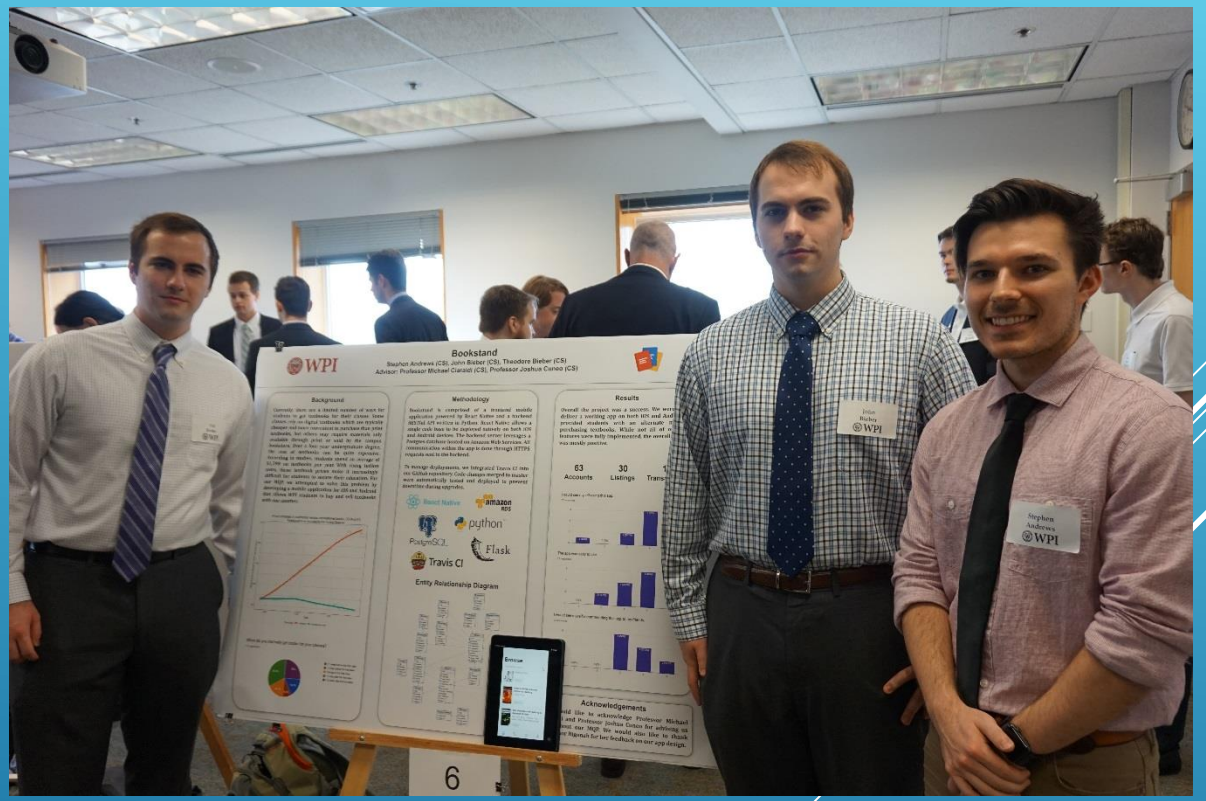
Computer Science Department

PROJECT PRESENTATION DAY
APRIL 19, 2019

by Cane, Refie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WPI
Vocaodoru - Rhythm Gaming and Artificial Cinematography in Virtual Reality
David Giangrave (CS/IMGD), Aidan O'Keefe (CS/IMGD), Patrick Critz (IMGD)
Advisor: Dr. Gillian Smith (CS/IMGD)
RITSUMEIKAN UNIVERSITY
Abstract
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Utility-Based AI
Computational Cinematography
Focus Type
Framing Type
Shot Type
Shot Length
Focal Length
Velocity Type
Location Sphere
Optics and Positioning
Depiction of Location Sphere
Reinforcement Learning
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EXIT
WPI
PAT: The Robot Tour Guide
