

Emmanuel O. Agu, PhD

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Updated May 3, 2020

BACKGROUND

Academic Experience

- Professor,
 - Computer Science Dept., Worcester Polytechnic Inst. (WPI), July 2018 – Date
 - Electrical & Computer Engineering Dept., WPI, July 2018 – Date
 - Biomedical Engineering, WPI, July 2018 – Date
 - Robotics Engineering, WPI, July 2018 - Date
 - Interactive Media & Game Development (IMGD) Program, WPI, July 2018 – Date
 - Bioinformatics & Computational Biology Program, WPI, July 2018 – Date
 - Data Science Program, WPI, (Affiliated), July 2018 – Date
 - Science, Engineering and Innovation for Global Development Program, WPI Global School, January 2020 - Date
- Associate Professor,
 - Computer Science Dept., Worcester Poly. Inst. (WPI), July 2008 – June 2018
 - Electrical & Computer Engineering Dept., WPI, July 2015 – June 2018
 - Biomedical Engineering, WPI, December 2017 – June 2018
 - Robotics Engineering, WPI, January 2018 – June 2018
 - Interactive Media & Game Dev. (IMGD) Program, WPI, July 2008 – June 2018
 - Bioinformatics & Computational Biology Program, WPI, July 2011 – June 2018
 - Data Science Program, WPI, (Affiliated), July 2013 – June 2018
- Assistant Professor,
 - Computer Science Dept., WPI, July 2002 – 2008.
 - Interactive Media & Game Development (IMGD) Program, WPI, July 2005 - 2008
- Visiting Assistant Professor, HRTA Department, School of Management, University of Massachusetts, Amherst, Spring 2002.

Education

- PhD. in Electrical & Computer Engineering, Univ of Massachusetts, Amherst MA, Sept 2001
Doctoral Dissertation: Diffraction Shading Models for Iridescent Surfaces.
Advisor: Francis. S Hill Jr.
- M.S. in Electrical & Computer Engineering, Univ of Massachusetts, Amherst MA, May 1996
Masters Thesis: Wireless Local Area Networks Medium Access Control Protocols.
Advisor: Aura Ganz
- B.Eng., Electrical & Electronics Engineering, University of Benin, Nigeria, April 1994
Undergraduate Thesis: Design and Implementation of a 6-bit Digital Adder,
Advisor: John Igimoh

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Updated May 3, 2020

Work Experience

- Aug 2008 – Dec 2009 Consultant, Raytheon, Marlborough, MA (On sabbatical leave from WPI)
- May 2008 – Nov 2008 Consultant, Fidelity Investments, Boston (On sabbatical leave from WPI)
- Sept.1997 - Aug. 2001 Research Assistant, Electrical and Computer Engr Dept., University of Massachusetts, Amherst, MA
- June-Aug. 1998 Graduate Research Intern, Philips Research, BriarCliff, New York
- June-Aug. 1997 Graduate Research Intern, Nokia Research Center, Burlington, MA
- Oct 1994 – Sept 1997 Research Assistant, Wireless Multimedia LAN Group, Electrical and Computer Engineering Dept., University of Massachusetts-Amherst.
- May-Oct 1992; Sept – Oct. 1991 Engineering Undergraduate Intern, Tara Systems, Lagos, Nigeria,

Consulting

- Oct. – Nov. 2005. Consultant and Expert Witness, Mintz Levin law firm, Boston, MA.
- October 2006 - date Technical and Operations Consultant, UDC Company Limited, Nigeria
- October 2007 Consultant, Fanny Mlinarsky, Startup Company on Virtual Fashion

Languages: English, Ibo (Nigerian language), French

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SCHOLARSHIP

Research Interests

Mobile and Ubiquitous Computing, Mobile Health, Mobile sensing, Computer Graphics

List of Publications

(**Legend:** Undergraduate co-authors are underlined, graduate co-authors are bold + underlined)

Refereed Book Chapters

- BC1 Emmanuel Agu, Amorn Chokchaisiripakdee, Nuttaworn Sujumnong, Latthapol Krachonkitkosol, Bengisu Tulu, Making Exergames Appealing: An Assessment of Commercial Exergames, *Handbook of Research on Holistic Perspectives in Gamification for Clinical Practice*, Chapter 14, IGI Global Publishers, 2015
- BC2 **Fan Wu**, Emmanuel Agu, **Clifford Lindsay** and Chung-han Chen, On Balancing Energy Consumption, Rendering Speed, and Image Quality on Mobile Devices, *Emergent Trends in Personal, Mobile, and Handheld Computing Technologies*, Chapter 14, IGI Global Publishers, 2012 (20 pp).
- BC3 **Fan Wu**, Emmanuel Agu, **Clifford Lindsay** and Chung-Han Chen, UbiWave: An Novel Energy-Efficient End-to-End Solution for Mobile 3D Graphics, *Handheld Computing for Mobile Commerce: Applications, Concepts and Technologies* IGI Global Publishers, 2010.

Refereed Journals

- J1 Ada Dogrucu, Alex Perucic, Anabella Isaro, Damon Ball, Eral Toto, Elke Rundensteiner, Emmanuel Agu, Rachel Davis-Martin and Edwin Boudreaux, Moodable: Instantaneous Depression Assessment using Machine Learning on Voice Samples and Retrospectively Harvested Smartphone and Social Media Data, *Elsevier Smart Health Journal* (accepted, to appear)
- J2 **Xixuan Zhao**, **Zivang Liu**; Emmanuel Agu; **Ameva Wagh**; **Shubham P Jain**; Clifford Lindsay; Bengisu Tulu; Diane Strong; Jiangming Kan, Fine-grained diabetic wound depth and granulation tissue amount assessment using bilinear convolutional neural network, *IEEE Access* 7 (2019): 179151-179162.
- J3 **Hamza Abujrida**, Emmanuel Agu, Kaveh Pahlavan, Machine Learning-based Motor Assessment of Parkinson's Disease Using Postural Sway, Gait and Lifestyle Features on Crowdsourced Smartphone Data, *Biomedical Physics and Engineering Express Journal* 2019.
- J4 **Lei Wang**, Peder C. Pedersen, Emmanuel Agu, Diane Strong, Bengisu Tulu, **Qian He**, Boundary determination of foot ulcer images by applying the Associative Hierarchical Random Field framework, *Journal of Medical Imaging e Analysis*, no. 2 (2019): 024002.
- J5 Sherry Pagoto, Bengisu Tulu, Emmanuel Agu, Molly E. Waring, Jessica L. Oleski, and Danielle E. Jake-Schoffman. "Using the habit app for weight loss problem solving: development and feasibility study." *JMIR mHealth and uHealth* 6, no. 6 (2018): e145.

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Updated May 3, 2020

- J6 Ana Abrantes, Claire Blevins, Clifford Lindsay, Cynthia L. Battle, Matthew P. Buman, Emmanuel Agu, and Michael Stein. "Formative work in the development of a physical activity smartphone app targeted for patients with alcohol use disorders." *Psychology of Sport and Exercise* 41 (2019): 162-171.
- J7 **Maryam Hasan**, Elke Rundensteiner, Emmanuel Agu, Automatic Emotion Detection in Text Stream Messages Using Social Sensing", *Springer Int'l Journal of Data Science and Analytics*, February 2019, Volume 7, Issue 1, pp 35–51
- J8 **Charles Lovering**, **Anqi Lu**, **Cuong Nguyen**, **Huyen Nguyen**, David Hurley and Emmanuel Agu, (2018). Fact or fiction. *Proceedings of the ACM on Human-Computer Interaction*, 2(CSCW), 111.
- J9 Sherry Pagoto, Jessica Oleski, Molly E Waring, Emmanuel Agu and Bengisu Tulu, Habit App: Feasibility of a Weight Loss Problem Solving App, *Annals Behavioral Medicine*, 2017
- J10 **Maryam Hasan**, Elke Rundensteiner, Xiangnan Kong and Emmanuel Agu, Discover Trends in Public Emotion using Social Sensing, *ACM SIGWeb Newsletter*. Spring, Article 2 (March 2017), 5 pages.
- J11 **Lei Wang**, Peder C. Pedersen, Emmanuel Agu, Diane Strong, Bengisu Tulu, **Qian He**, Area determination of diabetic foot ulcer images using a cascaded two-stage SVM based classification, *IEEE Transactions on Biomedical Engineering*, vol. 64, no. 9, pp. 2098-2109, Sept. 2017.
- J12 **Xiaochen Huang** and Emmanuel Agu (2016) A Speech-Based Mobile App for Restaurant Order Recognition and Low-Burden Diet Tracking. In: Zheng X., Zeng D., Chen H., Leischow S. (eds) *Smart Health. Springer Lecture Notes in Computer Science*, vol 9545, pp 333-339
- J13 Kaveh Pahlavan, **Yishuang Geng**, **Guanqun Bao**, **Liang Mi**, Emanuel Agu, David R. Cave, Andrew Karellas, Vahid Tarokh, Kamran Sayrafian, A Novel CyberPhysical System (CPS) for 3D Imaging of the Small Intestine in Vivo, *IEEE Access Journal*, vol 3, Dec 2015, pp 2730-2742
- J14 **Lei Wang**, Peder C. Pedersen, Diane M. Strong, Bengisu Tulu, Emmanuel Agu, Ron Ignatz, **Qian He**, An automatic assessment system of diabetic foot ulcers based on wound area determination, color segmentation and healing score evaluation, *Journal of Diabetes Technology and Science*, volume 10, Issue 2, 2016
- J15 **Lei Wang**, Peder C. Pedersen, Diane Strong, Bengisu Tulu, Emmanuel Agu and Ronald Ignatz, Smartphone Based Wound Assessment System for Patients with Diabetics, *IEEE Transactions on Biomedical Engineering* vol. 62, no.2, February, 2015.
- J16 **Che Sun** and Emmanuel Agu (2015) Many-Lights Real Time Global Illumination Using Sparse Voxel Octree. In: Bebis G. et al. (eds) *Advances in Visual Computing. Springer Lecture Notes in Computer Science*, vol 9475, pages 150-159
- J17 **Qian He**, Emmanuel Agu, Diane Strong, Bengisu Tulu, Peder Pedersen, **Lei Wang**, The Design, Architecture and Implementation of Sugar, an Android Smartphone App for Advanced Diabetes, in Proceedings book of Diabetes Technical Meeting 2013, in *Journal of Diabetes Science and Technology*

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Updated May 3, 2020

- J18 **Clifford Lindsay** and Emmanuel Agu (2014) 3D Previsualization Using a Computational Photography Camera. In: Bebis G. et al. (eds) *Advances in Visual Computing. ISVC 2014. Lecture Notes in Computer Science, vol 8888*, pp 904-914
- J19 **Clifford Lindsay** and Emmanuel Agu (2014) Automatic Multi-Light White Balance Using Illumination Gradients and Color Space Projection. In: Bebis G. et al. (eds) *Advances in Visual Computing. ISVC 2014. Springer Lecture Notes in Computer Science, vol 8887*, pp 579-588
- J20 **Damon Blanchette** and Emmanuel Agu, Real-Time Dispersive Refraction with Adaptive Spectral Mapping, *Int'l Journal on Artificial Intelligence Tools* 22, 1360019 (2013)
- J21 **Karen Works**, Elke A. Rundensteiner, and Emmanuel Agu, Optimizing Adaptive Multi-Route Query Processing via Time-Partitioned Indices, *Journal of Computer and System Sciences (JCSS)*, Special Issue, "Data Warehousing and Knowledge Discovery from Sensors and Streams", vol 79, issue 3, May 2013, pp 330-348, Elsevier Publisher.
- J22 **Damon Blanchette** and Emmanuel Agu (2012) Adaptive Spectral Mapping for Real-Time Dispersive Refraction. In: Bebis G. et al. (eds) *Advances in Visual Computing. ISVC 2012. Springer Lecture Notes in Computer Science, vol 7431*. Berlin, Heidelberg.
- J23 Diane Strong, Emmanuel Agu, Peder Pedersen and Bengisu Tulu, *Pocket Doctor*, In Patient Care Magazine, Issue 10, 2012, pp 35-37
- J24 **Fan Wu**, Emmanuel Agu, **Clifford Lindsay** and Chung-han Chen, On Balancing Energy Consumption, Rendering Speed, and Image Quality on Mobile Devices. *Int'l Journal of Handheld Computing Research*, July, 2010.
- J25 **Fan Wu**, Emmanuel Agu, **Clifford Lindsay** and Chung-han Chen, Imperceptible Simplification on Mobile Displays, *Int'l Journal of Handheld Computing Research* (3)1, 2012
- J26 R. Bartoš, S. G. Chappell, R. J. Komerska, **M. Haag**, S. Mupparapu, E. Agu, and I. Katz, "Development of routing protocols for the Solar-powered Autonomous Underwater Vehicle (SAUV) platform," *Wireless Communications and Mobile Computing*, Vol.8, No.8, pp. 1075-1088, Aug. 2008.
- J27 **Fan Wu**, Emmanuel Agu, **Clifford Lindsay**, (2008) Adaptive CPU Scheduling to Conserve Energy in Real-Time Mobile Graphics Applications. In: Bebis G. et al. (eds) *Advances in Visual Computing. ISVC 2008. Springer Lecture Notes in Computer Science, vol 5358*, Berlin, Heidelberg, pp 624-633
- J28 **William West** and Emmanuel Agu, Experimental Evaluation of Energy-based Denial-of-Service Attacks in Wireless Networks, *IJCSNS Int'l Journal of Computer Science and Network Security*, VOL.7 No.6, June 2007
- J29 **Clifford Lindsay** and Emmanuel Agu. (2006) Physically-Based Real-Time Diffraction Using Spherical Harmonics. In: Bebis G. et al. (eds) *Advances in Visual Computing. ISVC 2006. Springer Lecture Notes in Computer Science, vol 4291*. Berlin, Heidelberg Pp 505-517.
- J30 **Fan Wu** and Emmanuel Agu, Multiresolution Graphics on Ubiquitous Displays Using Wavelets, *Int'l Journal of Virtual Reality*, volume 5(3): 9-15, September 2006.

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Updated May 3, 2020

- J31 Emmanuel Agu, **Kutty Banerjee**, **Shirish Nilekar**, **Oleg Rekutin**, **Diane Kramer**, A Middleware Architecture for Mobile 3D Graphics”, *Int’l Journal of Parallel, Emergent and Distributed Systems (IJPEDS)*, special issue on mobile distributed computing”, Volume 21, Issue 3, June 2006.
- J32 Emmanuel Agu and Francis S Hill (2003) A Simple Method for Ray Tracing Diffraction. In: Kumar V., Gavrilova M.L., Tan C.J.K., L’Ecuyer P. (eds) *Computational Science and Its Applications — ICCSA 2003. ICCSA 2003. Springer Lecture Notes in Computer Science, vol 2669*. Berlin, Heidelberg Pages 336-345.

Refereed Conferences and Workshops

- C1 **Hamid Mansoor**, **Walter Gerych**, **Luke Buquicchio**, **Kavin Chandrakasekaran**, Elke Rundensteiner, Emmanuel Agu, ARGUS: An Interactive Visual Analytics Framework for the Discovery of Disruptions in Bio-Behavioral Rhythms, in Proc EuroVis 2020 (accepted, to appear)
- C2 **Haadi Mombini**, Bengisu Tulu, Diane Strong, Emmanuel Agu, Clifford Lindsay, Lorraine Loretz, Peder Pedersen, Raymond Dunn, Do Novice and Expert Users of Clinical Decision Support Tools Need Different Explanations? Emergent Research Forum (ERF), submitted to AMCIS conference 2020 (accepted, to appear)
- C3 **Haadi Mombini**, Bengisu Tulu, Diane Strong, Emmanuel Agu, **Holly Nguyen**, Clifford Lindsay, Lorraine Loretz, Peder Pedersen and Raymond Dunn, Design of a Machine Learning System for Prediction of Chronic Wound Management Decisions, DESRIST Conference (accepted, to appear)
- C4 **Abdulaziz Alajaji**, **Walter Gerych**, **Kavin Chandrasekaran**, **Luke Buquicchio**, Emmanuel Agu and Elke Rundensteiner, DeepContext: Parameterized Compatibility-Based Attention CNN for Human Context Recognition, in Proc IEEE Conference on Semantic Computing (ICSC), 2020
- C5 **Hamid Mansoor**, **Walter Gerych**, **Luke Buquicchio**, **Kavin Chandrakasekaran**, Elke Rundensteiner, Emmanuel Agu, DELFI: Mislabeled Human Context Detection using Multi-Feature Similarity Linking, in IEEE Visualization in Data Science (VDS) Symposium, 2019.
- C6 **Ruojun Li**, Emmanuel Agu, **Ganesh Balakrishnan**, Debra Herman, Ana Abrantes, Michael Stein and Jane Metrik, WeedGait: Unobtrusive Smartphone Sensing of Marijuana-Induced Gait Impairment by Fusing Gait Cycle Segmentation and Neural Networks”, in Proceedings of IEEE Healthcare Innovations and Point of Care Technologies Conference (HI-POCT) 2019
- C7 **Kavin Chandrasekaran**, **Luke Buquicchio**, **Walter Gerych**, Emmanuel Agu and Elke Rundensteiner, Get Up!: Assessing Postural Activity and Transitions using Bi-Directional Gated Recurrent Units (Bi-GRUs) on Smartphone Motion Data, in Proceedings of IEEE Healthcare Innovations and Point of Care Technologies Conference (HI-POCT) 2019
- C8 **Alexander Fitzgerald**, **Sam Huang**, **Kyle Sposato**, **Dongjie Wang**, Mark Claypool and Emmanuel Agu, The Exergame Enjoyment Questionnaire (EEQ): An Instrument for Measuring Exergame Enjoyment, in Proc.Hawaii International Conference on System Science (HICSS) 2019.