Henry Dunphy(CS), Zinaver Kang(RBE/CS), William Mosby(CS)
Advisors: Prof. Jing Xiao (RBE/CS) and Prof. Greg Fischer (RBE)
Sponsor: Ava Robotics
AVA ROBOTICS
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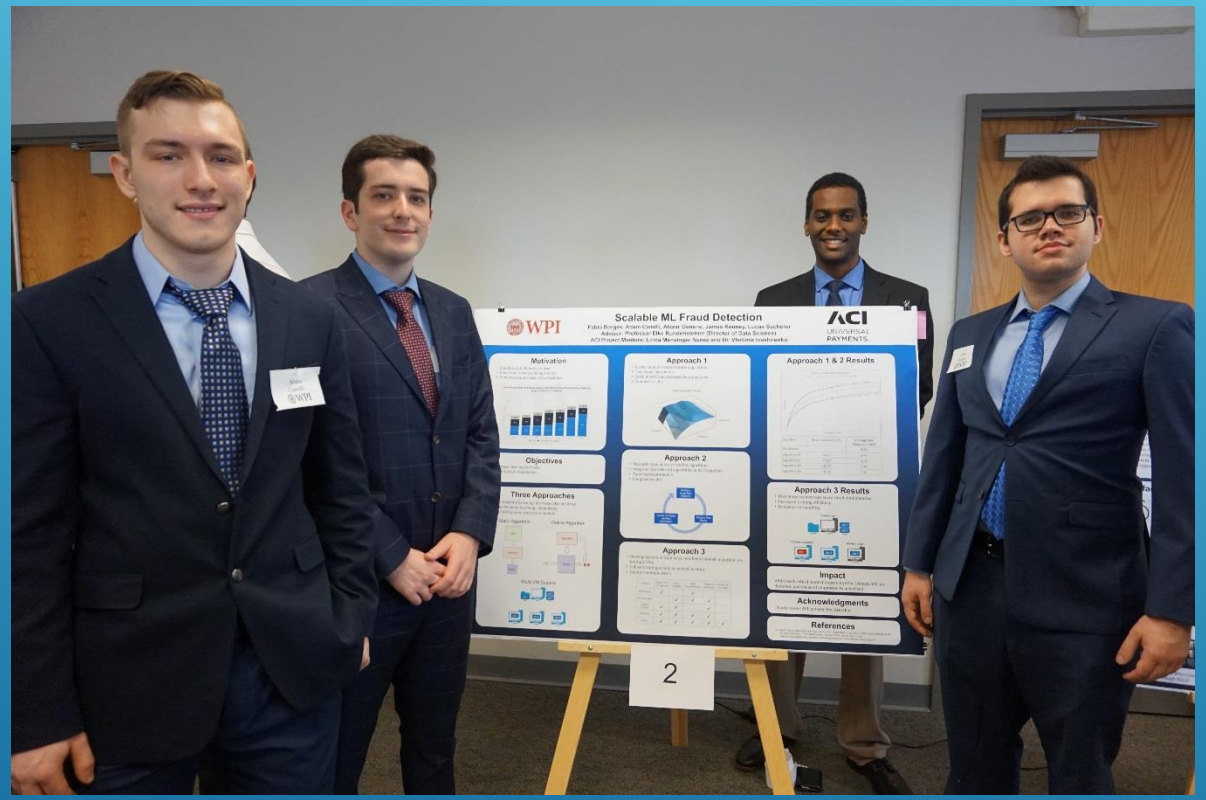
WPI
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Deep Learning for Data Privacy Classification
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Yōkai no Kōgeki
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OSAKA UNIVERSITY
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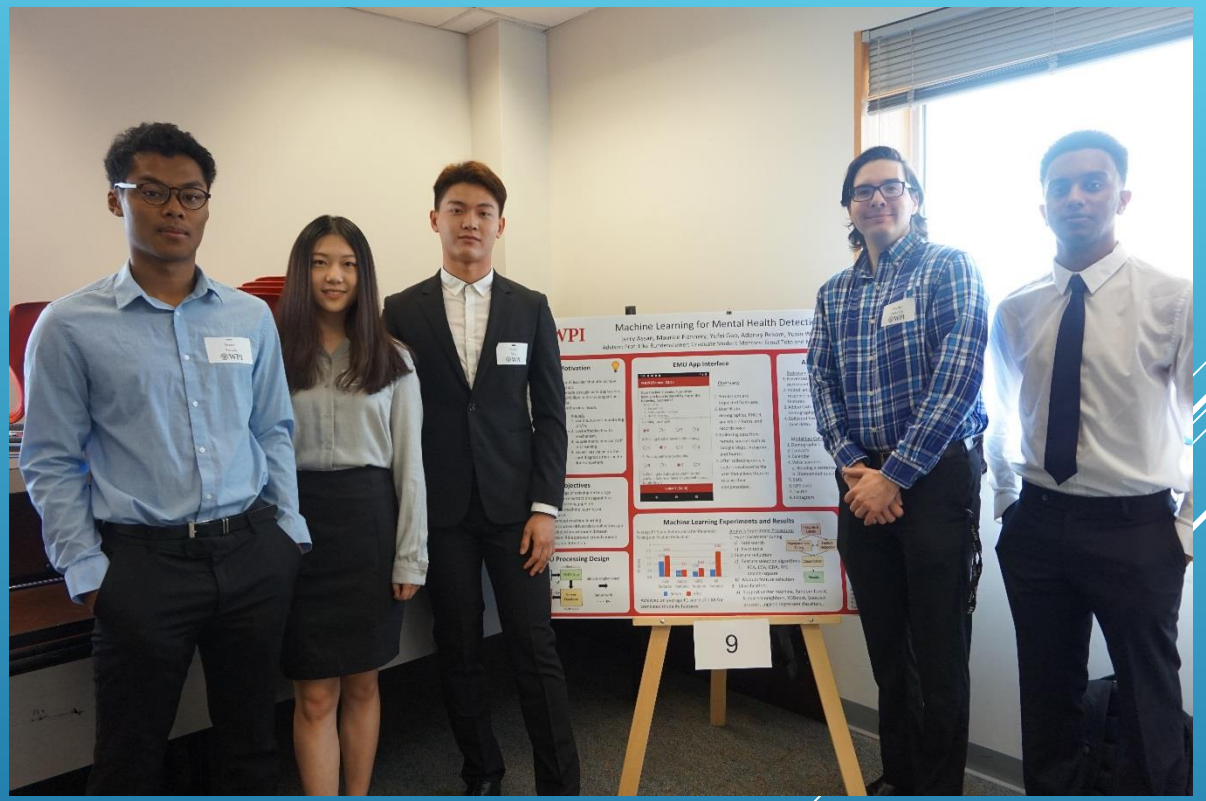
WPI
Machine Learning for Mental Health Detecti
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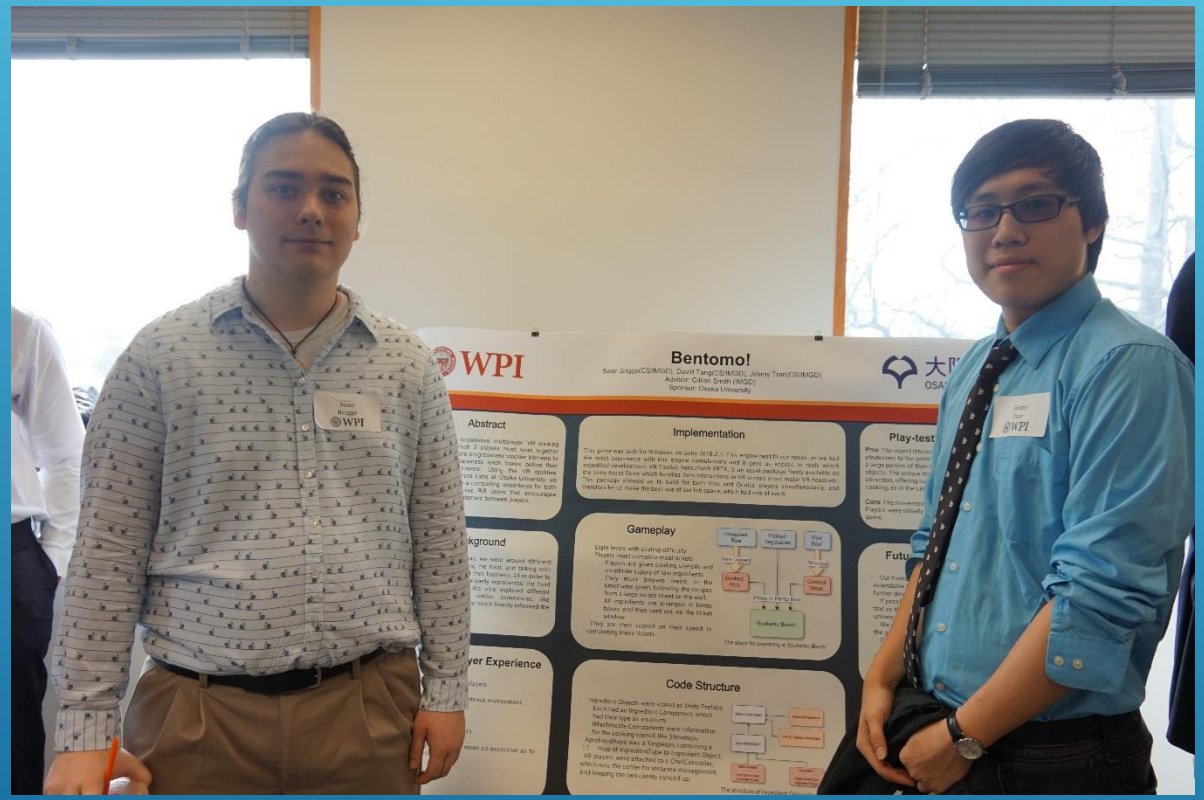
WPI
Bentomo!