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Updated May 3, 2020

- C9 Hossain Shahriar, Kai Qian, Dan Lo, Mohammad Rahman, Fan Wu, Sheikh Ahamed, Emmanuel Agu, Plugin-based Intervention for Secure Software Development, in Proc IEEE Frontiers in Education Conference (FIE) 2019.
- C10 Md. Arabin Talukder, **Hossain** Shahriar, Mohammad Rahman, Sheikh Ahamed, Fan Wu, Emmanuel Agu, DroidPatrol: A Static Analysis Plugin For Secure Mobile Software Development, Proc. of 43rd IEEE Conference on Computer, Software and Applications (COMPSAC), Milwaukee, WI, July 15-19, 2019, pp. 652-655.
- C11 Colin Willoughby, Ian Banatoski, Paul Roberts and Emmanuel Agu, Drunk Selfie: Intoxication Detection from Smartphone Selfie Images, in Proceedings IEEE International Workshop on Integrated Smart Healthcare (WISH 2019) (co-located with IEEE COMSAC)
- C12 Ruojun Li, Ganesh Balakrishnan, Jiaming Nie, Yu Li, Emmanuel Agu, Michael Stein, Ana Abrantes, Deborah Herman, Kristine Grimone, On Smartphone Sensability of Bi-Phasic User Intoxication Levels from Diverse Walk Types in Standardized Field Sobriety Tests, in Proc IEEE EMBS EMBC 2019
- C13 Hamid Mansoor, Walter Gerych, Luke Buquicchio, Kavin Chandrakasekaran, Elke Rundensteiner, Emmanuel Agu, "COMEX: Identifying Mislabeled Human Behavioral Context Data using Data Visual Analytics, in Proc 1st IEEE International Workshop on Deep Analysis of Data Driven Applications (DADA) 2019.
- C14 Haadi Mombini, Bengisu Tulu, Diane Strong, Emmanuel Agu, Holly Nguyen, Peder Pedersen, Clifford Lindsay, Raymond Dunn and Lorraine Loretz, Design of a Rule-based Decision Model for Assessment of Chronic Wounds, Late Breaking submissions, DESRIST 2019
- C15 Walter Gerych, Emmanuel Agu and Elke Rundensteiner, Classifying Depression in Imbalanced Datasets using an Autoencoder-based Anomaly Detection Approach, in Proc IEEE Conference on Semantic Computing (ICSC) 2019
- C16 Charles Lovering, Anqi Lu, Cuong Nguyen, Huyen Nguyen, David Hurley and Emmanuel Agu, Fact or Fiction: An Application to Subvert Fake News, in Proc Conference for Computer Supported Cooperative Work (CSCW) 2018
- C17 Kai Qian, Dan Chia-Tien Lo, Fan Wu, Emmanuel Agu and Bei-Tseng Chu, Authentic Learning Secure Software Development (SSD) in Computing Education, in Proc. IEEE Frontiers in Education (FIE) Conference, 2018.
- C18 Hamza Abujrida, Emmanuel Agu and Kaveh Pahlavan, Smartphone-Based Gait Assessment to Infer Parkinson's Disease Severity using Crowdsourced Data, in Proc. IEEE-NIH Special Topics Conference on Healthcare Innovations and Point-of-Care Technologies (HI-POCT '17), Washington DC, 2017
- C19 Akshay Thejaswi, Aditya Nivarthi, Daniel Beckwith, Clifford Lindsay and Emmanuel Agu, Detruncation of Attenuation Maps using Neural Networks, IEEE nuclear science symposium and medical imaging conference (NSS/MIC) 2017, oral presentation.

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Updated May 3, 2020

- C20 Andrew McAfee, Jacob Watson, Ben Bianchi, Christina Aiello, Emmanuel Agu, AlcoWear: Detecting Blood Alcohol Levels from Wearables, in Proceedings *IEEE Conference on Ubiquitous Intelligence and Computing (UIC) 2017*
- C21 Qian He and Emmanuel Agu, A Rhythm Analysis-Based Model to Predict Sedentary Behaviors, in Proc. IEEE 2nd Int'l Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE) 2017, Philadelphia, PA
- C22 Sherry Pagoto, Jessica Oleski, Effie Olendzki, Molly Waring, Emmanuel Agu, Bengisu Tulu, Habit App: Feasibility of a Weight Loss Problem Solving App, abstract in the *Annual meeting of the Society of Behavioral Medicine 2017*, San Diego
- C23 Maryam Hasan, Elke Rundensteiner, Xiangnan Kong and Emmanuel Agu, Using Social Sensing to Discover Trends in Public Emotion, in Proc *IEEE Int'l Conference on Semantic Computing (ICSC) 2017* (honorable mention, top 6 best papers)
- C24 Kai Qian, Hossain Shahriar, Fan Wu, Cassandra Thomas and Emmanuel Agu, Broadening Secure Mobile Software Development (SMSD) Through Curriculum Development, Poster Session, *ACM SIGCSE 2017*, Seattle, WA, March 8-11, 2017.
- C25 Philipp Baumann, Anthony Gallo, Emmanuel Agu and Mark Claypool, Exer-Walls – A Health Alternative to Paywalls in Mobile Games, in Proc *Meaningful Play Conference 2016*
- C26 Qian He and Emmanuel Agu, Smartphone Usage Contexts and Sensable Patterns as Predictors of Future Sedentary Behaviors, in Proceedings of the *IEEE-NIH Special Topics Conference on Healthcare Innovations and Point-of-Care Technologies (HI-POCT '16)*, Cancun, Mexico, Nov 9-11, 2016
- C27 Gauri Pulekar and Emmanuel Agu, Autonomously Sensing Loneliness and Its Interactions with Personality Traits using Smartphones, in Proceedings of the *IEEE-NIH Special Topics Conference on Healthcare Innovations and Point-of-Care Technologies (HI-POCT '16)*, Cancun, Mexico, Nov 9-11, 2016
- C28 Christina Aiello and Emmanuel Agu, Investigating Postural Sway Features, Normalization and Personalization in Detecting Blood Alcohol Levels of Smartphone Users, in Proc *Wireless Health Conference 2016*, NIH, Bethesda, Maryland
- C29 Emmanuel Agu and Mark Claypool, Cypress: A Cyber-Physical Recommender System to Discover Smartphone Exergame Enjoyment, in Proc *Int'l Workshop on Engendering Health with RecSys, co-located with ACM RecSys 2016*, Boston MA.
- C30 Qian He and Emmanuel Agu, Towards Sedentary Lifestyle Prevention: An Autoregressive Model for Predicting Sedentary Behaviors, *IEEE Medical Information and Communication Technology Conference (ISMICT)*, Worcester, MA, USA, March 20-23 2016.
- C31 Qian He and Emmanuel Agu, A Frequency Domain Algorithm to Identify Recurrent Sedentary Behaviors from Activity Time-Series Data, *IEEE Int'l Conference on Biomedical and Health Informatics*, Las Vegas, NV, USA on Feb 24-27 2016.
- C32 Bengisu Tulu, Diane Strong, Lei Wang, Qian He, Emmanuel Agu, Peder Pedersen, Soussan Djamasbi, Design Implications of User Experience Studies: The Case of a Diabetes Wellness App, in Proc *Hawaiian Int'l Conference on System Sciences (HICSS) 2016*.

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Updated May 3, 2020

- C33 **Xiaochen Huang** and Emmanuel Agu, Location-Dependent Vocabularies and Speaker Style Personalization for Accurate Mobile Diet Recognition, in Proc *IEEE Conference on Healthcare Informatics 2015* (Extended abstract)
- C34 **Qiwen Chen** and Emmanuel Agu, Exploring Statistical GLCM Texture Features for Classifying Food Images, in Proc *IEEE Conference on Healthcare Informatics 2015* (Extended abstract)
- C35 **Zach Arnold, Danielle LaRose, Emmanuel Agu**, A Factorial Experiment to Investigate Naturalistic Factors Affecting Smartphone Gait Analysis, in Proc *17th Int'l Conference on e-Health Networking, Applications and Services (Healthcom) 2015* (short paper)
- C36 **Zach Arnold, Danielle LaRose, Emmanuel Agu**, Smartphone Inference of Alcohol Consumption Levels from Gait, in Proc *IEEE Conference on Healthcare Informatics 2015*
- C37 **Bengisu Tulu, Emmanuel Agu, Stephenie Lemon, Jessica Oleski, Martinus Evans, Sherry Pagoto**, Smart Coach: A Problem-Solving Mobile App to Support Weight Loss Management, in Proc *American Medical Informatics Association (AMIA) 2015* (poster)
- C38 **Maryam Hasan**, Elke Rundensteiner, Emmanuel Agu, Using Hashtags as Labels for Supervised Learning of Emotions in Twitter Messages (poster), in *New England Database Day (NEDBDay) January 2015*, MIT
- C39 **Wei Wang, Zhilu Chen, Baoyuan Xing, Xiaochen Huang, Shengwen Han** and Emmanuel Agu, A Smartphone-based Digital Hearing Aid to Mitigate Hearing Loss at Specific Frequencies, in Proc Workshop on Mobile Medical Applications (MMA) 2014, co-located with *ACM Sensys 2014*, Memphis Tennessee
- C40 **Qian He**, Emmanuel Agu, Diane Strong and Bengisu Tulu, RecFit: A Context-Aware System for Recommending Physical Activities, in Proc *Workshop on Mobile Medical Applications (MMA) 2014*, co-located with *ACM Sensys 2014*, Memphis Tennessee
- C41 **Lei Wang**, Peder C. Pedersen, Diane Strong, Bengisu Tulu, Emmanuel Agu, **Qian He**, Assessing Diabetic Foot Ulcer Healing at Wound Clinics: Development of a tracking system using SVM based classification, in *Diabetes Technical Meeting (DTM) 2014* (poster), Bethesda, MD
- C42 **Maryam Hasan**, Emmanuel Agu, Elke Rundensteiner, Using Hashtags as Labels for Supervised Learning of Emotions in Twitter Messages, in *SIGKDD Health Informatics Workshop (HI-KDD)*, co-located with *ACM SIGKDD 2014*
- C43 **Lei Wang**, Peder C. Pedersen, Diane M. Strong, Bengisu Tulu, Emmanuel Agu, **Qian He**, Detection of diabetic foot ulcers using SVM based classification, *University of Massachusetts Center for Clinical and Translational Science, 5th Annual Research Retreat*, May 2014
- C44 **Qian He**, Emmanuel O. Agu, Diane M. Strong, Bengisu Tulu, Peder C. Pedersen, Characterizing the Performance and Behaviors of Runners Using Twitter, *University of Massachusetts Center for Clinical and Translational Science, 5th Annual Research Retreat*, May 2014

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Updated May 3, 2020

- C45 **Qian He** and Emmanuel O. Agu, A Context-Aware Activity Recommendation Smartphone Application to Mitigate Sedentary Lifestyles, *University of Massachusetts Center for Clinical and Translational Science, 5th Annual Research Retreat*, May 2014
- C46 Diane Strong, Bengisu Tulu, Emmanuel Agu, **Qian He**, Peder Pedersen, **Lei Wang**, Ronald Ignatz, Raymond Dunn, Sherry Pagoto and David Harlan, Design of the Feedback Engine for a Diabetes Self-Care Smartphone App, in *Proc Association for Information Systems Conference (AMCIS) 2014*
- C47 **Maryam Hasan**, Elke Rundensteiner and Emmanuel Agu, EMOTEX: Detecting Emotions in Twitter Messages, in *Proc ASE/IEEE Int'l Conference on Social Computing (Socialcom) 2014*
- C48 **Qian He** and Emmanuel Agu, On11: An Activity Recommendation App to mitigate sedentary Lifestyles, in *Physical Analytics Workshop, co-located with ACM Mobisys 2014*
- C49 Diane Strong, Emmanuel Agu, Peder C. Pedersen, Bengisu Tulu, **Qian He**, **Lei Wang**, Ronald Ignatz, Raymond Dunn, David Harlan, and Sherry Pagoto, *Sugar: A Mobile Phone App for Diabetes and Diabetic Wound Management*, in *Proceedings American Medical Informatics Association (AMIA) 2013 (poster)*
- C50 Diane Strong, Peder C. Pedersen, Emmanuel Agu, Bengisu Tulu, **Lei Wang**, **Qian He**, Dr. Ronald Ignatz, Dr. Raymond Dunn, Dr. David Harlan, and Dr. Sherry Pagoto, Smartphone-Based Wound Assessment System for Diabetic Patients, in *Diabetes Technical Meeting (DTM) 2013 (poster)*
- C51 **Qian He**, Emmanuel Agu, Peder Pederson, Diane Strong and Bengisu Tulu, "Characterizing the Performance and Behaviors of Runners Using Twitter", (full paper) in *Proc IEEE Int'l Conference on Healthcare Informatics (ICHI) 2013, Philadelphia, PA*
- C52 **Minh Hyunh**, **Kevin Lo** and Emmanuel Agu, On Time-Use Surveys for Ubiquitous Computing Solutions in a Pharmacy Environment, (extended abstract) in *Proc IEEE Int'l Conference on Healthcare Informatics (ICHI) 2013, Philadelphia, PA*
- C53 **Punit Dharani**, **Benjamin Lipson**, **Devin Thomas** and Emmanuel Agu, RFID-Based Public Space Navigation System for the Visually Impaired, (extended abstract) in *Proc IEEE Int'l Conference on Healthcare Informatics (ICHI) 2013, Philadelphia, PA*
- C54 Emmanuel Agu, Peder C. Pedersen, Diane Strong, Tulu Bengisu, **Qian He**, **Lei Wang**, **Yejin Li**, The smartphone as a Medical Device: Assessing Enablers, Benefits and Challenges, in *Proc Workshop on Design Challenges in Mobile Medical Device Systems (DC-MMDS) (in conjunction with IEEE SECON 2013)*
- C55 **Lei Wang**, Peder C. Pedersen, Emmanuel Agu, Diane Strong, Tulu Bengisu, Wound Image Analysis System for Diabetics, in *Proc. Int'l Society for Optics and Photonics (SPIE) Medical Imaging Conference*, (poster) Lake Buena Vista, FL, Feb. 9 - 14, 2013
- C56 **Andrew Zafft** and Emmanuel Agu, Malicious WiFi Networks: A First Look, in *Proceedings, Workshop on Security in Communications Networks (SICK), co-located with IEEE Conference on Local Computer Networks (LCN)*, Clearwater, Florida, October 2012
- C57 Bengisu Tulu, Diane Strong, Emmanuel Agu, Peder Pedersen, **Qian He**, **Lei Wang**, (2012) "Diabetes Self-Management: Role of Mobile Apps in Supporting Patients with Advanced

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Updated May 3, 2020

- Diabetes and Foot Ulcers” *Proceedings of Medicine 2.0 5th World Congress on Social Media, Mobile Apps, and Internet/Web2.0*, September 15-16, 2012, Boston, Massachusetts, USA.
- C58 Bengisu Tulu, Emmanuel Agu, Michael Ng, Evan Duderewicz, Brendan Harris, Thomas Jenkins, Kenneth Miyaguchi, Tiffany Moore-Simas, Milagros Rosal, (2011) “Mom-O-Meter: A self-help pregnancy Android app”. Poster, *American Medical Informatics Association (AMIA) 2011 Annual Symposium*, October 2011, Washington, D.C., USA.
- C59 Karen E Works, Elke A Rundensteiner, Emmanuel Agu, Index Tuning for Adaptive Multi-Route Data Stream Systems” *Scalable Stream Processing Systems Workshop (SSPS) 2010*.
- C60 Fan Wu, Emmanuel Agu, Clifford Lindsay and Chung-han Chen, Unequal Error Protection (UEP) for Wavelet-Based Wireless 3D Mesh Transmission, 8th *IEEE Int’l Symposium on Network Computing and Applications (IEEE NCA09)*, Cambridge, MA. July 2009.
- C61 Karen Works, Elke Rundensteiner, Emmanuel Agu, Indexing Adaptive Multi-Route Data Stream Systems, Poster, *New England Database Day (NEDBDay)* January 2009, MIT.
- C62 Karen Works, Elke Rundensteiner, Emmanuel Agu, "Index System for Adaptive Multi-Route Data Stream Systems", Poster, *CRA-W Grad Cohort for Women Program*, April 2009,
- C63 Fan Wu, Emmanuel Agu and Clifford Lindsay, Adaptive CPU Scheduling to Conserve Energy in Real-Time Mobile Graphics Applications, (Short paper and Research Poster), *Pacific Graphics 2008*, Tokyo, Japan. October 2008.
- C64 Clifford Lindsay, Emmanuel Agu, Fan Wu, Dynamic Correction of Color Appearance on Mobile Displays, in Proc. *Graphics Interface Conference*, May 2008
- C65 Chen-Hao Chang, Peter Lohrmann, Emmanuel Agu, Robert Lindeman, “ENCORE: Energy-Conscious Rendering for Mobile Devices,” in Proc *First Workshop on General Purpose Processing on Graphics Processing Units (GPGPU)*, Oct. 4, 2007, Boston, MA.
- C66 Fan Wu, Emmanuel Agu, and Clifford Lindsay, Pareto-Based Perceptual Metric for Imperceptible Simplification on Mobile Displays, in Proc *European Association for Computer Graphics (Eurographics) Conference 2007*, in Prague, Czech Republic, September 3-7, 2007.
- C67 Fan Wu and Emmanuel Agu, UbiWave: Ubiquitous Multiresolution Graphics using Wavelets, in Proceedings of the *Int’l Conference on Artificial Reality and Telexistence (ICAT) 2006*, Nov. 29—Dec. 1, 2006, Hangzhou, China. **Best paper award**
- C68 Matt Haag, Rick, Emmanuel Agu, Rick Komerska, Steven G Chappell and Radim Bartos, Status Packet Deprecation and Store-Forward Routing in AUSNet, in Proceedings of the *1st ACM Int’l Workshop on UnderWater Networks (WUWNet) 2006* (in conjunction with ACM Mobicom), Los Angeles, California, September 24-29, 2006, pages 86 - 92.
- C69 Paul Timmins, Sean McCormick, Emmanuel Agu, and Craig Wills, Characteristics of Mobile Web Content, in Proceedings of the *First IEEE Workshop on Hot Topics in Web Systems and Technologies (HotWeb) 2006*, Boston, MA. Pages 1-10.
- C70 Fan Wu and Emmanuel Agu, Unequal Error Protection for Wavelet-Based Wireless Mesh Transmission, in *33rd ACM Int’l Conference on Computer Graphics and Interactive Techniques (SIGGRAPH 2006)* (Research poster), Boston, MA July 30 – August 3, 2006.

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Updated May 3, 2020

- C71 **Clifford Lindsay** and Emmanuel Agu, Real-Time Wavelength-Dependent Rendering Pipeline, in 33rd *ACM Int'l Conference on Computer Graphics and Interactive Techniques (SIGGRAPH 2006)* (Research poster), Boston, MA July 30 – August 3, 2006.
- C72 **B L'Heureux**, **M McHugh**, **B Privett**, R Kinicki and Emmanuel Agu, A Campus-wide Mobile EMS Information Management System, in 1st ACM Workshop on Ubiquitous and Pervasive Healthcare (Ubicare), in Proceedings of the *IEEE Annual Int'l Conference on Pervasive Computing and Communications (PerCom)* 2006. Pages 522-526
- C73 Fernando C. Colon Osorio, Emmanuel Agu, and **Kerry McKay**, Trade-offs between Energy and Security in Wireless Networks, *The Software Defined Radio Technical Conference*, November 14-18 2005, Orange County, CA.
- C74 Fernando C. Colon Osorio, **Kerry McKay** and Emmanuel Agu, Comparison of security protocols in Mobile Wireless Environments: Tradeoffs between level of security obtained and battery life, in Proceedings of the *First IEEE/Create-Net Workshop on Security and QoS in Communication Networks*, 2005, Sept. 2005, Athens, Greece.
- C75 **Cliff Lindsay** and Emmanuel Agu, Spherical Harmonic Lighting of Wavelength-Dependent Phenomena, in Proceedings of the *European Association for Computer Graphics (Eurographics) Conference 2005*, Dublin Ireland. Pages 121 – 124.
- C76 **Kutty Banerjee**, **Fan Wu** and Emmanuel Agu, Estimating Mobile Memory Requirements and Rendering Time for Remote Execution of the Graphics Pipeline, in Proc *European Association for Computer Graphics (Eurographics) Conference 2005*, Dublin Ireland. Pages 125 – 128.
- C77 **Kutty Banerjee**, Emmanuel Agu, Remote Execution for 3D Graphics on Mobile Devices, in Proceedings of *IEEE Int'l Conference on Wireless Networks, Communications and Mobile Computing (WirelessCom) Symposium on Mobile Computing*, Maui, Hawaii, June 13-16, 2005. Pages 1154 – 1159.
- C78 **Kutty Banerjee**, Emmanuel Agu, PowerSpy: Fine-Grained Software Energy Profiling for Mobile Devices, in Proceedings of *IEEE Int'l Conference on Wireless Networks, Communications and Mobile Computing (WirelessCom) Symposium on Mobile Computing*, Maui, Hawaii, June 13-16, 2005. Pages 1136 – 1141.
- C79 Emmanuel Agu, **Kutty Banerjee**, **Shirish Nilekar**, **Oleg Rekutin**, **Diane Kramer** A Middleware Architecture for Mobile 3D Graphics”, in Proceedings of 3rd *Int'l Workshop on Mobile Distributed Computing (MDC'05)*, co-located with the *25th Int'l Conf. on Distributed Computing Systems (ICDCS'05)*, Columbus, Ohio (acceptance rate: 33%)
- C80 Fernando Colon-Osorio, Emmanuel Agu and **Kerry McKay**, “Energy trust models for wireless security protocols – tradeoffs and optimality, in Proc *IEEE Int'l Performance, Computing and Communications Conference (IPCCC)* 2005, Phoenix, Arizona, April 7 – 9, 2005. (acceptance rate: 30%). Pages 293 – 302.
- C81 **Ali Taheri**, **Arvinder Singh** and Emmanuel Agu, Location Fingerprinting on Infrastructure 802.11 Wireless Local Area Networks (WLANs) using Locus, Fourth *Int'l IEEE Workshop on Wireless Local Networks*, in Proceedings of *IEEE Local Computer Networks Conference (LCN)* 2004, Tampa, Florida (acceptance rate: 35%). Pages 676-683

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Updated May 3, 2020

- C82 Ali Taheri, Arvinder Singh and Emmanuel Agu, Locus: A Tool for Tag-less Location Sensing on 802.11 Wireless LANs with Display in SVG, in Proceedings of *Scalable Vector Graphics (SVG) Open Conference* 2004.
- C83 Mingzhe Li, Emmanuel Agu, Mark Claypool, Robert Kinicki and Choong-Soo Lee, Performance Enhancement of TFRC in Wireless Networks, in Proceedings of *Special Session on Multimedia Streaming in Ad hoc Networks at the 2004 Int'l Conference on Distributed Multimedia Systems (DMS '04)*, San Francisco Bay, California. Pages 127 – 132.
- C84 Tom Beigbeder, Rory Coughlan, Corey Lusher, John Plunkett, Emmanuel Agu and Mark Claypool. The Effects of Loss and Latency on User Performance in Unreal Tournament 2003, in Proceedings of *ACM SIGCOMM Workshop on Network and Systems Support for Games (NetGames)* 2004. Pages 144 - 151.
- C85 Choong-Soo Lee, Emmanuel Agu, Mark Claypool, Robert Kinicki and Mingzhe Li. Low Delay Marking for TCP in Wireless Ad Hoc Networks, in IEEE Workshop on Multihop Wireless Networks (MWN), in Proceedings of *IEEE Int'l Performance, Computing and Communications Conference (IPCCC)*, Phoenix, Arizona, USA, April 2004
- C86 Nathan Sheldon, Eric Girard, Seth Borg, Mark Claypool, and Emmanuel Agu. The Effect of Latency on User Performance in Warcraft III, in Proceedings of *ACM SIGCOMM Workshop on Network and Systems Support for Games (NetGames)*, May 2003. **Best paper award**. Pages 3 – 14.
- C87 Emmanuel Agu and Francis S Hill Jr., " Diffraction Shading Models for Iridescent Surfaces", in Proc. *IASTED Conference on Visualization, Imaging and Image Processing (VIIP)* 2002. Malaga Spain, 2002
- C88 Daniel Awduche and Emmanuel Agu, "Mobile Extensions to RSVP", "in Proc. *Int'l Conf. On Computer Communications and Networks (ICCCN)*, Las Vegas, Sept 22-27, 1997. Pages 132 – 136.
- C89 Emmanuel Agu and Aura Ganz, "A Resource Reservation Protocol for Wireless Local Area Networks", in Proc. *Massachusetts Telecommunications Conference (MTC)* 1996

Patents

- P1 Peder Pedersen, Diane Strong, Emmanuel Agu, Bengisu Tulu, Lei Wang, Qian He, System and method for assessing wound, US Patent number US 20150119721 A1, October 30, 2014
- P2 Blood Alcohol Content Sensing System (Alcogait patent), Attorney Docket No.: 55900-00009

Papers Submitted and Pending

Journals

- J33** Holly Nguyen, Emmanuel Agu, Bengisu Tulu, Diane Strong, Haadi Mombini, Peder Pedersen, Clifford Lindsay, Raymond Dunn, Lorraine Loretz, Machine Learning Classification of Actionable Care Decisions on Lower Extremity Wounds, submitted to Elsevier Smart Health

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Updated May 3, 2020

- J34 **Qian He**, Emmanuel Agu, Peder Pederson, Diane Strong and Bengisu Tulu, "Characterizing the Performance and Behaviors of Runners Using Twitter", submitted to *Computers in Human Behavior Journal*
- J35 Bengisu Tulu *et al*, Managing a Design Science Research Project: Lessons Learned, submitted to IEEE Transactions on Engineering Management

Conference

- C90 **Hamid Mansoor, Walter Gerych, Luke Buquicchio, Kavin Chandrakasekaran**, Elke Rundensteiner, Emmanuel Agu, NOSOI: Interactive Observation of Smartphone Sensed Symptoms for In-The-Wild Data, submitted to IEEE Visualization conference 2020
- C91 Haadi Mombini, Bengisu Tulu, Diane Strong and Emmanuel Agu, A Systematic Review of Decision Support Tools for Chronic Wound Management: A Design Science Research Approach, submitted to the Hawaii International Conference on System Science (HICSS) 2019.
- C92 Walter Gerych, Thomas Hartvigsen, Luke Buquicchio, Kavin Chandrasekaran, Abdulaziz Alajaji, Hamid Mansoor, Elke Rundensteiner and Emmanuel Agu, Deep Positive Unlabeled Learning of Sequential Data with Selection Bias, submitted to KDD '20
- C93 Walter Gerych, Elke Rundensteiner and Emmanuel Agu, OP-DMA: Outlier-Preserving Distribution Mapping Autoencoders for Versatile Outlier Detection, submitted to KDD '20
- C94 Luke Buquicchio, Walter Gerych, Kavin Chandrasekaran, Abdulaziz Alajaji, Hamid Mansoor, Elke Rundensteiner and Emmanuel Agu, Variational Open Set Recognition, submitted to KDD '20
- C95 Haadi Mombini, Emmanuel Agu, Diane Strong, Clifford Lindsay, Lorraine Loretz, Peder Pedersen, Prediction of Chronic Wound Care Decisions Using Machine Learning, submitted to AMIA 2020 Posters
- C96 Emmanuel Agu, Elke Rundensteiner, **Abdulaziz Alajaji, Walter Gerych, Hamid Mansoor, Luke Buquicchio, Kavin Chandrakasekaran**, Smartphone Assessment of TBI and Infectious Diseases using Smartphone Biomarkers: The DARPA WASH Project, to be submitted to IEEE Pervasive Magazine

Awards/Honors Related to Scholarship

- AT1 Member, National Academy of Inventors (NAI), inducted May 2017
- AT2 **Honorable mention for top 6 best papers** for paper by Maryam Hasan, Elke Rundensteiner, Xiangnan Kong and Emmanuel Agu, Using Social Sensing to Discover Trends in Public Emotion, in Proc IEEE Int'l Conference on Semantic Computing (ICSC) 2017

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Updated May 3, 2020

- AT3 **Best paper award** for paper by **Fan Wu** and Emmanuel Agu, UbiWave: Ubiquitous Multiresolution Graphics using Wavelets, in Proc. Int'l Conference on Artificial Reality and Telexistence (ICAT) 2006.
- AT4 **Best paper award for paper** by **Nathan Sheldon**, **Eric Girard**, **Seth Borg**, Mark Claypool, and Emmanuel Agu. The Effect of Latency on User Performance in Warcraft III, in Proc. *ACM NetGames* 2003, May 2003.
- AT5 Eugene M. Isenberg **Scholarship**, 1998-1999 (for \$10,000), 1999-2000 (for \$10,000)
- AT6 James F. Naurison **Scholarship**, 1998-1999 (for \$500)

Research Software (25)

- *NOSOI* Visual Analytics framework for visualizing and contextualizing smartphone-sensed health symptomatic days.
- *ARGUS* Visual Analytics framework for visualizing and contextualizing smartphone-sensed circadian rhythms (sleep-wake cycles) and disruptions.
- *COMEX* Visual Analytics framework for discovering wrong user-assigned labels in smartphone sensing studies in-the-wild based on computed anomaly scores
- *DELFI* Visual Analytics framework for discovering wrong user-assigned labels in smartphone sensing studies in-the-wild based on feature similarity
- *SmartWANDS* Wound care smartphone app that uses machine learning to automatically analyze wound images to assess healing progress
- *Weedgait* Smartphone sensing app, infers impairment in marijuana users
- *Alcogait* Smartphone sensing app, infers Users' intoxication level from their gait
- *Alcowatch* Smartwatch sensing app, infers users' intoxication level from their gait
- *AlcoContextualizer* Smartphone app, displays visualizations of recurrent drinking contexts to support reflection
- *Cypress* Exergame smartphone-based system that recommends new games based on sensed user enjoyment level
- *BMS* Security system that authenticates smartphone users based on their unique behaviors (locations visited, phone interaction style, apps used)
- *Socioloscope* Smartphone sensing app, infers users' loneliness level from their communication and phone usage patterns
- *RELAX* Mobile app targeting obesity caused by overeating due to stress
- *Sugar* Diabetes and wound care smartphone app that uses machine learning to automatically analyze wound images to assess healing progress
- *SmartCoach* Obesity smartphone counseling application
- *On11* Activity and sedentary lifestyle tracking smartphone application. At its peak, the Smartwatch On11 version had over 30,000 subscribers worldwide.
- *RecFit* Physical activity recommendation smartphone application
- *EMOTEX* Twitter mining application, uses machine learning to detect emotions expressed in short messages
- *Mom-O-Meter* Mobile health application for mitigating gestational diabetes
- *PCam* Programmable digital camera for Computational Photography

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Updated May 3, 2020

- *UbiWave* Distributed multiresolution graphics framework using wavelets
- *MADGRAF* Middleware framework for graphics on mobile devices
- *RMesa* Remote execution module for mobile 3D graphics applications
- *PowerSpy* Software-only tool that profiles application procedure, thread and I/O energy
- *LOCUS* Tagless Location Sensing module for infrastructure 802.11 Wireless LANs
- *Review* Bi-directional Reflectance (BRDF) viewer

Major Grants Awarded (Over \$45 million Funding as PI, co-PI or senior personnel)

- G1 Stability Health Sandbox Grant, Massachusetts Technology Collaborative (MeHI), PI David Harlan, co-PIs Mike Aspinwall, Emmanuel Agu, Diane Strong, Bengisu Tulu, Soussan Djamasbi, Rodica Neamtu, \$50,000, 2020 Academic year
- G2 2 T32 CA172009 Prevention and Control of Cancer: Training for Change in Individuals and Systems (PRACCTIS 2.0), NIH National Cancer Institute (NCI), T32 grant, MPIs Lemon/Houston UMMS, WPI mentors: Emmanuel Agu, Dmitry Korin, Elke Rundensteiner, Sharon Johnson, Diane Strong, Funding Amounts: \$1,558,829, Funding Dates: 08/08/2019 – 07/31/2024
- G3 Design and Synthesis of Materials for Agile Manufacturing, Danielle Cote (PI), Army Research Labs (ARL), Funding Amount: \$24,999,821.00, Dates: 08/15/19 – 08/14/22
- G4 HR001117S0032-WASH-FP-031, DH-Warfighter: Improving Warfighter Health by Early Detection of Digital Biomarkers, Emmanuel Agu (PI), Elke Rundensteiner (co-PI), Defense Advanced Research Agencies (DARPA). Funded Amount \$2,803,313. Requested dates 3/1/2018 – 2/28/2022
- G5 1R01EB025801-01 SCH: INT: Smartphone Wound Image Parameter Analysis and Decision Support in Mobile Environments, Emmanuel Agu (PI), Diane Strong (co-PI), Bengisu Tulu (co-PI), National Science Foundation, Smart and Connected Health Program. Requested amount \$1,968,571. Requested dates 9/1/2017 – 8/30/2021 (funded by NIH NIBIB)
- G6 Data-driven healthcare proposal (D3Health) proposal to the Mass. Life Sciences Fund, Luzuriaga, McManus (PIs), collaboration between UMass Medical School, WPI and HDI, \$6 million.
- G7 1R21AA025193-01 Machine Learning Approach for Inferring Alcohol Intoxication Levels from Gait Data, Michael Stein (PI), Emmanuel Agu (PI), Ana Abrantes (co-I), NIH R21 National Institute on Alcoholism. PA-14-188. Requested amount \$408,578, WPI sub-contract amount (\$115,469). Requested Dates 7/1/17-6/30/19
- G8 NSF Award # 1723555 Collaborative Research: Broadening Secure Mobile Software Development (SMSD) Through Curriculum and Faculty Development, Fan Wu (PI), Cassandra Thomas (co-PI), Kai Qian (co-PI), Hossain Shahriar (co-PI), Emmanuel Agu (co-PI). Requested amount (\$498,970), WPI Share \$149,487. Requested Dates 09/01/17-08/30/20
- G9 NIH 1R21DA041153-01A1 A Smartphone App to Facilitate Buprenorphine Discontinuation, PI: Abrantes, co-PIs: Michael Stein, Emmanuel Agu. NIH NIDA submission, Award amount: \$103,609. Grant dates: 6/15/16 – 5/31/18

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Updated May 3, 2020

- G10 SocialoScope: A Passive System to Infer Loneliness from the Interaction and Communication Patterns of Smartphone Users, Emmanuel Agu (PI), WPI Health Delivery Institute (HDI) Internal Proposal. Award amount \$21,000, Grant dates June 1-August 31, 2016.
- G11 KERN Entrepreneurial Engineering Network grant, Developing the Entrepreneurial Engineer, Glenn Gaudette (PI), Emmanuel Agu Entrepreneurial Engineering Faculty (EEF) Award Amount: \$1,760,000. Grant dates June 2016 – April 2019
- G12 NIH R21AA024295 A Tailored Physical Activity Smartphone App for Patients with Alcohol Dependence, Abrantes (PI), co-PIs: Michael Stein, Emmanuel Agu, Award amount: \$207,207. Grant Dates: 4/1/16-3/31/21
- G13 NSF REU SITE Award IIS-1560229: Data science research for healthy, safe, and sustainable communities, Elke Rundensteiner and Fatemeh Emdad (PIs), Program faculty: Emmanuel Agu, Mohamed Eltabakh, Carolina Ruiz, Xiangnan Kong, Yanhua Li, Lane Harrison, Dmitry Korkin, Jian Zou, Randy Paffenroth. Award Amount: \$358,574. Grant Dates: May 1, 2016 - April 30, 2019
- G14 KERN Entrepreneurial Engineering Network grant, Developing the Entrepreneurial Engineer, Glenn Gaudette (PI), Emmanuel Agu Entrepreneurial Engineering Faculty (EEF) Award Amount: \$488,500. Grant dates June 2015 – April 2016
- G15 NIH R01HL122302, Project Title: RELAX: A Mobile Application Suite Targeting Obesity and Stress, Principal Investigator: Pagoto, Sherry L, WPI co-PIs: Bengisu Tulu (School of Business), Emmanuel Agu (Computer Science), Tsung-Ye Wang (School of Business). Award amount: \$1,952,780. WPI sub-contract: \$618,546. Grant dates: 12/1/2014 - 11/30/2017
- G16 Grant Number: 1 R21 DK098556-01, Project Title: Feasibility Trial of a Problem-Solving Weight Loss Mobile, Principal Investigator: Pagoto, Sherry L, WPI co-PIs: Bengisu Tulu (School of Management), Emmanuel Agu (Computer Science). Award amount: \$470,393. WPI sub-contract: \$90,020. Grant dates: 4/1/2013 - 3/31/2015
- G17 SHB: Medium: Self-Care Management: Patient-Centered Diabetic Wound Care Using Smart Phones, National Science Foundation, CISE Smart Health and Wellbeing program, D. Strong, PI, E. Agu, R. Ignatz, P. Pedersen, B. Tulu, Co-PIs, Award amount: \$1,200,000. Grant dates: September 1 2011- August 31 2015.
- G18 David Olinger and Emmanuel Agu (co-PIs), Airdrop research projects, Airdrop Technology Team at Natick Soldier Research, Development, and Engineering Center, under Solicitation Number "07-09 Natick BAA", Award amount: \$40,000. Grant dates: January 2008 – 2009.
- G19 Matthew Ward (PI) and Emmanuel Agu, George Heineman, Neil Heffernan (co-PIs), Fellowships in Computer Science to Support the Learning Sciences and Security, GAANN proposal, Award amount: \$804,940, (\$177,610 cost-sharing). Grant dates: 8/06 to 7/09.
- G20 Kaveh Pahlavan (PI) and Emmanuel Agu (co-PI), An Integrated Multi-Layer Wireless LAN Testbed, MRI equipment grant from the National Science Foundation (NSF), #0303592 Award amount: \$380,000. Grant dates: September 2003 – August 2005.