Abstract
Implementation
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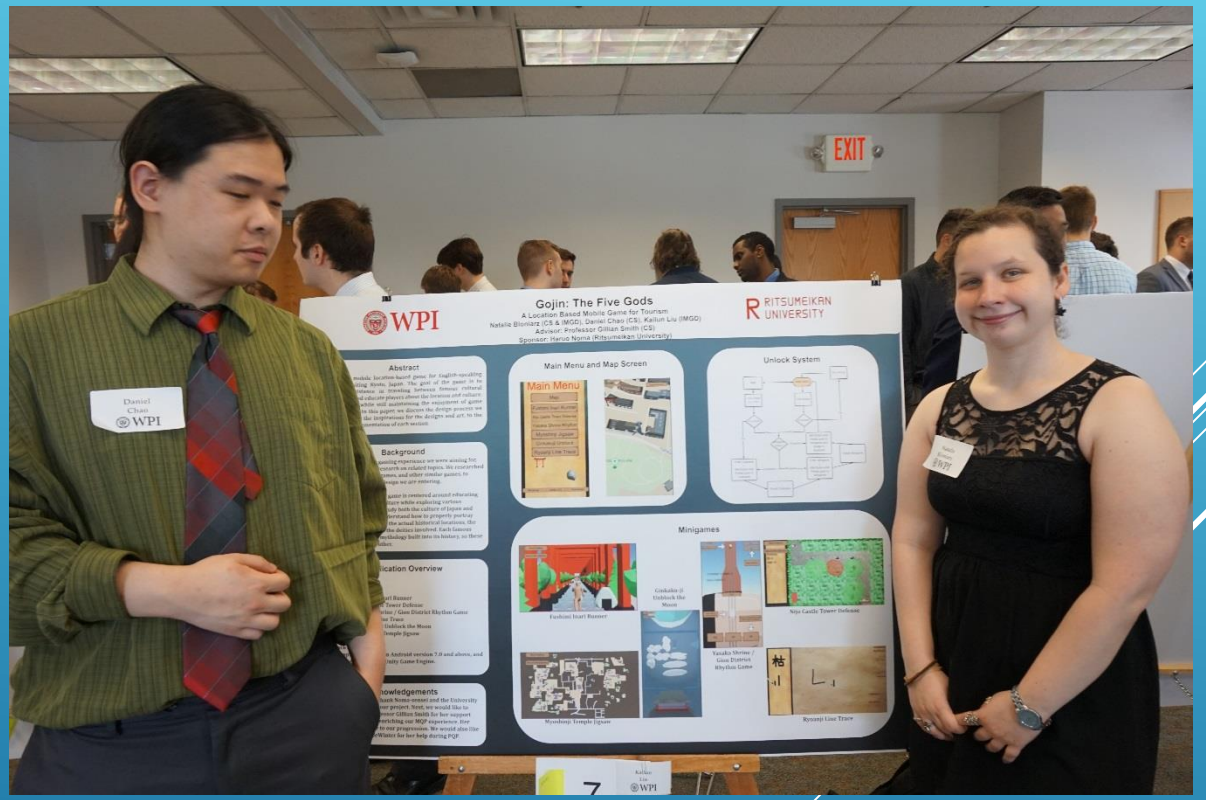
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WPI
Gojin: The Five Gods
RITSUMEIKAN UNIVERSITY
Abstract
Main Menu and Map Screen
Main Menu
Unlock System
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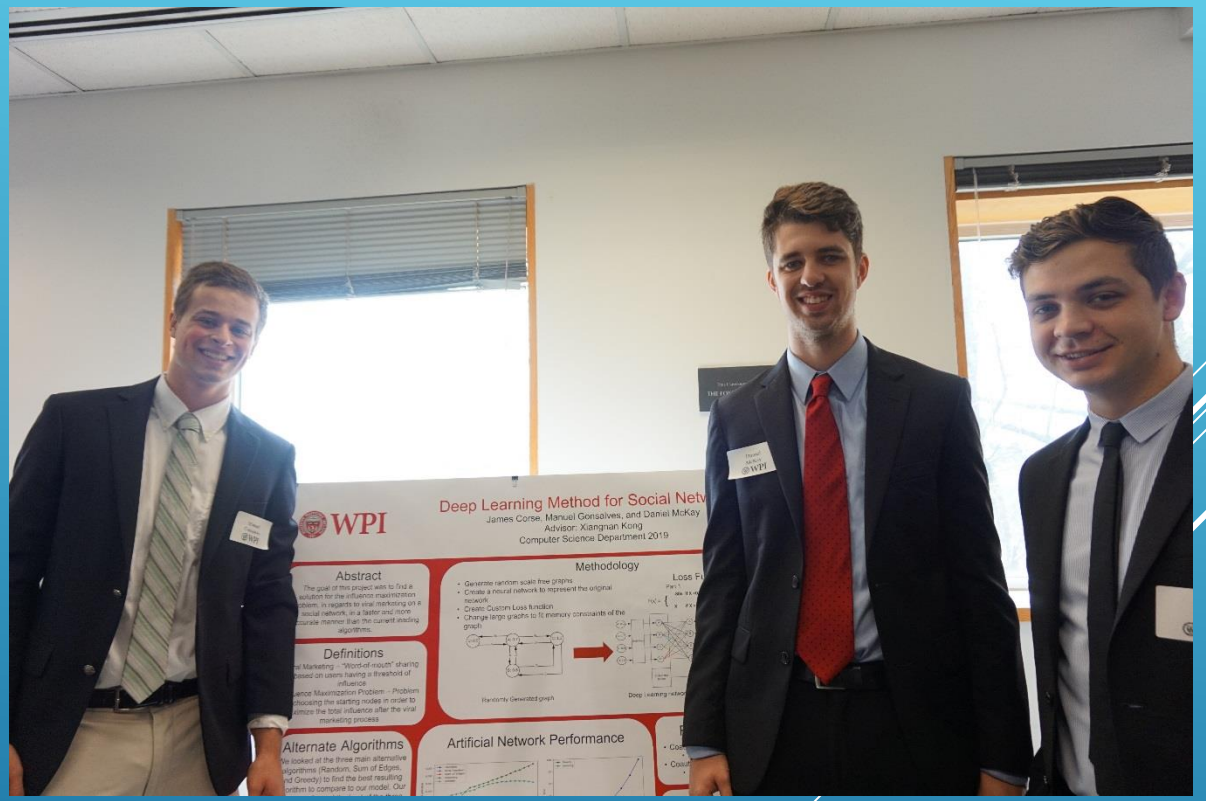
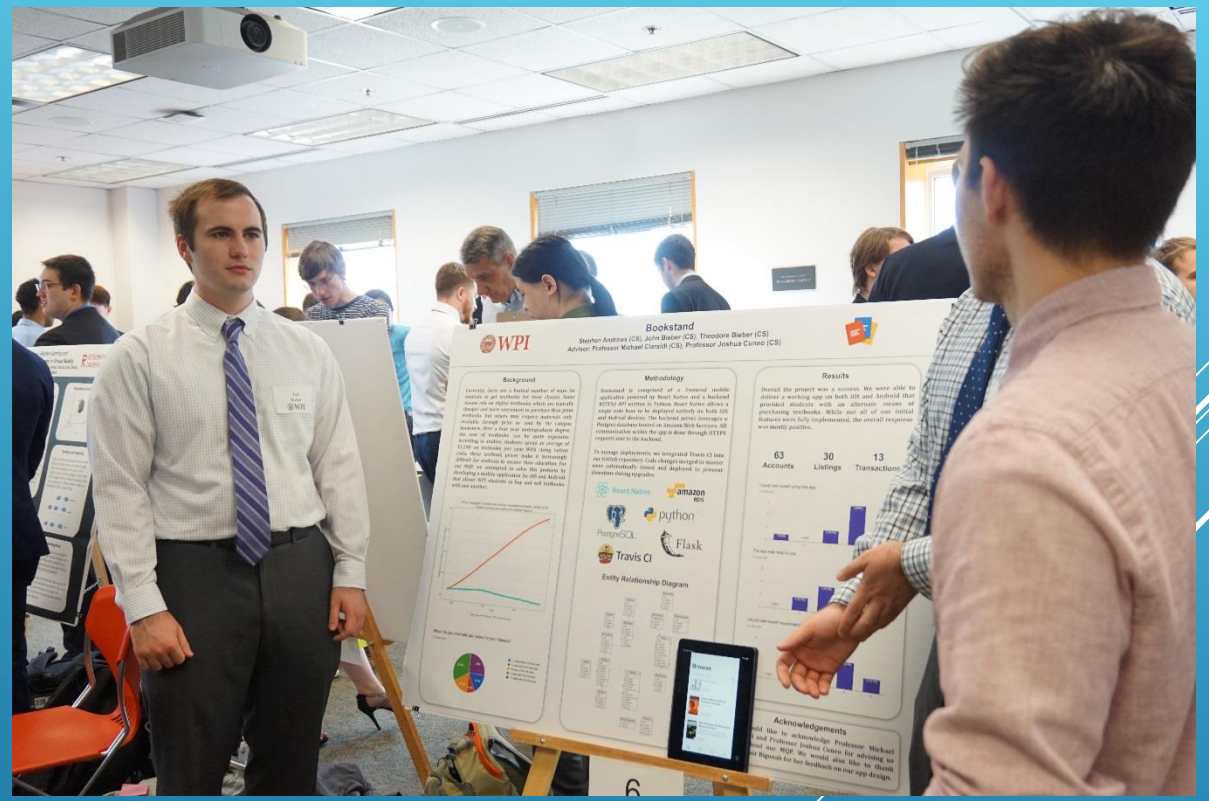
Minigames

EXIT
WPI
Gojin: The Five Gods
A Location Based Mobile Game for Tourism
RITSUMEIKAN UNIVERSITY
Abstract