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Updated May 3, 2020

- G21 Emmanuel Agu (PI), WPI Computer Science Dept. Research Startup Grant, Award amount: \$25,000. Grant dates: June 2002 – Date

Minor Grants Awarded (Funding amount < \$20,000 as PI, co-PI or senior personnel)

- G22 Stroke Rehabilitation through Gaming: Proactively Predicting Non-Adherence to Facilitate Just-In-Time Interventions Mark Claypool, Lynn Gauthier, Emmanuel Agu, UML-WPI Collaborative Seed Funding, \$11,486, Summer 2019
- G23 SHB: Medium: Self-Care Management: Patient-Centered Diabetic Wound Care Using Smart Phones, National Science Foundation, CISE Smart Health and Wellbeing program, REU Supplement, (NSF IIS-1065298) D. Strong PI and E. Agu, Award amount: \$13,000. Grant dates: 2013-2014
- G24 Emmanuel Agu (PI), \$500 of equipment from Nvidia Corp Inc. (1 Programmable Graphics Card for Desktop Computers), April 2011
- G25 Emmanuel Agu (PI), \$1,250 of equipment from Nokia Inc. (5 C5 Smartphones), March 2011
- G26 Emmanuel Agu (PI), \$8500 of equipment from Google Inc. (20 Motorola Droid 2 Smartphones), May 2010
- G27 Emmanuel Agu, Speedup of Synthetic Aperture Radar Algorithm using GPUs, \$8,000, Raytheon Inc., December 2009
- G28 Emmanuel Agu (PI) and Robert Lindeman (co-PI), \$5000 of equipment from ATI Inc. (10 Programmable Graphics Cards for Desktop Computers)
- G29 Emmanuel Agu (PI), “Location-Aware Computing”, \$6450 research grant from the WPI Research and Development Council (RDC), summer 2005, 2005-2006 academic year
- G30 Emmanuel Agu (PI), “Mobile Adaptive Distributed Graphics Framework (MADGRAF), \$4500 research grant from WPI Research and Development Council (RDC), Summer 2003

Proposals Submitted (Pending)

- GP1 Multimodal computer system approach using novel artificial intelligence for the diagnosis and treatment of multiple sclerosis, submitted March 12, 2020, UMass internal grant, PI: Caroline Ionete (UMass), co-PIs: Dalia Abou Zeki (UMass), Christopher Hemod (UMass), Jillian Richmond (UMass), Dmitry Korkin, Emmanuel Agu, Requested amount: \$250,000
- GP2 SCH: INT: Objective Pain Assessment using Speech and Facial Expressions mediated by an Empathetic Embodied Conversational Agents (ECA), submitted December 11, 2019, National Science Foundation (NSF), Smart and Connected Health (SCH) Program, PI: Emmanuel Agu Co-PIs: Adam Lammert, Bengisu Tulu, Jacob Paula Gardiner (UMass), Requested amount: \$1,196,949. Requested Dates: 08/01/2020 – 07/31/2024
- GP3 IRES Track II: Advanced Studies Institute on Value Creation for STEM Students in a US/France Partnership, Terri Camesano PI, Glenn Gaudette co-PI, Emmanuel Agu participant, Submission to NSF IRES program, Requested amount: \$394,529. Requested Dates: 09/01/20 – 08/31/23

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Updated May 3, 2020

- GP4 “A wearable Limb Monitoring System (LiMS).” Giorgio Giatsidis, UMass Med School PI, submitted to the United States Department of Defense Fiscal Year 2019 (FY19) CDMRP Peer Reviewed Orthopaedic Research Program (PRORP) Applied Research Award, August 2019 (consultant)
- GP5 A minimally-invasive wearable device for automated continuous monitoring and diagnosis of limb injuries (Limb Monitoring Bandage, LiMB), Giorgio Giatsidis, UMass Med School PI, submitted to DoD, June 2019 (consultant)
- GP6 US/Africa Network for Science and Technology for Development, USAID Proposal, PI: Dean Wole Soboyejo, \$70 million requested, multiple WPI co-PIs and mentors
- GP7 Proposal to integrate data-driven analytics into M4SSA, PI: Dean Wole Soboyejo.
- GP8 ARL/SmartWorld/Bio proposal: PI: Dean Wole Soboyejo

Proposals Submitted (Declined or Withdrawn)

- GR1 Integration and Implementation of Digital Health Technologies to Improve Care of Patients with Coronary Health Disease, Alexander Iribarne, Partho Sengupta, Sanjeev Bhavani (PIs), Emmanuel Agu (co-Investigator), submitted to the American Heart Association Health Technologies and Innovation Strategically Focused Research Network
- GR2 Objective Continuous Pain Monitoring using Activity, Gait, Sleep and Circadian Rhythm, submitted October 16, 2019, National Institutes for Health (NIH) PI: Emmanuel Agu Co-PIs: Carolina Ruiz, Angela Rodriguez, Diane Strong, Richard Pavao (UMass), Consultants: Lisa Conboy (MCPHS), Paula Gardiner (UMass), Requested amount: \$406,077, Requested Dates: 08/01/2020 – 07/31/2022
- GR3 Pain Journaling and Detecting Catastrophizing using Voice and Facial Expressions, submitted October 16, 2019, National Institutes for Health (NIH) PI: Emmanuel Agu Co-PIs: Adam Lammert, Bengisu Tulu, Jacob Whitehill, Lisa Conboy (MCPHS), Consultants: Richard Pavao (UMass), Paula Gardiner (UMass), Requested amount: \$387,877, Requested Dates: 08/01/2020 – 07/31/2022
- GR4 Real-time, remote monitoring of infection in diabetic wounds by wearable micro-sensors: leveraging affordable technology to impact morbidity, mortality, quality of life, and costs in diabetic wound”, Giorgio Giatsidis, UMass Med School PI, submitted to the American Diabetes Association under the 2019 Pathway to Stop Diabetes Accelerator Award, June 2019 (consultant)
- GR5 Emmanuel Agu (PI), Patricia Franklin (co-PI), Bengisu Tulu (co-PI), Dean Jean King (co-PI), OA-Sense: Smartphone Sensing and Biomarker Discovery for Knee and Hip Osteoarthritis, NIH/NIAMS Pre-proposal
- GR6 SCC: Revitalization of Urban Neighborhoods - Using Data Science to Address Social and Health Disparities in Communities, submitted February 28, 2018, NSF Smart and Connected Communities (S&CC) Program, PI: Elke Rundensteiner. Co-PIs: Kyumin Lee, Jeanine Skorinko, Mingjiang Tao, Emmanuel Agu, Requested amount: \$2,540,925.

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Updated May 3, 2020

- GR7 NRT-HDR: Traineeships for Harnessing the Data Revolution for Digital Health, submitted February 6, 2018, NSF Research Traineeship (NRT) Program, PI: Elke Rundensteiner. Co-PIs: Randy Paffenroth, Emmanuel Agu, Carolina Ruiz and Diane Strong, Requested amount: \$2,992,454.
- GR8 Cyber-physical recommender system to discover exergame enjoyment, Emmanuel Agu (PI), Mark Claypool (co-PI), Sony Corporation of America. Requested amount: \$99,893. Requested dates: 06/01/17 – 05/31/18
- GR9 Integrated Modeling of Data from Social Media and the EHR, Samah Jarad (PI), Mohammed Zaki (co-PI), Edwin Boudreaux (co-PI), Edward Boyer (co-PI), Hong-Yu (co-I), Cynthia Brandt (consultant), Emmanuel Agu (consultant), Louise Maranda (statistician), submitted to NSF Smart and Connected Health program. Requested amount: \$2.5M. Requested dates: 7/1/2016 – 6/30/2020.
- GR10 Localization and distance travelled by endoscopy capsules in the gastrointestinal tract for improving diagnosis and treatment PIs; Pahlavan, Agu, Huang (WPI) Cave, Karrelas (UMMS), Tarokh (Harvard) Program: NIH/ Quantum Projects U01, Funding opportunity PAR-15-031 Requested amount: \$2,318,241.00 requested dates: start: December 2016 for three years
- GR11 TITLE: preciselyMe: The Personalized Medicine Technology Center for PMI Cohort Participants, WPI (Rundensteiner, Agu, Korkin, and Eltabakh) and MIT LL (Claypool), NIH Precision Medicine Initiative Cohort Program Participant Technologies Center (U24) program, Requested amount: \$9,313,293. Requested Dates: Fall 2016 - 2021.
- GR12 AlcoGait: A Passive Method to Infer Intoxication from the Gait of Smartphone Drinkers, Emmanuel Agu (PI), WPI Health Delivery Institute (HDI) Internal Proposal. Requested amount \$22,300, Dates June 1-August 31, 2016.
- GR13 A Cyber-Physical Recommender Systems to Discover Smartphone Exergame Enjoyment (CyPReSS), Emmanuel Agu (PI), Mark Claypool (co-PI), NSF Cyber Human Program. Requested Amount \$496, 847 Requested Dates: 9/1/2016 – 8/31/2019
- GR14 Title: CPS: Frontier: Collaborative Proposal: A CPS for Localization and Distance Travelled by Micro-Robots in the Small Intestine, submitted to NSF IIS – Cyber-Physical Systems (CPS), PI: Kaveh Pahlavan, co-PIs: Emmanuel Agu, Xinming Huang, Vahid Tarokh, Dr David Cave, Dr Abhjit Chowdhury, Dr Andrew Karellas, Requested Amount: \$1,588,864.00. Dates: 09/01/15 – 08/31/18
- GR15 STEP-MH: Supporting Enhanced Perinatal Mental Health: A mobile app for clinical decision support to address perinatal depression in Ob/Gyn settings, Letter of Intent for UMMS-WPI collaborative funding, PI: Biebel. Co-PIs: Bengisu Tulu, Emmanuel Agu, Nancy Byatt, and Tiffany A Moore Simas, MD
- GR16 SCH:INT: Advancing Depression Screening from PHQ-9 Self-Reports to Pervasive Continuous Sensing on College Campuses, PI: Elke Rundensteiner. Co-PIs: Emmanuel Agu, Charles Morse (WPI Counseling Center), Leonard Doeffler (Assumption College), Randy Paffenroth (WPI Mathematical Sciences Dept.). Requested Amount: \$800,000, NSF Smart and Connected Health program, requested dates 09/1/15 – 08/31/19

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Updated May 3, 2020

- GR17 Title: CSR: Medium: Collaborative Research: Body-SLAM and 3D Imaging of Microbots in Fantastic Voyage, submitted to NSF CNS Core CSR Program, PI: Kaveh Pahlavan, co-PIs: Emmanuel Agu, Vahid Tarokh, Requested Amount: \$591,777. Dates: 06/01/15 – 05/31/18
- GR18 Title: A Holistic Chronic Wound Care System for Continuity of Care: Connecting Patients, Visiting Nurses and Wound Clinicians using Smartphone Technology, submitted to NIH RFA-NR-15-001: Chronic Wounds: Advancing the Science from Prevention to Healing (R01), PI: Diane Strong, co-PIs: Peder Pedersen, Emmanuel Agu, Bengisu Tulu, Tsung-Yi Wang, Janice Lalikos, Raymond Dunn, and Ronald Ignatz, Requested Amount: \$2.7 million (\$1.7million direct), Requested dates: April 1, 2015 – March 30, 2020.
- GR19 Title: SCH: INT: Collaborative Research: Body-SLAM: Simultaneous Localization and Mapping of Wireless Video Capsule inside the Small Intestine, submitted to NSF Smart and Connected Health. PI: Kaveh Pahlavan, co-PIs: Emmanuel Agu, David Cave (MD), Sergey Makarov, Requested Amount: \$1,508,098. Dates: 07/01/14 – 06/30/18
- GR20 Title: Exploring Inferred Heart Rate Variability (HRV), Temporal Location Patterns and Phone Position for Implicit Smartphone User Authentication, submitted to Samsung Global Research Outreach (GRO) Program 2014. PI: Emmanuel Agu, co-PI: Krishna Venkatasubramanian, Requested Amount: \$99,382. Dates: 09/01/14 – 08/31/15
- GR21 Title: Predictive Analytics Using Social and Biometric Sensors for the Early Detection and Mitigation of Mental Ailments, submitted to Samsung Global Research Outreach (GRO) Program 2014. PI: Elke Rundensteiner, co-PI: Emmanuel Agu, Requested Amount: \$99,720. Dates: 09/01/14 – 08/31/15
- GR22 INT: Evidence-based Support for Campus Mental Health Fitness PI: Elke Rundensteiner. Co-PIs: Emmanuel Agu, Charles Morse (WPI Counseling Center) and Leonard Doeffler (Assumption College) . Requested Amount: \$1,427,130, NSF Smart and Connected Health program, requested dates 08/1/14 – 07/31/18
- GR23 Title: CSR: Large: Collaborative Research: Body-SLAM and a CPE for a Fantastic Voyage, submitted to NSF CNS CSR Program. PI: Kaveh Pahlavan, co-PIs: Emmanuel Agu, David Cave (MD), Sergey Makarov, Requested Amount: \$1,623,080. Dates: 07/01/14 – 06/30/18
- GR24 PHIM Smartphone App: Supporting Physical Activity of Aging Adults with Arthritis, UMass Medical School (Agency for Healthcare Research and Quality), PI: Tulu, Bengisu, co-PIs: Emmanuel O Agu, Diane M Strong, Requested amount: \$907,945, submitted March 5, 2013
- GR25 Title: Body-SLAM: Simultaneous Localization and Mapping Inside the Human Body, submitted to Keck Foundation. PI: Kaveh Pahlavan, co-PIs: Vahid Tarokh, Emmanuel Agu, Kamran Sayrafian, David Cave (MD), Andrew Karellas and Allen Levesque. Requested Amount: \$2,000,000. Dates: Sept 1 2014 – Aug 31, 2017
- GR26 Wearable Vest and Smartphone App to mitigate Atrial Fibrillation, PI: Ki-Chon, co-PIs: Deepak Ganesan (UMass Amherst), Yitzhak Mendelson, Jarn Riistama, Ton Akkermans, Natasa Reljin, Nam Yunyoung, Jo Woon Chong, Albert Swiston, Patrick J Flaherty, David McManus, (philips.com, MIT Lincoln Labs and WPI), Emmanuel Agu (expert), proposal submitted to NSF Smart Health and Wellbeing Program

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Updated May 3, 2020

- GR27 EXT: Evidence-based Support for Mental Health Fitness PI: Elke Rundensteiner. Co-PIs: Emmanuel Agu, Charles Morse (WPI Counseling Center) . Requested Amount: \$748,243, submitted to the NSF Smart and Connected Health program, Dates: 01/01/14 – 12/31/16
- GR28 Title: Evaluating a Mobile Phone Diabetes Management Application in an Underserved Population, submitted to Aetna Foundation. PI: Emmanuel Agu, co-PIs: Diane Strong, Bengisu Tulu. Requested Amount: \$30,000. Dates: Sept 1 2013 – May 31 2014
- GR29 Title: Radio Frequency Localization for Wireless Capsule Endoscope. NIH R01 submission. PI: Kaveh Pahlavan, Co-PIs: Sergey Makarov and Emmanuel Agu. Other Senior/Key WPI personnel: Al Levesque. Requested amount: \$1,609,097 (Direct Costs: \$1,172,820 and Indirect Costs: \$436,276). Dates: Sep 2013 - Sep 2016
- GR30 Quality of Life and Clinical Outcomes Assessment of the Medically Complex Pediatric Orthopedic Patients Alf red I. DuPont Hospital for Children (PCORI grant application), PI: Faber, Brenton co-PIs: Emmanuel O. Agu, Oleg V Pavlov, Amount requested: \$848,416, submitted April 12, 2013.
- GR31 Stroke and Heart Attack Mitigation via Opportunistic Smartphone Heart Rate Sensing, PI: Emmanuel Agu, Google Research Award Grant, Requested amount: \$82,500, submitted April 15, 2013
- GR32 Title: iLink: A mobile application to enhance prison re-entry supports. NIH R01 submission. PI: David Smelson. Co-PIs: Edward Boyer, Douglas Ziedonis, Debra Pinals, Gerardo Gonzalez, Leon Sawh, Elke Rundensteiner, Emmanuel Agu. Requested Amount: \$1,970,572
- GR33 Title: Personal Health Information management through Smartphone Applications: Supporting the Physical Activity Needs of Aging Adults with Arthritis. Source/Program: UMMS subcontract for Agency for Healthcare Research and Quality (AHRQ). PI: Bengisu Tulu Co-PIs: Diane Strong, Emmanuel Agu Submission Date: February 2012 Requested Amount: \$ 1,081,958 (WPI subcontract only)
- GR34 NSF SHB: Type II (INT): Collaborative Research: Multi-sensor Stream Analytics For Continuous Substance Abuse Care. PI: Elke Rundensteiner. Co-PIs: Emmanuel Agu, Ed Boyer (UMass Medical). Requested Amount: \$986,850
- GR35 NSF-CMMI-HMSE \$371,096 Collaborative Research: Bio-inspired control of smart structures (PI: Yeeseok Kim, Co-PIs: Reza Langari, Jong-Wha Bai, and Emmanuel Agu)
- GR36 NSF-CMMI-CS \$391,925 Collaborative Research: Identification and Bio-inspired Control of Large Systems (PI: Yeeseok Kim, Co-PIs: Rajib Mallick, Emmanuel Agu, and Sankha Bhowmick)
- GR37 NSF-CMMI-HMSE \$398,165 An integrated modeling and control framework of smart structures for high impact force attenuations (PI: Yeeseok Kim, Co-PIs: Tahar El-Korchi, Nicholas Dembsey, and Emmanuel Agu)
- GR38 "Managing Diabetic Pregnancies with Smartphones", McKesson Foundation, Mobilizing for Health program, D. Strong, PI, E. Agu, T. Moore Simas, P. Pedersen, B. Tulu, V. Wilson, Co-PIs, Letter of Intent Submitted April 2011, requested budget \$250,000.