Main Menu and Map Screen
Main Menu
Unlock System
Minigames
Daniel Chao
WPI


WPI
Deep Learning Method for Social Netw
James Corse, Manuel Gonsalves, and Daniel McKay
Advisor: Xiangnan Kong
Computer Science Department 2019
Abstract
Methodology
Definitions
Alternate Algorithms
Artificial Network Performance

WPI
MASH

WPI
MASH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Diagnosing Robotic Swarms (Dr. Swar
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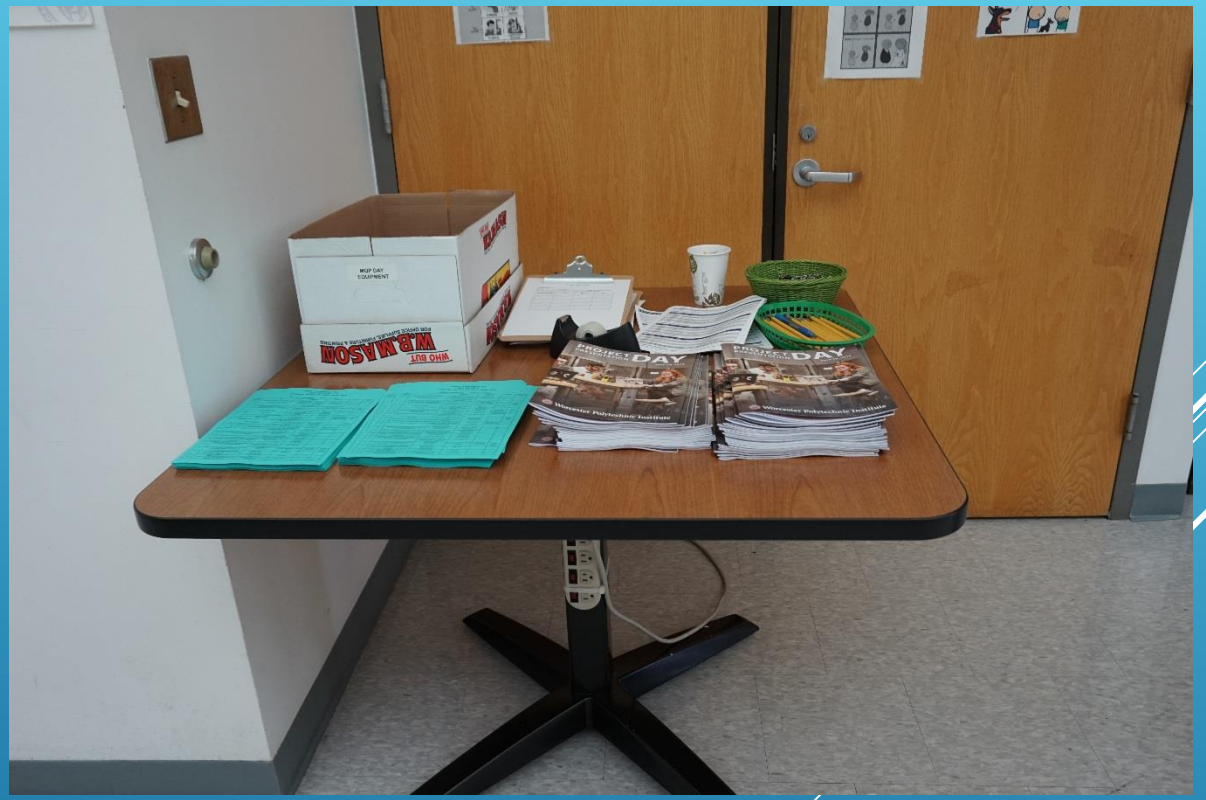
WHO BUT
W.P.I.