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Updated May 3, 2020

- GR39 Emmanuel Agu (PI), Robert Lindeman, Matthew Ward (co-PIs), Acquisition of a GPU Cluster for Defense-related Visual Computing, \$349,739, Air Force Office of Scientific Research DURIP, September 2006. Requested dates: 4/07 to 3/08
- GR40 Emmanuel Agu (PI), Robert Lindeman, Matthew Ward (co-PIs), Acquisition of a GPU Cluster for Defense-related Visual Computing, \$349,739, Department of the Army – Materiel Command, September 2006. Requested dates: 4/07 to 3/08
- GR41 E Agu (PI), R Lindeman, M Ward (co-PIs), Acquisition of a GPU Cluster for Defense-related Visual Computing, \$349,739, Office of Naval Research, September 2006. Requested dates: 4/07 to 3/08
- GR42 F Colon-Osorio (PI), E. Agu (co-PI), G Sarkozy (co-PI), The Study and Design of Efficient Wireless Security Protocols for 802.11i, 802.16e and CDMA2000 Networks, submitted to the NSF, CNS Division, \$371,742 requested. Requested dates: 09/07 – 08/10
- GR43 Emmanuel Agu (PI), HCC: Imperceptible Mesh Simplification on Heterogeneous Ubiquitous Displays, NSF Proposal, IIS Program, for \$258,488.00, December 2006, withdrawn due to unsuitability to program.
- GR44 Emmanuel Agu (PI), Robert Lindeman (co-PI) ENCORE: Energy-Conscious Rendering for Mobile Devices, \$499,549 NSF proposal, CCF division, October 2006. Requested dates: 1/07 to 5/10.
- GR45 Emmanuel Agu (PI), “CAREER: multiresolution graphics on mobile devices: an end-to-end framework using wavelets”, \$646,939.00, submitted to NSF CAREER Program, July 2006.
- GR46 Robert Lindeman (PI), Emmanuel Agu, Mark Claypool, John MacDonald, Reeta Prusty and Matthew Ward (Co-PIs), IGERT: Global Interaction Framework for Scientific and Social Experimentation, interdisciplinary proposal. (not invited to next stage)
- GR47 Fernando Colon-Osorio (PI) and Emmanuel Agu (co-PI), Swarm Attacks, A new class of Intelligent worms - Threats & Countermeasures, submitted to the NSF, \$615,871. Requested dates: 9/06 – 8/09.
- GR48 Emmanuel Agu (PI), “CAREER: A Middleware Approach to Mobile 3D Graphics”, for \$851,384, submitted to NSF CAREER Program, July 2005.
- GR49 Mark Claypool (PI), Emmanuel Agu (co-PI), Robert Kinicki (co-PI) and Craig Wills (co-PI), “Low-Power Video Sensors”, \$11,000 research grant from the WPI Research and Development Council (RDC), 2005-2006 academic year.
- GR50 Emmanuel Agu (PI), “Mobile Adaptive Distributed Graphics Framework (MADGRAF)”, \$15000 research grant from the WPI Research and Development Council (RDC), 2004-2005 academic year.
- GR51 Emmanuel Agu (PI), “CAREER: Mobile 3D Graphics”, for \$730,000, submitted to NSF CAREER Program, July 2004.
- GR52 Fernando Colon-Osorio (PI) and Emmanuel Agu (co-PI), Cyber Trust: Energy Trust Models in Wireless Security Protocols - Optimality and Tradeoffs, submitted to the NSF cybertrust program, March 2003.

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Updated May 3, 2020

- GR53 Emmanuel Agu (PI), "Adaptive Graphics Web Server for Mobile Environments (AWESOME) " Early Career Grant Proposal submitted to the Department of Energy (DOE), February 2003.
- GR54 Kaveh Pahlavan (PI) and Emmanuel Agu (co-PI), "SENSORS: Modeling, Performance Analysis, and Graphical Display for Indoor Tracking ", # 0330064, for \$757, 745, submitted to the National Science Foundation (NSF), March 2003.

Talks

Invited Talks (External to WPI)

- T1 Invited Talk, WPI-UMMS NSF Outreach Workshop, Mobile Sensing for Healthcare, WPI Campus Center, May 20, 2016. Host: Dr Indic Premananda, UMass Medical School.
- T2 Invited talk, University of Massachusetts Lowell, Dept. of Computer Science, Novel Mobile and Social Media Interventions for Preventive Health and Disease Treatment, February 26, 2015. Host: Benyuan Liu
- T3 Invited talk, Mathematics in Computer Graphics and Games, at Mathematics Institute for Secondary Teaching, hosted by Suzanne Weekes and Luca Capogna, 2014, 2015, 2017
- T4 Invited talk, Tuskegee University Dept. of Computer Science, Mobile and Ubiquitous Health Research at HDI, November 14, 2013. Host: Fan Wu
- T5 Invited talk, Speeding up the Synthetic Aperture Radar (SAR) Code using Graphics Processing Units (GPU), Raytheon Network-centric systems, Marlborough, Massachusetts, Feb 19, 2009.
- T6 Invited talk, Graduate Degrees for Minorities in Engineering and Science Program, Boston University, October 2006
- T7 Invited Talk, WPI MASTER program for minorities to strengthen minority high school student's skills and abilities in math, engineering and science, November 2, 2005
- T8 Invited Talk, WPI MASTER program for minorities to strengthen minority high school student's skills and abilities in math, engineering and science, February 16, 2005

Paper presentations and other Talks

(**Legend:** WPI undergraduate students are underlined, graduate students are underlined + bold)

- T9 Paper presenter for Colin Willoughby, Ian Banatoski, Paul Roberts and Emmanuel Agu, Drunk Selfie: Intoxication Detection from Smartphone Selfie Images, submitted to The 1st IEEE International Workshop on Integrated Smart Healthcare (WISH 2019) (co-located with IEEE COMSAC)
- T10 Paper presenter for Andrew McAfee, Jacob Watson, Ben Bianchi, **Christina Aiello**, Emmanuel Agu, AlcoWear: Detecting Blood Alcohol Levels from Wearables, *IEEE Conference on Ubiquitous Intelligence and Computing (UIC) 2017*, San Francisco, CA

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Updated May 3, 2020

- T11 Paper presenter for **Qian He** and Emmanuel Agu, Smartphone Usage Contexts and Sensible Patterns as Predictors of Future Sedentary Behaviors, in Proceedings of the IEEE-NIH Special Topics Conference on Healthcare Innovations and Point-of-Care Technologies (HI-POCT '16), Cancun, Mexico, Nov 9-11, 2016
- T12 Paper presenter for **Gauri Pulekar** and Emmanuel Agu, Autonomously Sensing Loneliness and Its Interactions with Personality Traits using Smartphones, in Proceedings of the IEEE-NIH Special Topics Conference on Healthcare Innovations and Point-of-Care Technologies (HI-POCT '16), Cancun, Mexico, Nov 9-11, 2016
- T13 Paper presenter for **Christina Aiello** and Emmanuel Agu, Investigating Postural Sway Features, Normalization and Personalization in Detecting Blood Alcohol Levels of Smartphone Users, in Proc Wireless Health Conference 2016
- T14 Paper presenter for Emmanuel Agu and Mark Claypool, Cypress: A Cyber-Physical Recommender System to Discover Smartphone Exergame Enjoyment, in Proc Int'l Workshop on Engendering Health with RecSys, co-located with ACM RecSys 2016, Boston MA.
- T15 Paper presenter for **Zach Arnold**, **Danielle LaRose**, Emmanuel Agu, A Factorial Experiment to Investigate Naturalistic Factors Affecting Smartphone Gait Analysis, in Proc 17th Int'l Conference on e-Health Networking, Applications and Services (Healthcom) 2015
- T16 Paper presenter for **Zach Arnold**, **Danielle LaRose**, Emmanuel Agu, Smartphone Inference of Alcohol Consumption Levels from Gait, in Proc IEEE Conf. on Healthcare Informatics 2015.
- T17 Paper presenter for **Clifford Lindsay** and Emmanuel Agu, Previsualization using a Computational Photography Camera, in Proc. Int'l Symposium on Visual Computing (ISVC) 2014, Las Vegas, Nevada
- T18 Paper presenter for paper **Clifford Lindsay** and Emmanuel Agu, Automatic Multi-Light White Balance using Illumination Gradients and Color Space Projection, in Proc. Int'l Symposium on Visual Computing (ISVC) 2014, Las Vegas, Nevada
- T19 Paper presenter for **Wei Wang**, **Zhilu Chen**, **Baoyuan Xing**, **Xiaochen Huang**, **Shengwen Han** and Emmanuel Agu, A Smartphone-based Digital Hearing Aid to Mitigate Hearing Loss at Specific Frequencies in Proc Workshop on Mobile Medical Applications (MMA) 2014, co-located with ACM Sensys 2014, Memphis Tennessee
- T20 Paper presenter for **Qian He**, Emmanuel Agu, Diane Strong and Bengisu Tulu, RecFit: A Context-Aware System for Recommending Physical Activities, in Proc Workshop on Mobile Medical Applications (MMA) 2014, co-located with ACM Sensys 2014, Memphis Tennessee
- T21 Paper presenter for paper Emmanuel Agu, Peder C. Pedersen, Diane Strong, Tulu Bengisu, **Qian He**, **Lei Wang**, **Yejin Li**, The smartphone as a Medical Device: Assessing Enablers, Benefits and Challenges, in Proc Workshop on Design Challenges in Mobile Medical Device Systems (DC-MMDS) (in conjunction with IEEE SECON 2013)
- T22 Paper presenter for paper **Andrew Zafft** and Emmanuel Agu, Malicious WiFi Networks: A First Look, in Proceedings, Workshop on Security in Communications Networks (SICK), co-located with IEEE Conf. on Local Computer Networks (LCN), Clearwater, Florida, Oct 2012

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Updated May 3, 2020

- T23 Paper presentation, **Kutty Banerjee** and Emmanuel Agu " Estimating Mobile Memory Requirements and Rendering Time for Remote Execution of the Graphics Pipeline ", in Eurographics, Dublin, Ireland, August 2005
- T24 Paper presentation for paper, **Kutty Banerjee** and Emmanuel Agu, PowerSpy: Fine-Grained Software Energy Profiling for Mobile Devices", in IEEE WirelessCom Conference, June 2005
- T25 Paper presentation for paper **Kutty Banerjee** and Emmanuel Agu, Remote Execution for 3D Graphics on Mobile Devices ", in IEEE WirelessCom Conference, June 2005
- T26 Paper presentation, Emmanuel Agu, **Kutty Banerjee**, **Shirish Nilekar**, **Oleg Rekutin**, **Diane Kramer** " A Middleware Architecture for Mobile 3D Graphics", in MDC Workshop 2005 (co-located with ICDCS), Columbus, Ohio, June 2005
- T27 Paper presenter for paper, **Ali Taheri**, **Arvinder Singh** and Emmanuel Agu, Location Fingerprinting on Infrastructure 802.11 Wireless Local Area Networks (WLANs) using Locus, talk at Fourth Int'l IEEE Workshop on Wireless Local Networks, (in conjunction with IEEE LCN 2004), Tampa, Florida, November 2004
- T28 Paper presentation for paper, Emmanuel Agu and Francis S. Hill, A Simple Method for Ray Tracing Diffraction, Computer Graphics and Geometric Modeling (CGGM) Workshop, Montreal, Canada, May 2003
- T29 Paper presentation for paper, Emmanuel Agu and Francis S. Hill, Diffraction Shading Models for Iridescent Surfaces, paper presentation in IASTED VIIP Conference, 2002
- T30 Paper presentation for paper, Emmanuel Agu and Aura Ganz, A Resource Reservation Protocol for Wireless Local Area Networks, paper presentation in Massachusetts Telecommunications Conference (MTC) 1996

Invited Talks Internal to WPI

- T31 WPI Computer Science Colloquium, An Excursion in Mobile Health Sensing, April 29 2016. Host: Krishna Venkatasubramanian.
- T32 Speaker, WPI CS Applied Logic and Security (ALAS) Research Group, Security Issues in the Sugar Diabetes App, April, 2013
- T33 Speaker, Computer Science Colloquium, Mobile and Ubiquitous Health Research at HDI, April 5, 2013. Host Craig Wills
- T34 Speaker, Progress Report on MADGRAF, WPI CS Image Science Research Group (ISRG) WPI, Nov. 2004
- T35 Speaker, Wireless LAN location sensing, WPI CS Performance Evaluation of Distributed Systems (PEDS) Research Group, March 15, 2004
- T36 Speaker, Photorealism in computer graphics, WPI CS Image Science Research Group (ISRG), November 2003
- T37 Speaker, Wireless network and sensor protocol issues, WPI CS Performance Evaluation of Distributed Systems (PEDS) research group, Oct. 2003

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Updated May 3, 2020

- T38 Speaker, Mobile 3D graphics, WPI CS WPI CS Performance Evaluation of Distributed Systems (PEDS) research group, WPI, April 2003
- T39 Speaker, Mobile 3D graphics, WPI CS Image Science Research Group (ISRG), March 2003
- T40 Guest Lecture, Internet Business Design & Development Class, SOM 597G, School of Management, University of Massachusetts-Amherst, Spring 1999.
- T41 Teaching Assistant and Guest Lecture, Wireless Local Area Networks Class, ECE 597A, Electrical and Computer Engineering Dept., Univ. of Massachusetts-Amherst, Fall 1996.

Media Coverage of my Work

- MC1 Worcester Polytechnic Institute and UMass Lowell team up to seed growth of combined research, <https://www.wpi.edu/news/worcester-polytechnic-institute-and-umass-lowell-team-seed-growth-combined-research>, August 28, 2019
- MC2 Physician in your Pocket: Emmanuel Agu, WPI Journal, September 28, 2018
- MC3 **DARPA Warfighter Analytics for Smartphone Healthcare (WASH) project:**
- MC4 TV interview with Channel 3, Worcester about WASH grant, September 25, 2018
- MC5 Radio interview on WBZ Radio Boston about WASH grant, September 25, 2018
- MC6 WPI Granted \$3M to develop Soldier Brain Injury Smartphone app, Worcester Business Journal, Sept 25, 2018. <http://www.wbjournal.com/article/20180925/NEWS01/180929975/wpi-granted-3m-to-develop-soldier-brain-injury-smartphone-app>
- MC7 Worcester Polytechnic Institute Secures \$2.8 Million to Develop a Smartphone App to Help Assess the Health of Soldiers, Business Insider, Sept 24, 2018. <https://markets.businessinsider.com/news/stocks/worcester-polytechnic-institute-secures-2-8-million-to-develop-a-smartphone-app-to-help-assess-the-health-of-soldiers-1027559959>
- MC8 WPI Secures \$2.8 Million to Develop a Smartphone App to Help Assess the Health of Soldiers, WPI News, Sept 24, 2018. <https://www.wpi.edu/news/wpi-secures-28-million-develop-smartphone-app-help-assess-health-soldiers>
- MC9 Wall & Main: WPI professor's research wins \$2.8M grant for app that tracks warriors' health, Worcester Telegram and Gazette, May 7, 2018. <http://www.telegram.com/news/20180507/wall-amp-main-wpi-professors-research-wins-28m-grant-for-app-that-tracks-warriors-health>
- MC10 **Alcogait Smartphone Intoxication Sensing from Gait project:** Over 120 media articles including Boston Globe, 2 NPR radio articles, BBC Radio, Worcester Telegram and Gazette, Boston TV channels 2,3,4 and 5 and 7
- MC11 Smartphone Intelligence, Diversity in Action, September/October 2018
- MC12 WPI celebrates record year for student patent filings, Licences, Worcester Telegram & Gazette, May 7, 2018. <http://www.telegram.com/news/20180507/wpi-celebrates-record-year-for-student-patent-filings-licenses>

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Updated May 3, 2020

- MC13 Too High, Drunk or Sleepy to Drive? One day your phone could know, Wired Magazine, May 1, 2018, <https://www.wired.com/story/portable-field-sobriety-tests/>
- MC14 Smartphones speed recovery of surgical wounds, Financial Times, March 5, 2018. <https://www.ft.com/content/251044be-05f6-11e8-9e12-af73e8db3c71>
- MC15 Radio interview about smartphone wound app, WBZ radio, February 23, 2018
- MC16 Researchers creating app to track, analyze dangerous chronic wounds, WPI News, February 21, 2018. <https://www.wpi.edu/news/researchers-creating-app-track-analyze-dangerous-chronic-wounds>
- MC17 WPI granted \$1.6M to develop wound-care app, Worcester Business Journal, February 21, 2018. <http://www.wbjournal.com/article/20180221/HEALTH/180229986/wpi-granted-16m-to-develop-wound-care-app>
- MC18 Building the \$1.6M wound-monitoring smartphone app, Healthcare Analytics News, February 23, 2018. <http://www.hcanews.com/news/building-the-16m-woundmonitoring-smartphone-app>
- MC19 WPI Professor Making Progress on Health Apps, Worcester Telegram and Gazette, November 20, 2017. <http://www.telegram.com/news/20171120/peter-s-cohan-wpi-professor-making-progress-on-health-apps>
- MC20 Detox? There's an App for that (on the way), Lisa Chedekel, Boston University. February 6, 2017. <http://www.bu.edu/research/articles/detox-support-app/>
- MC21 New App in Development to help Patients Wean off Buprenorphine, Livia Areas-Holmblad, AdditionNow.com website. <https://www.addictionnow.com/2016/12/13/new-app-in-development-to-help-patients-wean-off-buprenorphine/>. Accessed Dec 15, 2016
- MC22 Smartphone App for Beating Opioid Addiction: NIH Funds Development of Detox Support App, WPI Daily Herd, Dec 12, 2016. <https://www.wpi.edu/news/smartphone-app-beating-opioid-addiction>. Accessed December 15, 2016.
- MC23 College Town: WPI-Developed App Aids Diabetics, by Bonnie Russell, Worcester Telegram and Gazette, April 18, 2015. <http://www.telegram.com/article/20150418/NEWS/304189721>. Accessed December 15, 2016.
- MC24 Trial Testing App to Manage Diabetes, Foot Ulcers, Science & Enterprise, April 14, 2015. <http://sciencebusiness.technewslit.com/?p=26838>, Accessed December 15, 2016.
- MC25 Pilot Clinical Study to test "Sugar" Diabetes App, MedicalXpress.com website, April 14, 2015. <http://medicalxpress.com/news/2015-04-clinical-sugar-diabetes-app.html>. Accessed December 15, 2016
- MC26 Pilot Clinical Study at UMMS to test "Sugar" Diabetes App, UMass Medical News, April 13, 2015. <http://www.umassmed.edu/news/news-archives/2015/04/pilot-clinical-study-at-umms-to-test-sugar-diabetes-app/> Accessed. Dec 15, 2016
- MC27 Diabetes Management App to Begin Pilot at UMass Medical School, MobiHealthNews, April 13, 2015. <http://www.mobihealthnews.com/42300/diabetes-management-app-to-begin-pilot-at-umass-medical-school>. Accessed December 15, 2016

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Updated May 3, 2020

- MC28 “Sugar”, A WPI-Built Diabetes App, Enters Clinical Testing, WPI News, April 13, 2015. <https://www.wpi.edu/news/sugapp>. Accessed December 15, 2016
- MC29 WPI developing smartphone app to address stress eating, by Megan Bard, UMass Medical School Communications and Michael Cohen, WPI Communications, UMass medical news. <http://www.umassmed.edu/news/news-archives/2015/01/umass-medical-school-wpi-developing-smartphone-app-to-address-stress-eating/>. Accessed February 2, 2015
- MC30 UMass Medical School and WPI Share \$2 million NIH Grant to Develop Stress Eating App, WPI News, February 2, 2015. <https://www.wpi.edu/news/tuluapp>. Accessed December 15, 2016.
- MC31 Worcester Polytechnic Institute Student Creates a Top 10 App for the Pebble Smart Watch, Robotics Tomorrow, April 14, 2014. <http://www.roboticstomorrow.com/news/2014/04/14/worcester-polytechnic-institute-student-creates-a-top-10-app-for-the-pebble-smart-watch/3834/>. Accessed Dec. 15, 2016.
- MC32 WPI Student Creates a Top 10 App for Pebble Smart Watch, WPI News, April 14, 2014. <https://www.wpi.edu/news/pebble>. Accessed December 15, 2016
- MC33 WPI Professor Developing Health Care Apps, by Peter Cohan, Worcester Telegram & Gazette, June 9, 2013. <http://www.telegram.com/article/20130609/COLUMN70/306099990>. Accessed December 15, 2016.
- MC34 Worcester Polytechnic Institute to Develop Smartphone Application for Patients with Advanced Diabetes, Foot Ulcers, Drug Store News, December 21, 2011. <http://www.drugstorenews.com/article/worcester-polytechnic-institute-develop-smartphone-application-patients-advanced-diabetes-fo>. Accessed December 15, 2016
- MC35 WPI Awarded \$1.2 Million to Develop App for Advanced Diabetes and Wound Care, oandp.com, December 14, 2011. http://www.oandp.com/articles/NEWS_2011-12-14_01.asp. Accessed December 15, 2016.
- MC36 Diabetes Management? Researchers Creating an App for that, UMass Medical School News, December 14, 2011. <https://www.umassmed.edu/es/news/news-archives/2011/12/diabetes-management-researchers-creating-an-app-for-that/>. Accessed December 15, 2016
- MC37 WPI team gets \$1.2 million from NSF for Diabetes Care app, Boston Business Journal, December 12, 2011. <http://www.bizjournals.com/boston/blog/mass-high-tech/2011/12/wpi-team-gets-12m-from-nsf-for-diabetes-care.html>. Accessed December 15, 2016
- MC38 WPI Team Awarded \$1.2 Million to Develop Smart Phone Application for Advanced Diabetes and Wound Care: Project will link a smart phone, glucose meter, and scale to help people manage their diabetes, WPI News, December 12, 2011. <https://www.wpi.edu/news/2011diab>. Accessed December 15, 2016
- MC39 WPI to develop smart phone app for foot ulcers, advanced diabetes, News-Medical-net website, December 13, 2011. <http://www.news-medical.net/news/20111213/WPI-to-develop-smart-phone-app-for-foot-ulcers-advanced-diabetes.aspx>. Accessed Dec 15, 2011

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Updated May 3, 2020

MC40 Four WPI Computer Science Faculty Members Receive Federal Education Award, June 6, 2006. <http://www.prnewswire.com/news-releases/four-wpi-computer-science-faculty-members-receive-federal-education-award-55950502.html>

MC41 Shoploco Internet Startup: Articles in Boston Globe and Daily Hampshire Gazette, Northampton, MA (1999)

Professional Society Memberships

PM1 Member of ACM SIGGRAPH Computer Graphics Society, Boston,

PM2 Member, Institute of Electrical and Electronics Engineering (IEEE)

PM3 Member, Association of Computing Machinery (ACM)

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Updated May 3, 2020

TEACHING

Summary Table of Classes Taught each Year at WPI

Academic Year	WPI Computer Science classes taught (3 class teaching load) (class, semester/term, undergraduate classes in italics)			Other classes taught (for CPE)
2019-20	CS 528 (Fall)	CS 543 (Fall)	Course release	
2018-19	CS 528 (Fall)	CS 543 (Fall)	Course release	
2017-18	CS 528 (Fall)	CS 543 (Spring)	CS 4518 (C)	
2016-17	<i>4731 (B)</i>	<i>4518 (C)</i>	543 (Spring)	
2015-16	Sabbatical (Fall)	<i>403X (D)</i>	528 (Spring)	
2014-15	<i>4731 (A)</i>	<i>403X (D)</i>	528 (Spring)	
2013-14	543 (Fall)	545(Spring)	<i>4731 (D)</i>	
2012-13	543 (Fall)	<i>4731 (C)</i>	525M (Spring)	
2011-12	543 (Fall)	<i>4731 (B)</i>	563 (Spring)	525G (Fall)
2010-11	543 (Fall)	<i>4731 (C)</i>	525M (Spring)	513/ECE 506
2009-10	<i>4731 (D)</i>	513/ECE 506 (Spring)	563 (Spring)	
2008-09	Sabbatical (Full year)			
2007-08	543 (Fall)	513/ECE 506 (Spring)	<i>4731 (B)</i>	
2006-07	543 (Fall)	<i>4514 (C)</i>	563 (Spring)	
2005-06	543 (Fall)	<i>4514 (C)</i>	525M (Spring)	
2004-05	<i>4731 (A)</i>	<i>4514 (C)</i>	563 (Spring)	
2003-04	543 (Fall)	<i>4731 (A)</i>	525M (Spring)	
2002-03	<i>4731 (A)</i>	<i>4514 (C)</i>	563 (Spring)	

Student Evaluations of Classes Taught at WPI (Question 2)

Classes with * indicate a pilot use of the IDEAS course evaluation system

Graduate Courses

- CS 528, Mobile and Ubiquitous Computing, WPI CS Dept.,
 - Fall 2019 (25 students, 4.2/5 average approval rating)
 - Fall 2018 (26 students, 4.6/5 average approval rating)
 - Fall 2017 (27 students, 4.39/5 average approval rating)
 - Spring 2016 (41 students, 3.78/5 average approval rating)
 - Spring 2015 (23 students, 4.33/5 average approval rating)

- CS 525M, Mobile and Ubiquitous Computing, Graduate Special Topics, WPI CS Dept.,
 - Spring 2013 (21 students, 4.13/5 average approval rating)
 - Spring 2011 (19 students, 4.25/5 average approval rating)
 - Spring 2006 (15 students, 4.21/5 average approval rating)
 - Spring 2004 (16 students, 97% approval rating)

- CS 543, Computer Graphics, WPI Computer Science Dept.

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Updated May 3, 2020

- Fall 2019 (8 students, 4.0/5 average approval rating)
- Spring 2018 (22 students, 3.92/5 average approval rating)
- Spring 2017 (29 students, 4.52/5 average approval rating)
- Fall 2013 (21 students, 4.19/5 average approval rating)
- Fall 2012, (21 students, 4.29/5 average approval rating)
- Fall 2011, (7 students, 4.21/5 average approval rating)
- Fall 2010, (12 students, 4.25/5 average approval rating)
- Fall 2007, (12 students, 4.45/5 average, 100% approval rating)
- Fall 2006, (14 students, 4.27/5 approval rating)
- Fall 2005, (13 students, 3.8/5 average rating)
- Fall 2003, (21 students, 94% approval)

- CS 563, Advanced Topics in Computer Graphics, WPI CS Department
 - (Focus on real-time rendering), spring 2012, (4 students, 4.28 avg approval rating)
 - (Focus on photorealistic rendering), Spring 2010, (7 students, 4.17/5)
 - (Focus on photorealistic rendering), Spring 2007, (13 students, 4.25/5)
 - (Focus on real-time rendering), Spring 2005 (12 students, *)
 - (Focus: photorealistic rendering), Spring 2003, (8 students, 100% approval rating)

- CS 513/ECE 506, Computer Networks, WPI Computer Science Dept.
 - Fall Semester 2010 at General Dynamics (9 students, 4.25 average approval rating)
 - Spring Semester, 2010 (38 students, 4.27/5 (CS) 3.91/5 (ECE) avg approval rating)
 - Spring Semester, 2008 (19 students, 4.3/5 approval rating)

- CS 525G, Special Topics Graphics Processing Units (GPGPU)
 - Fall Semester 2011 at BAE Systems (18 students, 4.21 average approval rating)

- CS/ECE 545, Digital Image Processing
 - Spring Semester 2014, (39 Students, 4.13/5 (CS), 4.00/5.0 (ECE) approval rating)

Undergraduate Courses

- CS 4518/403X, Mobile and Ubiquitous Computing, WPI CS Dept.,
 - C term, 2018 (42 students, 4.04/5 average approval rating)
 - C term, 2017 (23 students, 3.96/5 average approval rating)
 - D term, 2016 (45 students, 3.04/5 average approval rating)
 - D term, 2015 (45 students, 3.47/5 average approval rating)

- CS 4731, Computer Graphics, WPI Computer Science Dept.
 - B Term, 2016 (26 students, 3.65 average approval rating)
 - A Term, 2014 (24 students, 3.06/5 average approval rating)
 - D Term, 2014 (57 students, 3.73/5 average approval rating)
 - C Term, 2013 (45 students, 3.55/5 average approval rating)
 - B Term, 2011 (31 students, 4.13/5 average approval rating)
 - C Term, 2011 (51 students, 4.07/5 average approval rating)
 - D Term, 2010 (60 students, 3.7/5 average approval rating)
 - B Term, 2007 (36 students, 4.31/5 average approval rating)

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Updated May 3, 2020

- A Term, 2004 (70 students, *)
- A Term, 2003 (75 students, *)
- A Term, 2002 (55 students, 87% approval rating)
- CS 4514, Computer Networks, WPI Computer Science Dept.
 - C Term, 2007 (26 students, 4.43/5 approval rating)
 - C Term, 2006 (34 students, 3.75/5 average rating)
 - C Term, 2005 (49 students, *)
 - C Term, 2003 (50 students, 93% approval rating)
- HRTA 200, Hospitality Computer Applications, Univ. of Massachusetts, HRTA Dept.
 - Spring 2002 (4 sections, 72 students, 100% approval rating)

Awards/Honors Related to Teaching

- A1 Nominee, outstanding academic advisor of the year, 2018-19
- A2 Advisor, Fact or Fiction, by Charles Lovering, Anqi Lu, Cuong Nguyen, Huyen Nguyen, Honorable Mention for Provost's Award for best MQP in Comp Science Dept., 2017-18, top 10 out of 49 MQPs
- A3 Advisor, Intoxigait Deep Learning by Nicholas Cheung, Sam Huang, Joseph Bremner and Quoc Ho Lam, Honorable Mention for Provost's Award for best MQP in Comp Science Dept., 2017-18, top 10 out of 49 MQPs
- A4 Advisor, Depression Sensing by Ada Dogrucu, Aleksa Perucic, Damon Ball, Anabella Isaro, Honorable Mention for Provost's Award for best MQP in Comp Science Dept., 2017-18, top 10 out of 49 MQPs (co-advised with Elke Rundensteiner)
- A5 Advisor, Detruncation of Attenuation Maps using Neural Networks by Akshay Thejaswi, Aditya Nivarthi and Daniel Beckwith, Honorable Mention for Provost's Award for best MQP in Comp Science Dept., 2016-17, top 3 out of 46 MQPs, (co-advised with Clifford Lindsay)
- A6 Advisor WPI Graduate Research Innovation Exchange (GRIE), Poster Competition, Arts and Science 2017, Finalist MS Level by Nichole Etienne
- A7 Advisor, WPI Graduate Research Innovation Exchange (GRIE), Poster Competition, Arts and Science 2016, Winner MS Level by Christina Aiello
- A8 Advisor WPI Graduate Research Innovation Exchange (GRIE), Poster Competition, Arts and Science 2016, Finalist MS Level by Gauri Pulekar
- A9 Advisor WPI Graduate Research Innovation Exchange (GRIE), Poster Competition, Arts and Science 2013, Finalist MS Level by William Disanto
- A10 Nominee, Moruzzi Young Faculty Award for Innovation in Undergraduate Education, 2006
- A11 Advisor, Smartphone Gait Inference MQP by Zachary Arnold and Danielle Larose, Provost's MQP award for the best MQP in the WPI CS department for the 2014-2015 academic session
- A12 Advisor, WPI Grad 2006 poster competition, Multiresolution for Mobile Graphics by Fan Wu. Poster won 2nd place PhD level, campus wide

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Updated May 3, 2020

A13 Advisor, Wireless LAN Location Sensing MQP by Ali Taheri and Arvinder Singh, Provost's MQP award for the best MQP in the WPI CS department for the 2003-2004 academic session

Teaching Innovations at WPI (Introduced 3 New Classes and revamped 2 classes)

- Developed Modules (EMLs) to develop the entrepreneurial mindset in grad and undergrad Mobile & Ubiquitous Computing classes (CS 403X & CS 528), funded by KEEN grant
- Proposed and received approval for a new experimental undergrad course in Mobile and Ubiquitous computing (CS 403X), D Term 2015. Course was converted to CS 4518, a Cat 1 class in Fall 2015.
- Proposed and received approval for a new graduate course in Mobile and Ubiquitous computing (CS 528), Spring 2015
- Proposed, designed and taught new graduate course in General Purpose Computing using Graphics Processing Units at BAE Systems (CS 525G), fall 2011
- Introduced new advanced class in Mobile and Pervasive computing (CS 525M)
- Revamped introductory undergraduate and graduate computer graphics (CS 4731 and CS 543) classes to include new tested methods for teaching computer graphics.
- Revamped the advanced graduate computer graphics (CS 563) class to include cutting edge topics such as Graphics Processing Units (GPUs), Spherical Harmonics, Image-based rendering and Bi-directional Reflectance Functions (BRDFs).

Graduate Students

PhD Dissertations Advised and Co-Advised

- P1 Shengmeng Liu, WPI Computer Science Dept. (co-advised with Mark Claypool), January 2020 – Date
- P2 Wen Ge, WPI Computer Science Dept, January 2019 - Date
- P3 Ziyang Liu, WPI Computer Science Dept, August 2018 – Date
- P4 Hamid Mansoor, WPI Computer Science Dept, (co-advised with Elke Rundensteiner), January 2018 – Date
- P5 Walter Gerych, WPI Data Science Program (co-advised with Elke Rundensteiner), January 2018 – Date
- P6 Kavin Chandrakasaran, WPI Data Science Program (co-advised with Elke Rundensteiner), January 2018 – Date
- P7 Luke Buquicchio, WPI Data Science Program (co-advised with Elke Rundensteiner), June 2018 – Date
- P8 Abdulaziz Alalaji, WPI Data Science Program (co-advised with Elke Rundensteiner), January 2018-Date
- P9 Wafaa Almuhammadi, WPI Computer Science Program, August 2018 – Date

Emmanuel O. Agu, PhD

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Updated May 3, 2020

- P10 Ruojun Li, WPI Electrical and Engineering Dept, June 2018 – Date
- P11 Hamza Abujrida, PhD Student, WPI ECE Department, (co-advised with Kaveh Pahlavan, WPI ECE Dept.), September 2016 – December 2018
- P12 Maryam Hasan, PhD student, WPI Computer Science Dept., Proposal title: Emotion Classification in Social Text Streams, March 22, 2018 (co-advised with Elke Rundensteiner), Sept 2013 – Date (in progress)
- P13 Qian He, PhD, WPI Computer Science Dept., Advisor, Computational Models for Predicting Sedentary Behaviors, May 2017
- P14 Clifford Lindsay, PhD, Programmable Image-Based Light Capture for Previsualization. WPI Computer Science Dept., Advisor, Completed April 2011.
- P15 Fan Wu, PhD, Ubiquitous Scalable Graphics: An End-to-End Framework using Wavelets, WPI Computer Science Dept., Advisor. Completed November 2008

PhD Students left or switched advisors (Advised and Co-Advised)

- P16 Nichole Etienne, PhD student, WPI Computer Science Dept., Advisor, WPI May 2018, left to attend PhD program in Industrial Engineering at UMass, Amherst
- P17 Xin Wang, PhD student, WPI Computer Science Dept., Advisor (Jan 2010 – May 2012, left WPI to find a job)
- P18 Ali Benamara, PhD student (part time), WPI Computer Science Dept., Advisor (June 2007 - Feb 2011, left WPI)

Masters Theses Advised and Co-Advised

- T1 Apiwat Dittthapron, Passive Smartphone Speech Analysis for TBI Assessment, WPI Computer Science Dept (in progress)
- T2 Adonay Resom, Smartphone-Sensed Sleep Disturbance in TBI-afflicted populations, WPI Computer Science Dept (in progress)
- T3 Luke Buquicchio, Open Set Classification of Smartphone Context, Data Science Program Masters Thesis: co-advisor: Elke Rundensteiner (in progress)
- T4 Walter Gerych, Versatile Anomaly Detection with Outlier Preserving Distribution Mapping Autoencoders, Data Science Program Masters Thesis: co-Advisor with Elke Rundensteiner Reader: Randy Paffenroth. Completed December 2019.
- T5 Holly Nguyen, Machine Learning Models for Synthesizing Actionable Care Decisions on Lower Extremity Wound Images, Computer Science Dept Thesis, Advisor. Reader: Dmitry Korkin, completed April 2019
- T6 Shubham Jain, Image Normalization for Wound Assessment, WPI Robotics Engineering Dept, completed April 2019.
- T7 Chai Nimkar, AlcoGait Gamification, IMGD Masters thesis, Advisor. Completed May 2018. Reader: Gillian Smith

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Updated May 3, 2020

- T8 Nichole Etienne, Investigating Transfer Learning of Smartphone-Sensed Stress in a College Population, WPI Comp Science Dept., Advisor. Completed May 2017. Reader: Dmitry Korkin
- T9 Christina Aiello, Investigating Gyroscope Sway Features, Normalization, and Personalization in Detecting Intoxication in Smartphone Users, WPI Comp Science Dept., Advisor. Completed April 2016. Reader: Lane Harrison
- T10 Gauri Pulekar, Socialoscope: Sensing User Loneliness and Its Interactions with Personality Types, WPI Comp Science Dept., Advisor. Completed April 2016. Reader: Chuck Rich
- T11 Muxi Qi, Comparing Signal Processing Features for Detecting Intoxication using Smartphones, WPI Electrical & Computer Engr Dept., Advisor. Completed April 2016
- T12 William DiSanto, scattering in Participating Media using Light Propagation Volumes (LPV), WPI Comp Science Dept., Advisor. (Student completed non-thesis option).
- T13 Che Sun, Masters student, Real-Time Global Illumination using Voxel-Based Ray-Bundles, WPI Computer Science Dept., Advisor. Completed Dec 2015. Reader: Robert Lindeman.
- T14 Sia Mortazavi, Before Eternity: An Adventure Game Inspired by Sufi Mysticism, WPI Interactive Media and Game Design (IMGD) Program, Completed May 2015. Co-advised with Brian Moriarity
- T15 Qian He, Masters student, A Context-Aware Smartphone Application for Mitigating Barriers to Physical Activities, WPI Computer Science Dept., Advisor Completed October 2014
- T16 Damon Blanchette, Adaptive Spectral Mapping for Real-time Dispersive Refraction, Masters student, WPI Computer Science Dept., Advisor, Completed January 2012.
- T17 Randy Froc, Masters student, WPI Computer Science Dept., Advisor (incomplete, student left WPI)
- T18 Kevin Yang, MS Thesis, "Algorithm Acceleration with GPGPU, WPI Electrical and Computer Engineering (ECE) Dept., (co-advisor with Xinming Huang), completed Dec 2011
- T19 Juan Li, Masters thesis, Application-Directed DVFS using Multiple Clock Domains on Graphics Hardware, WPI Computer Science Dept., Advisor, completed January 2009
- T20 Brandon Light, Energy Efficient Photon Mapping Masters thesis, WPI Computer Science Dept., Advisor. Completed May 2007.
- T21 Peter Lohrmann, Energy-Efficient Ray Tracing of Static Scenes on Programmable Mobile GPUs, Masters student, WPI Computer Science Dept., Advisor, (co-advisor: Robert Lindeman). Completed December 2006
- T22 Chen-Hao Chang, The Study of Energy Consumption of Accelerations Structures for CPU and GPU Ray Tracing, Masters thesis, WPI Computer Science Dept., advisor, (co-advisor: Robert Lindeman). Completed December 2006
- T23 Clifford Lindsay, Real-Time Rendering of Wavelength-Dependent Phenomena Using Spherical Harmonics, Masters thesis, WPI Computer Science Dept., Advisor. Completed December 2006
- T24 Kutty Banerjee, Remote Execution for Mobile 3D graphics, Masters Thesis, WPI Computer Science Dept., Advisor. Completed May 2005.