DAY
Worcester Polytechnic Institute

WPI Computer Science 1995-1999
Number of Faculty, BS Degrees and MS Degrees
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Washburn Shops Lab Management System
Samuel M. Baumgarten (CS)
Advisor: Professor Michael Ciaraldi (CS)
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Building a Task Blacklist for Online Social Systems
Trang Ha (CS), Quyen Hoang (CS)
Advisor: Professor Kyumin Lee (CS)
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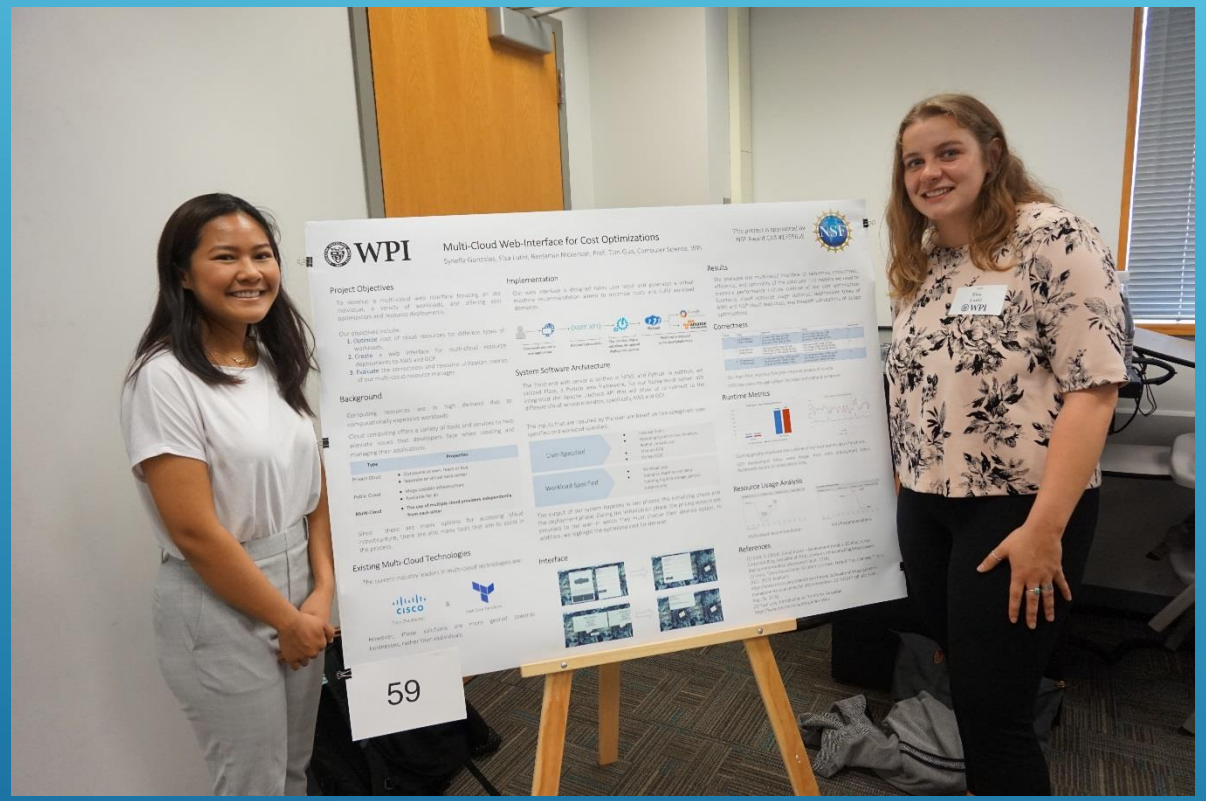
Collision Identification Program (CIP)
A Collision Detection Toolkit for Point Clouds
Krysta R Murdy, CS & ECE
Advised by Professors
Alexander M Wyglinski, ECE
Hugh C Lauer, CS
Project Goals
What is a Point Cloud?
CIP Continued
LiDAR Sensor
Overview & Purpose
Acknowledgements
HYPACK


WPI
Multi-Cloud Web-Interface for Cost Optimizations
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Runtime Metrics
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Coq for Formal Verification
Spyridon Antonatos (CS), Matthew McDonald (CS),
Dylan Richardson (CS), and Joseph St. Pierre (CS)
Advisor: Professor Daniel Dougherty (Department of Computer Science)
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Syntactic Unification
Our Work
Boolean Unification
Applications of Boolean Unification

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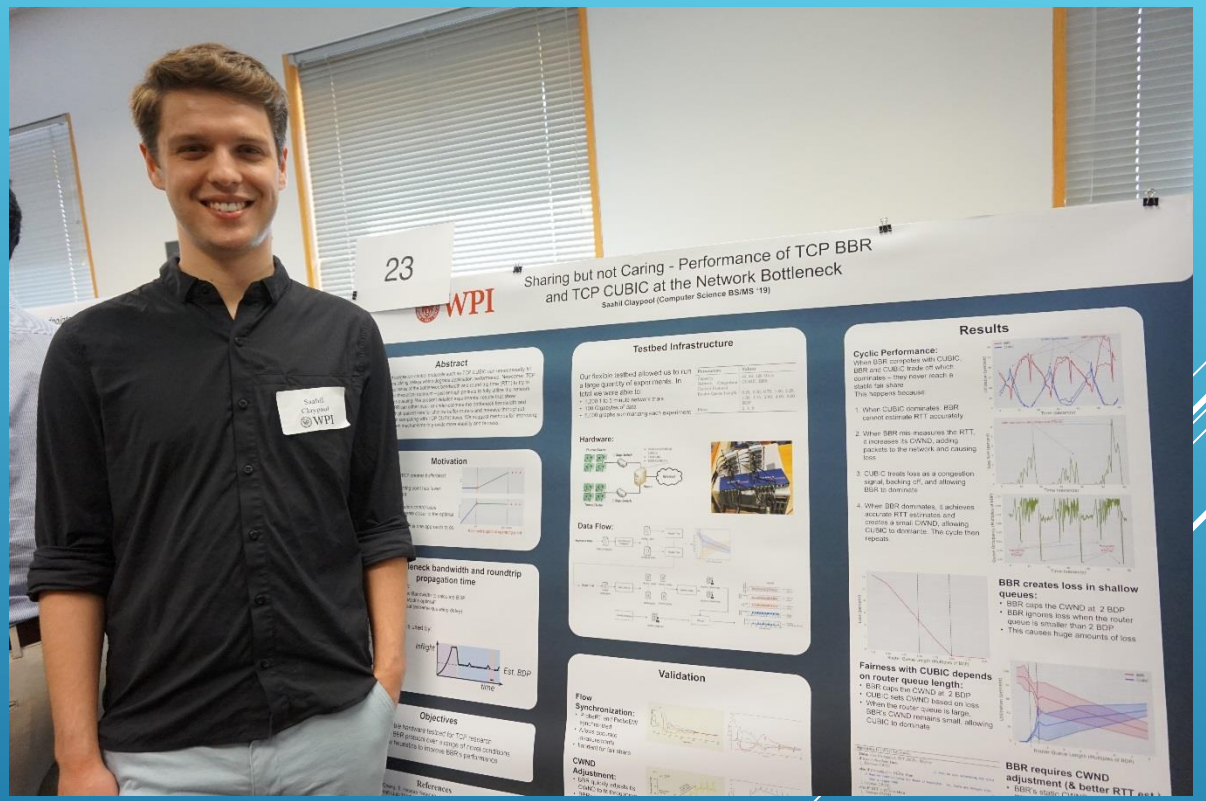
Maximizing the Effect of Redundancy on Fault Diversification Through Core Layout
Alec Kotchoff (CS/ECE) and Kyle Scaplen (ECE)