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Updated May 3, 2020

PhD Exams Committees and Research Qualifiers

- Yishuang Geng, Area Exam, Advisor Kaveh Pahlavan WPI Electrical and Computer Engineering Department, advisor Xinming Huang, in progress
- Maryam Hasan, Directed Research (co-advised with Elke Rundensteiner), Computer Science Dept., Fall 2013
- Jin Zhao, Feature Algorithms and Application on FPGA, WPI Electrical and Computer Engineering Department, advisor Xinming Huang, April 2015
- Feng Li, PhD student, WPI Computer Science Dept., advisors Mark Claypool and Robert Kinicki, research qualifier, Spring 2007
- Mingzhe Li, PhD student, WPI Computer Science Dept., advisors Mark Claypool and Robert Kinicki, comprehensive exams, 2006
- Mingzhe Li, PhD student, WPI Computer Science Dept., advisors Mark Claypool and Robert Kinicki, research qualifier, 2004
- Choong-Soo Lee, PhD student, WPI Computer Science Dept., advisors with Mark Claypool and Robert Kinicki, research qualifier, 2004

PhD Dissertation Committee

- Alan Ritacco, PhD student, How's My Network - A Health-Based Approach to Home Network Measurement, advisor Craig Wills, WPI Computer Science Dept., completed: Dec. 2019
- Mi Feng, Quantifying and Modeling Open-Ended Explorations of Web Visualizations, PhD, WPI Computer Science Dept, Advisor, Lane Harrison, Completed: April 16, 2019
- Abhishek Mukerji, Pattern Mining and Sense-Making Support for Enhancing the User Experience, PhD, WPI Comp. Sci Dept., Advisor: Elke Rundensteiner, completed Dec. 2018
- Yishuang Geng, Modeling of Time-of-arrival for CM4 Body Area Networks Channel, PhD, WPI Electrical and Computer Engr Dept., Advisor: Kaveh Pahlavan, completed Sept 2016
- Chiyang Wang, Dynamic Clustering-Modeling of Discrete Time Series, PhD, WPI Computer Science Dept., Advisors: Carolina Ruiz and Sergio Alvarez, completed April 2016
- Lei Wang, Systems Designs for Diabetic Foot Ulcer Image Assessment, PhD, WPI Electrical and Computer Engineering Department, Completed Feb 22, 2016
- Li Liu, A Personal Obstetric Ultrasound Simulator Supporting Self-Paced Training, PhD Candidate, WPI Biomedical Engineering Dept. Advisor: Peder Pedersen. Completed Dec 2015
- Chuan Lei, Large-Scale Recurring Query Processing: New Models and Optimization Techniques, PhD, WPI Comp. Sci Dept. Advisor: Elke Rundensteiner. Completed Aug 2015
- Jia Wang, Hybrid and Coordinated 3D Interaction in Immersive Virtual Environments, PhD, WPI Computer Science Dept. Advisor: Rob Lindeman. Completed April 24, 2015

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Updated May 3, 2020

- Guanqun Bao, student, PhD, WPI Electrical and Computer Engineering Department, advisor Kaveh Pahlavan, completed April 2014
- Karen Works, Targeted Prioritized Processing in Overloaded Data Stream Systems, PhD dissertation, completed November 2013
- Songxiang Gu, Body Deformation Correction for SPECT Imaging, advisor Michael Gennert, WPI Computer Science Dept., completed June 2009
- Mingzhe Li, PhD student, WPI Computer Science Dept., advisors Mark Claypool and Robert Kinicki, completed December 2006.

Masters Thesis Reader

- Brittany Lewis, Finger-Biomechanics based Authentication, Advisor: Krishna Venkatasubramanian (in progress)
- Brett Levasseur, Impact of RLC Acknowledgements on Application Performance in 4G LTE Networks. Advisors: Mark Claypool and Bob Kinicki, completed May 2013
- Derek MacNeil-Blackmer, Distributed Control of Multi-Robot Systems with Software Mobile Agents and ROS. Advisor: Stephen S Nestinger, WPI Mechanical Engineering Dept.
- Jack Benard, Visual Exploration of Genetic Sequence Data through Shape Projection in Xmdv Tool, Advisor: Matt Ward, (incomplete)
- Michael Putnam, A Beaconless Protocol for Improving Energy Efficiency in Wireless Sensor Networks, Advisors: Mark Claypool and Bob Kinicki, (in progress)
- Sahel Mastoureshgh, Measurement and Method for Receiver Buffer Sizing in Video Streaming, Advisor: Mark Claypool, completed May 2012
- Kenneth Loomis, SeSCA: A Smartphone-based Battery-Aware Sensor Data Stream Generator. Advisor: Elke Rundensteiner (abandoned, student left WPI for a job)
- Daniel Courcy, CARAF: Collision-Aware Rate Adaptation with Fragmentation for IEEE 802.11 WLANs, Advisor: Bob Kinicki (abandoned, student left WPI for a job)
- Karki Rabin, Fresh Analysis of Streaming Media Stored on the Web, Advisor: Mark Claypool, Jan 2011
- Rui Lu, Media Scaling for Power Optimization on Wireless Video Sensors, Advisor: Mark Claypool, Aug 2007.
- Natasha Lloyd, Clutter Measurement and Reduction for Enhanced Information Visualization, Advisor: Matt Ward, Dec 2005
- Kerry McKay, Tradeoffs between Energy and Security in Wireless Networks, Advisor: Fernando Colon-Osorio, May 2005
- Anilkumar Patro, Pixel Oriented Visualization in XmdvTool, Advisor: Matt Ward, Summer 2004

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Updated May 3, 2020

Masters Thesis Committees

- Donald Leo Bourque, Investigating monocular Large-Scale Direct SLAM (LSD-SLAM) and Direct Sparse Odometry (DSO), WPI Robotics Department, Advisor Michael Gennert.
- Yang Yang and Zhouchi Li, Implementation and Algorithms for In-Room Localization Technology using iBeacon, WPI Electrical and Computer Engineering Dept., advisor Kaveh Pahlavan, completed April 2016
- Julang Ying Barometer-Assisted 3D Indoor Wi-Fi Localization for Smart Phones-Map Selection and Performance Evaluation, WPI Electrical and Computer Engineering Dept., advisor Kaveh Pahlavan, completed April 2016
- Jin Zhao, Video/Image Processing on FPGA, WPI Electrical and Computer Engineering Department, advisor Xinming Huang, completed April 2015
- Guanxiong Liu, Performance of Hybrid Localization Using Inertial, RFID and Wi-Fi Signal, WPI Electrical and Computer Engr Dept., advisor Kaveh Pahlavan, completed April 2015
- Mingda Zhou, On the Accuracy of Wireless Capsule Endoscope Visual and RF Localization, WPI Electrical and Computer Engr Dept., advisor Kaveh Pahlavan, completed April 2015
- Liang Mi, A Testbed for Design and Performance Evaluation of Visual Localization Technique inside the Small Intestine, WPI Elect & Comp Engr Dept., advisor Kaveh Pahlavan, April 2015

Undergraduate Projects Advised and Co-Advised at WPI

Major Qualifying Projects (MQPs) Advised/Co-Advised (54 total)

2020-21

M1 Caitlin Enright, Smartphone Infection Tracking, EOA 0046, Computer Science Dept, WPI, A, B and C terms 2020-21

M2 Jean-Philippe Anthony Pierre, Smartphone Gait Authentication, EOA 0045, Computer Science Dept, WPI, A, B and C terms 2020-21

2019-20:

M3 Thar Min Htet, Smartphone Gait Authentication, EOA 0044, Computer Science Dept, WPI, A, B and C terms 2019-20.

M4 Saina Rezvani, Detecting Intoxication from Audio using Neural Networks, EOA 0043, Computer Science Dept, WPI, C, D (2018-19) and A term (2019-20)

2018-19:

M5 Tessa Garbely, Jesse Ying, Adam Bettigole, WPI Mobile Health Community, EOA 0042, Computer Science Dept, WPI, A, B and C terms 2018-19.

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Updated May 3, 2020

- M6 Charles Lovering, Anqi Lu, Cuong Nguyen, Huyen Nguyen, Microsoft MQP AY2017-18, EOA 0041, Computer Science Dept, WPI, B term 2017-18. Sponsor: Microsoft Corporation
- M7 Cameron Russell Maitland, Learning Exergame Enjoyment, EOA 0040, Computer Science Dept, WPI, A, B and C terms 2017-18
- M8 Paul Roberts, Colin Willoughby, Ian Banatoski, Drunk Selfie, EOA 0039, Computer Science Dept., WPI, A, C and D terms 2017-18
- M9 Nicholas Cheung, Sam Huang, Joseph Bremner and Quoc Ho Lam, Alcotait Deep Learning, EOA 0038, Computer Science Dept., WPI, A, B, C terms 2017-18
- M10 Ada Dogrucu, Aleksa Perucic, Damon Ball, Anabella Isaro, Depression Sensing, EOA 0037, Computer Science Dept., WPI, A, B, C terms, 2017-2018
- M11 Derrek Rueger, Bryan Benson and Benjamin Huchley, Behavioral Authentication, EOA 0036, Computer Science Dept., WPI, A, B, C terms 2017-2018

2016-17:

- M12 Arthur Dooner, Arun Donti, Stephen Lafortune and Walter Ho, Implicit Mobile Authentication
- M13 Akshay Thejaswi, Aditya Nivarthi and Daniel Beckwith, Detruncation of Attenuation Maps using Neural Networks (co-advised with Clifford Lindsay) (**Honorable Mention for Provost's Award for best MQP in Computer Science Dept., top 3 out of 46 MQPs**) (Resulted in paper C16)
- M14 Rupak Lamsal, Jules Voltaire and Matthew Nguyen, Behavior Change Contextualizer
- M15 Elijah Lee Gonzalez, Nicholas Wong, Joshua Audibert, CyPRESS Exergame Enjoyment, (co-advised with Prof Mark Claypool) (Resulted in paper C26)
- M16 Jacob Watson, Andrew McAfee, Benjamin Bianchi, AlcoWatch Intoxication Detection, (**Top 5 out of 46 for Provost's Award for best MQP in Computer Science Dept.**) (Resulted in paper C17)
- M17 Mengwen Li, Deep Learning for Intelligent Transport, (co-advised with Xinming Huang, Project sponsor: MathWorks Inc.)

2015-16:

- M18 Robert Esposito and Joseph Hill, FitU, (co-advised with Robert Lindeman)
- M19 Anthony Gallo, Phillip Baumann, Fitness in Mobile Gaming (Resulted in paper C22)
- M20** Stephen Ireland, Anthony Romeo, Android Smoking Detection

2014-15:

- M21 Yong Piao, Advanced 3D Rendering
- M22 John Haas, Onder Goksaran, Wellness Gamification, (co-advised with Prof Elke Rundensteiner)

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Updated May 3, 2020

- M23 Haley Andrews, Nathan Ford, Evan Safford, SAM Fitness: An Android Wellness-Application, (co-advised with Prof Elke Rundensteiner)
- M24 Zachary Arnold, Danielle LaRose, Smartphone Gait Inference, (co-advised with Joseph Petrucelli, WPI Math Dept.) (**Provost's Award for best MQP in Computer Science Dept., 2014-15**) (Resulted in papers C32, C33)
- M25 Andrew Paon, Adam Chaulk, GPGPU for Storage Networks (Project Sponsor: EMC)

2013-14:

- M26 Edison Jimenez, Seth Crampton, Smartphone Radio App, (co-advised with Scott Barton, WPI Humanities Dept.) (Project Sponsor: WICN Public Radio, Worcester) (**nominated for best MQP in Computer Science Dept., 2013-14**)
- M27 Kevin Hufnagle, Android Photo Maps Application, (co-advised with Prof Jennifer DeWinter (humanities))

2012-13:

- M28 Greg Wheeler, Billy Estrella, Jay Miller, Homesite Insurance Smartphone application, (co-advised with Profs Matt Ward (CS), and Guillermo Salazar (CEE) project sponsor: Homesite Insurance)

2011-12:

- M29 Eric Baicker-McKee, Jing Zhang, Binh Thanh Pham, Endicia Labeler, (co-advisor: Prof David Finkel, (Project sponsor: Endicia) (**nominated for best MQP in Computer Science Dept., 2011-12**)
- M30 Jackson Fields, Real-Time GI Rendering Engine
- M31 Xiao Du, Zhaochen Liu, David Rolle, Improved Visualization of Networked Storage Metrics (co-advised with Prof Matt Ward, Project sponsor: EMC)

2010-11:

- M32 Devin Thomas, Benjamin Lipson and Punit Dharani, RFID Navigation System for the Visually Impaired
- M33 Evan Duderewicz, Brendan Harris, Thomas Jenkins, Ken Miyauchi, Michael Ng, Mom-O-Meter: A self-help pregnancy Android app (co-advised with Bengisu Tulu, WPI School of Business) (Resulted in paper C55)
- M34 Nicholas Deapen, Physically Based Rendering (not completed)

2009-10:

- M35 Dickson Madison, Michael Oliver, Photorealistic Shader Effects
- M36 Ryan Lefevre and Bryan Crabtree, Mobile Social Networking Colors (**nominated for best MQP in Computer Science Dept., 2009-10**)
- M37 Eric Nadeau and Skyler Whorton, FPGA-Based Graphics Acceleration

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Updated May 3, 2020

2008-09 (On sabbatical):

M38 Andrey Yamshchikov and Shengshi Zhao, Financial Computations on the GPU (Project Sponsor: Fidelity Investments)

2007-08:

M39 Alexander Yeganov, Aaron Root, Chris Donnelly, 3D Mobile Game Engine

M40 Christopher Woo, Victoria Zukas, Enhanced Game DSL with Graphics

M41 Daisuke Abe, Corey Christous, The Effects of Task Intensity on Attention

M42 Berk Birand, WiFi Localization

M43 Andrew Halloran and Isaac Chanin, Wireless Sensor Network for Monitoring Applications, co-advisor with Wenjing Lou

M44 Matthew Caulkin, Air Cargo Drop Visualization (Project Sponsor: Army research labs)

2006-07:

M45 Pfeill Andy, ATI Catalyst Control Center Preview Application Update (Project Sponsor: ATI)

2005-06:

M46 Bangs Andrew, Haerinck Shaun, Kluft Aubrey, Location Aware Security Application

M47 Haag Matt, Stale Data Expiration and Store-Forward Routing (Project Sponsor: Autonomous Undersea Systems (AUSNet)) (Resulted in papers J17 and C49)

2004-05:

M48 Xiaohe Hu and Theodore Phillips, Efficient Graphics for Mobile Devices

M49 William West, Power Consumption of Ad Hoc Routing Protocols (Resulted in paper J19)

M50 Brendan Batchelder, Location-Aware Computing (Incomplete)

M51 Zhuo Chen and Aram Dulyan, MPEG-4 Streaming for Mobile Devices (Co-advisor with Mark Claypool)

2003-04:

M52 Paul Fydenkevez, Matt Gage and John Reynolds, Extreme Graphical Simplification using Images

M53 Tom Beigbeder, Rory Coughlan, Corey Lusher, and John Plunkett. The Effects of Packet Loss and Latency on Player Performance in Unreal Tournament 2003 (Co-advisor with Mark Claypool) (Resulted in paper C81)

M54 Ali Taheri and Arvinder Singh, Locus: Wireless LAN Location Sensing (**Provost's Award for best MQP in Computer Science Dept., 2003-2004**) (Resulted in papers C78 and C79)

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Updated May 3, 2020

- M55 Ben Sandorfsky and Jonathan Guillory, Rendering Structural Colors (**nominated for best MQP in Computer Science Dept., 2003-2004**)

2002-03:

- M56 Randy Chong, Java BRDF Viewer (Co-advisor: Prof Matt Ward)
- M57 Nathan Sheldon, Eric Girard and Seth Borg, The Effect of Latency on Performance in Warcraft III. (Co-advisor with Mark Claypool) (Resulted in paper C83)
- M58 Brian L'Heureux, Michael McHugh and Benjamin Privett, EMS Portable Workflow, (co-advisor with Robert Kinicki) (Resulted in paper C69)

Interactive Qualifying Projects (IQPs) Advised/Co-Advised

- I1 Anthony Qin, Brad Scuzzarella, Christopher Bearce, Run for Fun User Studies, Interactive Qualifying Project IQP-EOA-0004, WPI, A, B, C terms 2017-2018
- I2 Dongjie Wang, Sam Huang, Run and Fun Measurement (co-advised with Mark Claypool) (Resulted in paper C5)
- I3 Kyle Sposato, Alexander Fitzgerald, Run for Fun predicting (co-advised with Mark Claypool) (Resulted in paper C5)
- I4 Dean Kiourtsis, Nolan James, Kevin Truc, Katelyne Sibley, Attitudes Towards Technology-Based Alcohol Interventions
- I5 Shawn Yoon Smart Technology-Based Parking (co-advised with Mohamed Eltabakh)
- I6 Alex Carly-Dorsey, James Jackman, Nicholas Massa, Smartphone Health Games
- I7 Amorn Chokchaisiripakdee, Nuttaworn Sujumnong, Latthapol Khachonkitkosol, Smartphone Health Games (Resulted in paper BC1)
- I8 Seth Martin Crampton, Tech Bible Mobile App
- I9 Muhammad Azeem, Rohit Jagini, Mandela Kiran and Kaushal Shrestha, Social Implications of Graphics Processing Units
- I10 Taryn Flagg, FCCH Website Development Plan, (Co-advised with Stanley Selkow), (Not completed)

Other Undergraduate Advising

- RE1 Faculty Mentor REU Students summer 2017, WPI REU Site: Courtney Burns (REU), and Jennifer Ha (REU), with WPI undergraduate student Andrew Schade (WPI), co-mentored by Graduate student: Ermal Toto and by Faculty Advisors: Professors E. Agu and E. Rundensteiner
- Title of Poster: Using Machine Learning to Detect Depression by Voice,
 - Accepted as poster for presentation at 2017 IEEE MIT Undergraduate Research Technology Conference, Nov 2017, <http://ieeescrpts.mit.edu/conference>

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Updated May 3, 2020

Graduate Student Projects (ISGs) and Directed Research Advised/Co-Advised

- R1 Hamza Abujrida, PhD Student, WPI ECE Department, Smartphone-Based Assessment of Parkinson's Disease, Spring 2017 - Date
- R2 Wafaa Almuhammaddi, Fall 2018 - Date
- R3 Walter Gerych, Summer 2018 – Date
- R4 Hamid Mansoor, Summer 2018 – Date
- R5 Luke Buquicchio, Fall 2018 – Date
- R6 Abdulaziz Alalajaji, Summer 2018 – Date
- R7 Kavin Chandrakaserakaran, Summer 2018 – Date
- R8 Ziyang Liu, Summer 2018 – Date
- R9 Akshay Iyer, Fall 2019 – Date
- R10 Shubham Jain, Spring 2018 – Spring 2019
- R11 Ruojun Li, Summer 2018 - Date
- R12 Nichole Etienne, Smartphone Sensing of Stress, Spring 2016 – Spring 2017
- R13 Che Sun, Advanced Global Illumination, 2014 – 2015
- R14 Maryam Hasan, Emotion Detection in Twitter Messages, 2014 – 2016
- R15 Qian He, Context Aware Physical Activity App, 2014-2015
- R16 Qian He, Diabetes Phone App, Fall-Spring 2011-12, 2012-13, 2013-14
- R17 Bin Lang, Mood Detection Smartphone App, Fall 2013
- R18 Samarth Mothakapally, Diet Recognition Smartphone app, Fall 2013
- R19 Xin Wu, Sleep Detection Smartphone app, Fall 2013
- R20 Tairu Chen, Heart Rate Detection Smartphone app, Fall 2013
- R21 Xin Wang, Ubiquitous and Mobile Computing, Spring 2010
- R22 Clifford Lindsay, Programmable Camera (PCam), Summer 2007 – Spring 2010
- R23 Clifford Lindsay, Rendering Participating Media Using Lattice Boltzmann Meth., Spr '07.
- R24 Juan Li, Energy Efficient Graphics, Fall 2006, Spring 2007
- R25 Fan Wu, Scalable Graphics on Mobile Devices, Fall 2004 - Fall 2007.
- R26 Clifford Lindsay, Dispersive refraction using SH, Fall 2006.
- R27 Peter Lohrmann, Real-time raytracing, Fall 2005, Spring 2006
- R28 Chen-Hao Chang, Real-time raytracing, Fall 2005, Spring 2006
- R29 Brandon Light, Real-time Photon mapping, Spring 2006
- R30 Devanshu Mehta, Efficient Graphics Transmission for Mobile Devices, Fall 2004
- R31 Mariana Jbantova, Wireless Security, Directed Research, Spring 2004
- R32 Zhonghai Zhuo, Photorealistic Rendering in Computer Graphics, Spring 2004

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Updated May 3, 2020

- R33 Brad Momberger, Wavelength-Dependent Appearance Models, Spring 2004
- R34 Choong-Soo Lee, Low Delay Marking for TCP in Wireless Ad Hoc Networks, Fall 2004 (co-advisor with Mark Claypool and Robert Kinicki)
- R35 Mingzhe Li, Performance Enhancement of TCP-Friendly Rate Control (TFRC) in Wireless Networks, Fall 2004, (co-advisor with Mark Claypool and Robert Kinicki)
- R36 Kutty Banerjee, Mobile 3D Rendering, Fall 2003, Spring 2004
- R37 Cliff Lindsay, Real time Wavelength-Dependent Rendering Using Spherical Harmonics, Summer 2003
- R38 Cliff Lindsay, Spherical Harmonic Shading, Fall 2003
- R39 Zack Waters, Rendering Participating Media Using Photon Mapping, Summer 2003

Undergraduate Independent Student Projects (ISPs) Advised/Co-Advised

1. Andy Pfeill, ATI Control Center Application Update, 2005-06
2. Artur Janc (CS) and Paul Kastner (ECE), 802.11 Real Time Data Optimization, 2005-06 (co-advisor with R Brown, WPI Electrical and Computer Engineering Dept)
3. David Dunlop, Denial-of-Service Attacks in 802.11 Wireless LANs, 2003-04
4. Ben Sandorfsky, Microsoft .NET Framework, 2003-04
5. Arvinder Singh, Wireless LAN Location Sensing, 2003-04
6. Arvinder Singh, Location-Aware Computing, 2003-04
7. Oleg Rekutina, Mobile 3D Graphics, 2003-04

Academic Advising at WPI

My advising roster since arrival at WPI has consisted of 15-25 undergraduates and 10-15 graduate students per academic year. Several of my advisees have explicitly requested me as their advisor after taking a class with me.

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Updated May 3, 2020

SERVICE

Service to the Profession (External to WPI)

Journal Editorships (2)

- PC1 Associate Editor, Int'l Journal of Wireless Information Networks, Springer
- PC2 Associate Editor, Int'l Journal of Handheld Computing Research, IGI Global

Program Committees and Meeting Organization (21)

- PC3 IEEE TrustCom Conference 2020, Guangzhou, China
- PC4 The 4th International Conference on Biological Information and Biomedical Engineering (BIBE 2020), Chengdu, China
- PC5 IEEE-NIH Healthcare Innovations and Point-of-Care Technologies (HI POCT) conference 2019, Washington DC
- PC6 Program Committee, IEEE COMPSAC 2019, Milwaukee.
- PC7 Program Committee, Third Int'l Symposium on Signal Processing and Intelligent Recognition Systems (SIRS'17), Manipal, Karnataka, India
- PC8 Program Committee, IARIA Int'l Conference on Informatics and Assistive Technologies for Health-Care, Medical Support and Wellbeing (HEALTHINFO) 2017, Athens, Greece, 2018
- PC9 Technical Program Committee, IEEE Region 10 Symposium (TENSYMP) 2017
- PC10 Program Committee, IEEE Int'l Conference on Ubiquitous Intelligence and Computing (UIC), 2017 (San Francisco), 2018 (China), also PC member Intelligent/Smart Environments track, 2019 (Leicester)
- PC11 Program Committee, ACM MobiHoc Workshop on Pervasive Wireless Healthcare (in conjunction with ACM MobiHoc), 2017
- PC12 Program Committee, IEEE Connected Health: Applications, Systems and Engineering (CHASE), Washington DC, 2016, Philadelphia 2017, Washington DC 2018, Washington DC 2019
- PC13 Program Committee, IEEE 10th Int'l Symposium on Medical Information and Communication Technology (ISMICT), 2016 (Worcester, MA), 2017 Lisbon Portugal, 2018 Sydney Australia, Oslo 2019
- PC14 Program Committee, 2nd Workshop on mobile medical applications – Design and Development 2015, co-located with ACM Sensys 2015, Seoul, South Korea
- PC15 Program Committee, ACM 5th Int'l Workshop on Pervasive Wireless Healthcare (MobileHealth), co-located with Mobihoc 2015
- PC16 Program Committee, Workshop on mobile medical applications – Design and Development 2014, co-located with ACM Sensys 2014, Memphis, Tennessee
- PC17 Technical Program Committee member, PIMRC 2011 Wireless Networks and Healthcare (WNHC) track, Toronto, Canada
- PC18 Program Committee, Eurographics Conference, Mobile Graphics track, 2010

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Updated May 3, 2020

PC19 Program Committee, Int'l Symposium on Visual Computing (ISVC) 2009-2019

PC20 Program Committee, 1st Int'l Workshop on A New Generation of Malware: Models, Analysis, and Counter Measures" (MALWARE) in 2006 and 2007.

PC21 Session co-chair, Rendering session, IASTED Visualization, Imaging and Image Processing (VIIP 2002) conference, Malaga, Spain

Reviewer (Papers and Books)

Journal paper reviewer (16)

RV1 ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)

RV2 Journal of Translational Engineering in Health and Medicine

RV3 Smart Health Journal

RV4 ACM Transactions on Graphics

RV5 Annals of Telecommunications - Annales des Telecommunications.

RV6 IEEE Security and Privacy Magazine

RV7 Journal of Medical Internet Research (JMIR)

RV8 Journal of 'Personal and Ubiquitous Computing', special issue on 'Interaction and Visualization of 3D Virtual Environments on Mobile Devices'

RV9 Springer multimedia systems Journal

RV10 Computer Graphics Forum Journal

RV11 IEEE Computer Graphics & Applications (CG&A) Journal

RV12 IEEE Transactions on Parallel and Distributed Systems

RV13 Int'l Journal of Handheld Computing Research (IJHCR)

RV14 IEEE Transactions on Parallel and Distributed Systems

RV15 ACM Transactions on Mobile Computing

RV16 IEEE Internet Computing Journal

Conference Paper reviewer (19)

RV17 ACM Special Interest Group on Computer Graphics (SIGGRAPH) Conference

RV18 ACM Multimedia Systems (MMSys) Conference

RV19 American Medical Informatics Association Symposium

RV20 ACM Int'l Joint Conference on Pervasive and Ubiquitous Computing

RV21 IEEE Connected Health: Applications, Systems and Engineering

RV22 European Association for Computer Graphics (Eurographics) Conference

RV23 Int'l Conference on Multimedia and Expo (ICME)

RV24 IEEE Multimedia Conference

RV25 IEEE Wireless Communications and Networking Conference (WCNC)

RV26 IEEE Visualization Conference

RV27 Eurographics Symposium on Rendering (EGRS)

RV28 IEEE 10th Int'l Symposium on Medical Information and Communication Technology (ISMICT)

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Updated May 3, 2020

- RV29 Workshop on Mobile Medical Applications (MMA), co-located with ACM Sensys
- RV30 Workshop on Massively Multiuser Virtual Environments (MMVE)
- RV31 General Purpose Computing using Graphics Processing Units (GPGPU) Workshop
- RV32 IEEE Int'l Symposium Personal, Indoor and Mobile Communications (PIMRC)
- RV33 Int'l Conference on Malware
- RV34 Computer Graphics Int'l (CGI) Conference
- RV35 1st Int'l Workshop on A New Generation of Malware: Models, Analysis, and Counter Measures" (MALWARE), co-located with IEEE IPCCC

Grant Panels/Meetings

- RV36 NIH NIAAA ZAA1 DD (C1) Contract Review - NIH/NIAAA 018 (Alcohol Biosensor Development for Continuous Alcohol Consumption Monitoring), April 2020
- RV37 NIH/NCI Small Business Innovation Research (SBIR) topic 410: Cancer Clinical Trials Recruitment and Retention Tools for Participant Engagement, February 2020
- RV38 NSF Smart and Connected Health (SCH) CISE Research Initiation (CRII) Panel, December 2019

Grant proposal reviewer (3)

- RV39 Diabetes UK Funding Agency (External grant Reviewer)
- RV40 Global Center for Food Systems (GCFSI) Food Systems Innovation Grants Competition, Michigan State University
- RV41 TEKES, Finnish Funding Agency for Innovation, Research Organization, Helsinki, Finland

Book Reviewer (8)

- RV42 OpenGL ES 3.0 Programming Guide, by Aaftab Munshi, Dan Ginsburg and Dave Shreiner, Addison Wesley
- RV43 Modern Computer Networks 1st edition by Lin-Hwang-Baker, McGraw-Hill publishers
- RV44 Computer Networks, 5th edition by Andrew Tanenbaum, Prentice-Hall
- RV45 Computer Graphics with OpenGL, 3rd edition, by Hearn and Baker, Prentice-Hall
- RV46 Nitin Vaidya, Wireless Networks, Cambridge University Press
- RV47 Ron Goldman, An Integrated Intro. to Computer Graphics and Geometric Modeling, CRC
- RV48 Karri Pulli *et al*, "Mobile 3D Graphics Fundamentals", Morgan Kaufmann
- RV49 "Computer Graphics using OpenGL" by Francis S Hill Jr. and S. Kelly, Prentice-Hall

Service to WPI

- SW1 Faculty Director, Health Delivery Institute, WPI, from July 1, 2017 – Date
 - (HDI is an interdisciplinary WPI institute focused on Healthcare research with over 25 faculty and over \$19 million in funding since 2009)
- SW2 President's nominee, WPI Faculty Review Committee (FRC), December 2019 – Date

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Updated May 3, 2020

- SW3 Science, Engineering and Innovation for Global Development Program, WPI Global School, January 2020 – Date
- SW4 Affiliated Faculty, Robotics Engineering, WPI, July 2018 – Date
- SW5 Affiliated Faculty, Biomedical Engineering, WPI, July 2018 – Date
- SW6 Affiliated Faculty, Electrical & Computer Engineering Dept., WPI, July 2018 – Date
- SW7 Affiliated Faculty, WPI Data Science Program, 2013 – Date
- SW8 Affiliated Faculty, WPI Bioinformatics Program, 2011 – Date
- SW9 Affiliated Faculty, WPI Interactive Media & Game Dev. (IMGD) Program, 2005 – Date
- SW10 Member Undergraduate Research Advisory Board (Chair Suzanne Weekes), 2019 - Date
- SW11 Member, co-group leader, Provost's Bio-X initiative
- SW12 Mentor, Arts & Science Summer Research Experience for Undergraduates 2018 (Mentee: Adonay Resom)
- SW13 Member, Innovation and Entrepreneurship Campaign Planning Focus Group, 2018
- SW14 Review committee, School of Arts and Science (A&S) summer research experience for undergraduates, April 2018
- SW15 Member, President's Innovation and Entrepreneurship Center Committee, 2016-Date
- SW16 Member, Faculty Steering committee, Health Delivery Institute, WPI, 2010 – Date
- SW17 Affiliated Faculty, WPI Electrical & Computer Engineering Dept, July 2015 - Date
- SW18 Faculty member, Center for Wireless Information Network Studies (CWINS), Electrical and Computer Engineering Dept., WPI, 2002 – Date
- SW19 CWINS is the world's first wireless research lab, founded by Prof Kaveh Pahlaven (ECE)
- SW20 Faculty member, WPI Wireless LAN Research Laboratory (WLRL) at WPI
- SW21 Judge, GRIE Poster competition, WPI, 2015
- SW22 Judge, GRAD Poster competition, WPI, 2006 & 2007
- SW23 Member, WPI President's Interactive Qualifying Project (IQP) judging panel, 2003

Service to WPI CS Department

- SCS1 Tenure Committee, WPI CS Dept, 2019 - Date
- SCS2 Hiring Committee, WPI Computer Science Dept., 2015-16, 2016-17, 2019-20
- SCS3 Screening committee, IMGD serious games hire, WPI
- SCS4 Coach, Computer Science Graduate Student Participants, I3 Innovation competition 2013
- SCS5 Promotions Committee, WPI CS Dept., 2005-2007, 2009-2010
- SCS6 Graduate Research Committee, WPI CS Dept., 2005-2007, 2009-2010, 2011-2013, 2015-2017

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Updated May 3, 2020

- SCS7 Graduate admissions committee, WPI CS Dept., 2004-2005
- SCS8 Technical Report Coordinator, WPI CS Dept, 2014-Date
- SCS9 Selection Committee, Lee Becker scholarship, 2013
- SCS10 Coordinator, Image Science Research Group (ISRG), 2003-2004, 2016-2017
- SCS11 Founder and coordinator, Mobile Graphics Research Group (MGRG), 2003-date
- SCS12 Education committee, WPI CS Dept., 2003-2004
- SCS13 Undergraduate Committee, WPI CS Dept., 2002-2003
- SCS14 Member, WPI, CS building committee, 2002-2003, 2003-2004

Service to the Community

- Organizing committee, Woo Health Hack Hackathon (WooHacks) (jointly organized by UMass Medical School and all 7 Worcester Colleges), November 2019
- Session Chair and Organizer, World Bank Workshop for Math and Science for Sub-Saharan Africa (workshop to develop modules and train sub-saharan Africans to improve dissemination of STEM skills), May 2017
- Guest speaker, Mathematics in Computer Graphics and Games, at Mathematics Institute for Secondary Teaching, hosted by Suzanne Weekes and Luca Capogna, 2014, 2015, 2017
- Guest speaker, GEM: Graduate Degrees for Minorities in Engineering and Science Program, Boston University, October 2006.
- Guest speaker, WPI MASTER program for minorities to strengthen minority high school student's skills and abilities in math, engineering and science, November 2, 2005
- Guest speaker, WPI MASTER program for minorities to strengthen minority high school student's skills and abilities in math, engineering and science, February 16, 2005
- Mentor, Rachel Davis-Martin, K23 grant application, UMass Medical School (aims to aggregate biosensors, smartphone data, and EMA to create a technology enabled Technology Enabled Monitor of Alcohol Detoxification (TEMAD, clinical tool that measures alcohol withdrawals)
- Mentor, African students, PASET network

Awards/Honors Related to Service

- Faculty Recognition Award for Promotion to Full Professor, 2019
- Faculty Recognition Award for being Director of the Health Delivery Institute (HDI), 2017