Advisors: Robert Walls (CS) and Andrew Clark (ECE)
1 Introduction
2 Methodology
ALU
Addition
Multiplication
Division
Implementation
4 Results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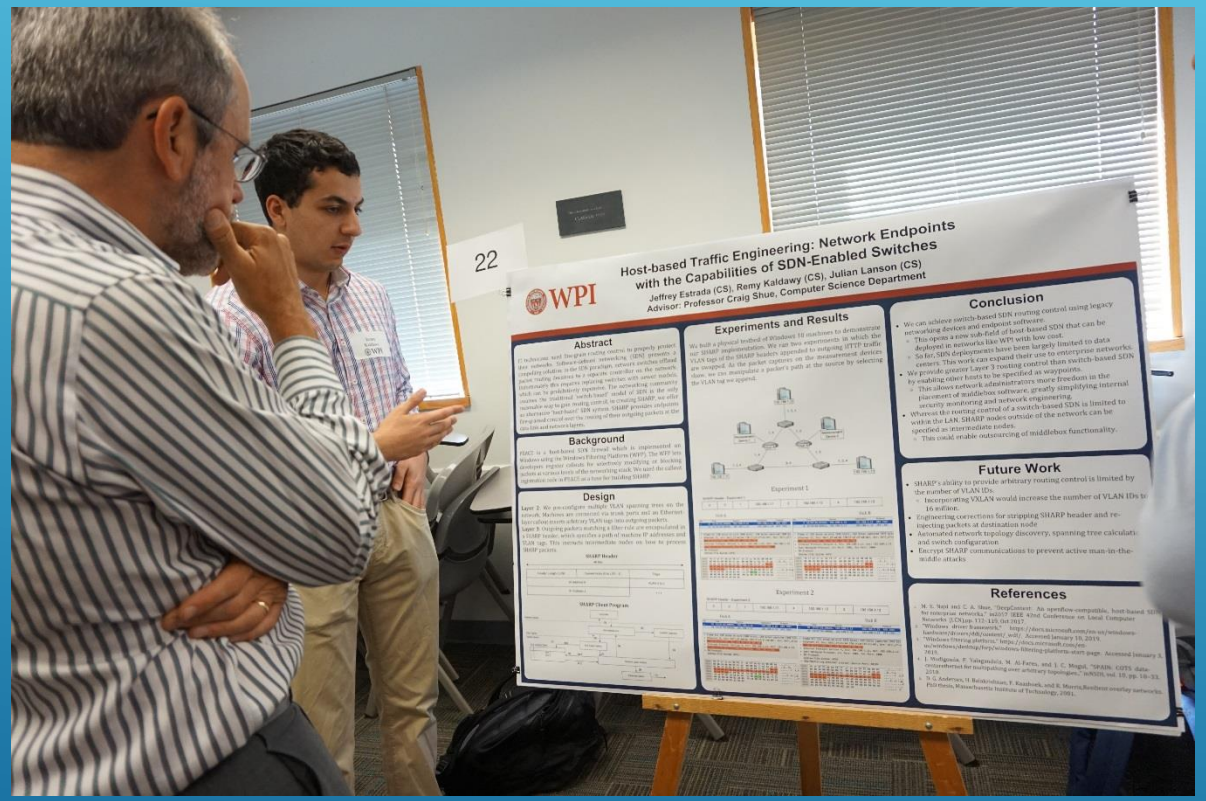
WPI
Sharing but not Caring - Performance of TCP BBR and TCP CUBIC at the Network Bottleneck
Saahil Claypool (Computer Science BS/MS '19)
Abstract
Motivation
Testbed Infrastructure
Hardware:
Data Flow:
Validation
Objectives
References
Results
Cyclic Performance:
BBR creates loss in shallow queues:
Fairness with CUBIC depends on router queue length:
BBR requires CWND adjustment (& better RTT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WPI
Host-based Traffic Engineering: Network Endpoints with the Capabilities of SDN-Enabled Switches
Jeffrey Estrada (CS), Remy Kaldawy (CS), Julian Lanson (CS)
Advisor: Professor Craig Shue, Computer Science Department
Abstract
Background
Design
Experiments and Results
Conclusion
Future Work
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WPI
Host-based Traffic Engineering: Network Endpoints with the Capabilities of SDN-Enabled Switches
Jeffrey Estrada (CS), Remy Kaldawy (CS), Julian Lanson (CS)
Advisor: Professor Craig Shue, Computer Science Department
Abstract
Background
Design
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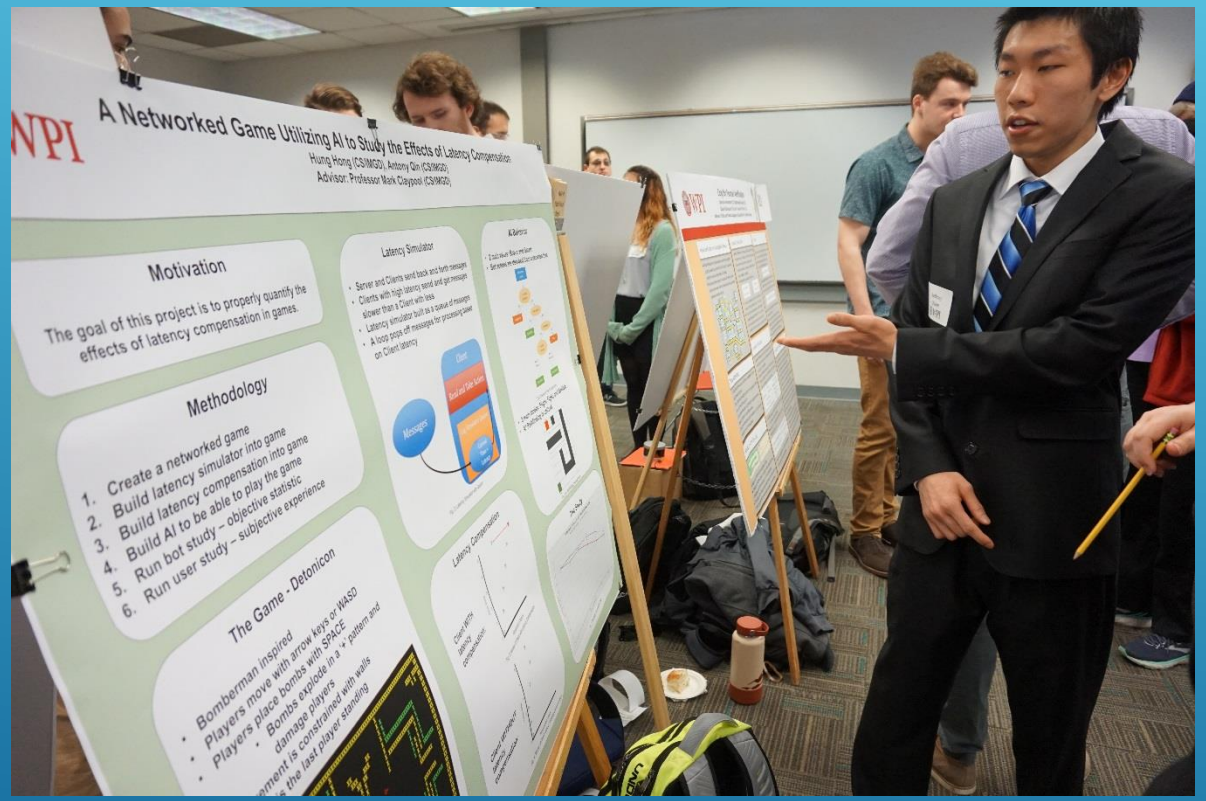
A Networked Game Utilizing AI to Study the Effects of Latency Compensation
Motivation
The goal of this project is to properly quantify the effects of latency compensation in games.
Methodology
1. Create a networked game
2. Build latency simulator into game
3. Build latency compensation into game
4. Build AI to be able to play the game
5. Run bot study – objective statistic
6. Run user study – subjective experience
Latency Simulator
The Game - Detonicon

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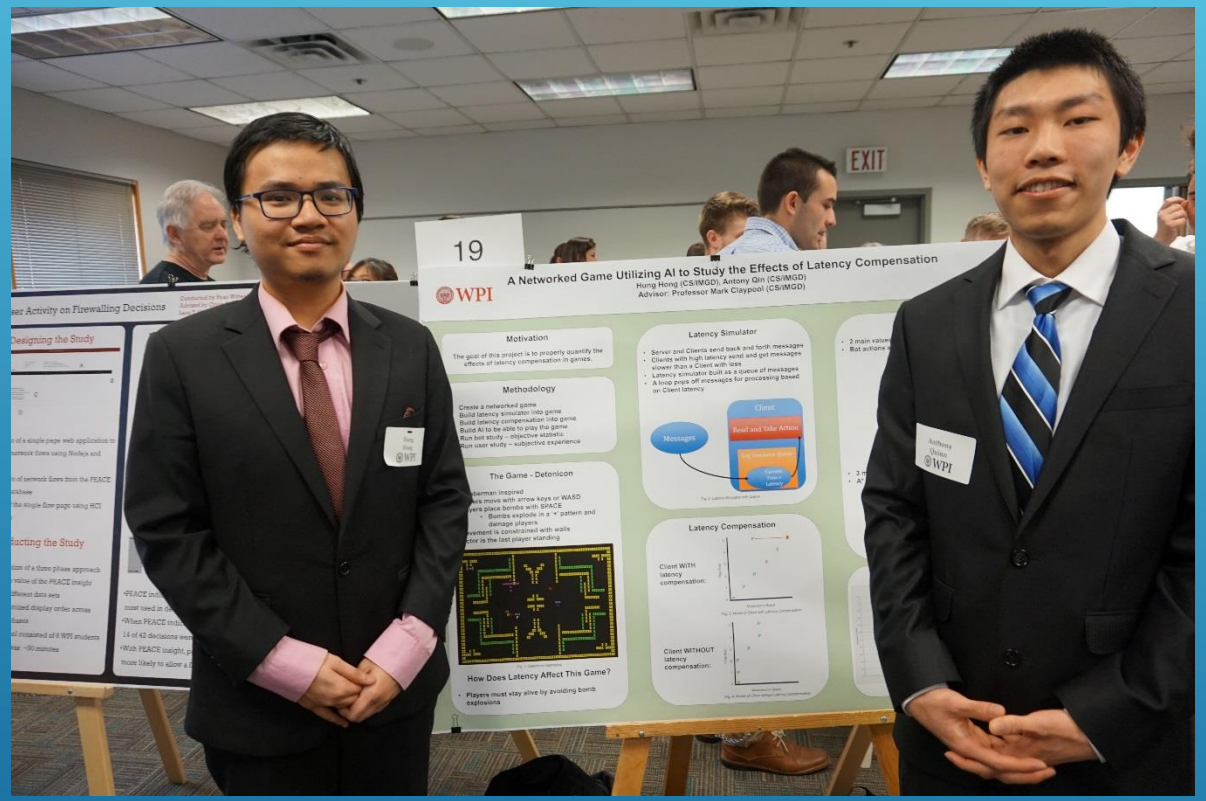
Columbia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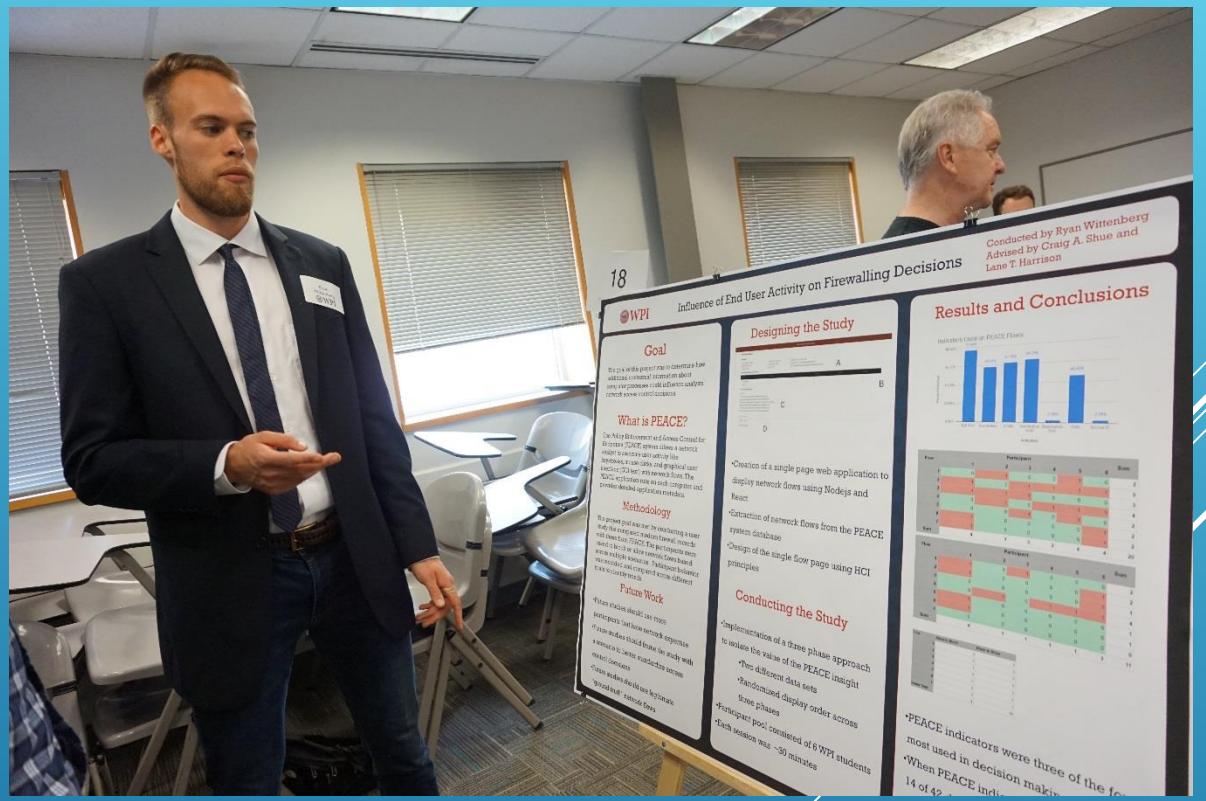
A Networked Game Utilizing AI to Study the Effects of Latency Compensation
WPI
Hung Hong (CS/IMGD), Antony Qin (CS/IMGD)
Advisor: Professor Mark Claypool (CS/IMGD)
Motivation
Methodology
Latency Simulator
The Game - Detonicon
How Does Latency Affect This Game?
Latency Compensation
Client WITH latency compensation:
Client WITHOUT latency compensation:
EXIT


18
Influence of End User Activity on Firewalling Decisions
Conducted by Ryan Wittenberg
Advised by Craig A. Shue and Lane T Harrison
WPI
Goal
What is PEACE?
Methodology
Future Work
Designing the Study
•Creation of a single page web application to display network flows using Nodejs and React
•Extraction of network flows from the PEACE system database
•Design of the single flow page using HCI principles
Conducting the Study
•Implementation of a three phase approach to isolate the value of the PEACE insight
•Two different data sets
•Randomized display order across three phases
•Participant pool consisted of 6 WPI students
•Each session was ~30 minutes
Results and Conclusions
•PEACE indicators were three of the fo
most used in decision maki
•When PEACE indi
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ReVisIt
Enabling Positive Evaluation of Interactive Visualizations
Interactive Visualization Use Case
Data Processing and Analytics
ReVisIt Interface
WPI

EXIT

WPI
Washburn Shops Lab Management System
Samuel M. Baumgarten (CS)
Advisor: Professor Michael Ciaraldi (CS)
GOALS
1. Track Utilization
2. Identify Users
3. Streamline Entry
4. Simplify Onboarding
Making the manufacturing labs more accessible while increasing lab safety and accountability.
ABSTRACT
ACKNOWLEDGEMENTS
COMPONENTS
661
Users Registered
5k
Shop Sessions Recorded
26k
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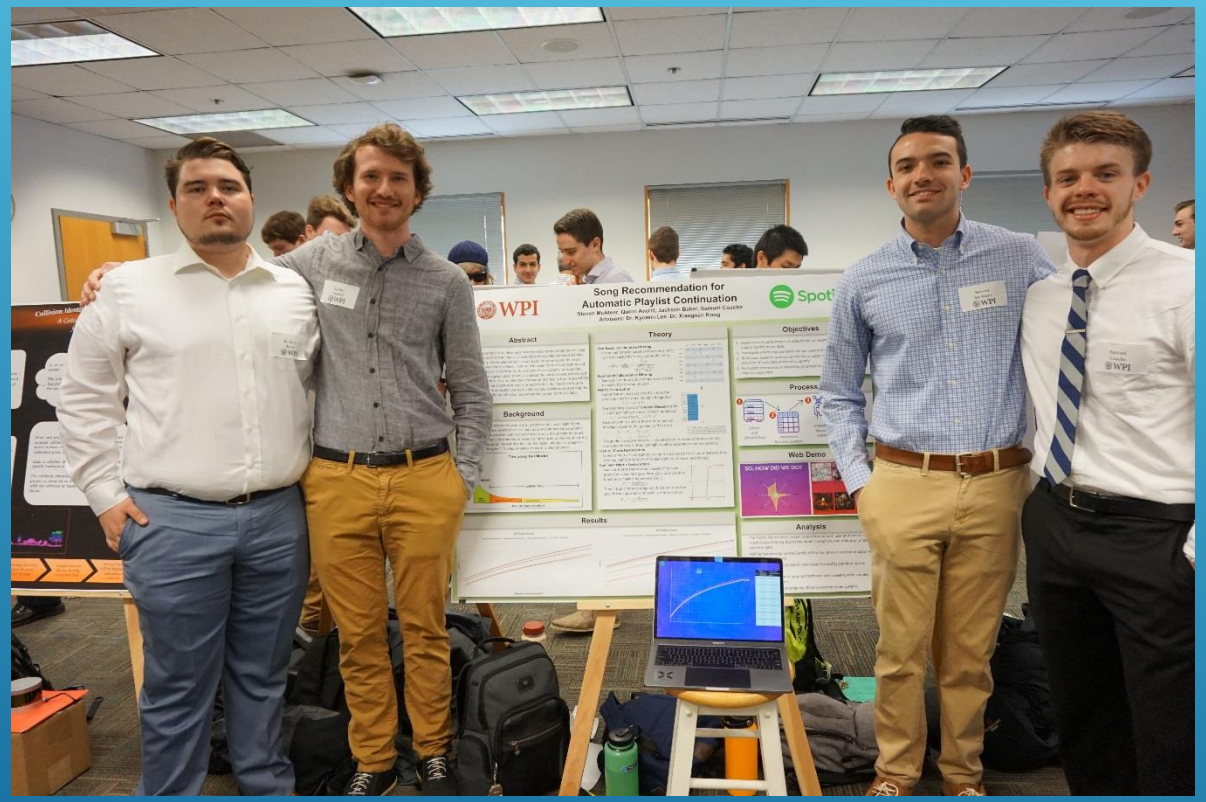
WPI
Song Recommendation for
Automatic Playlist Continuation
Abstract
Theory
Objectives
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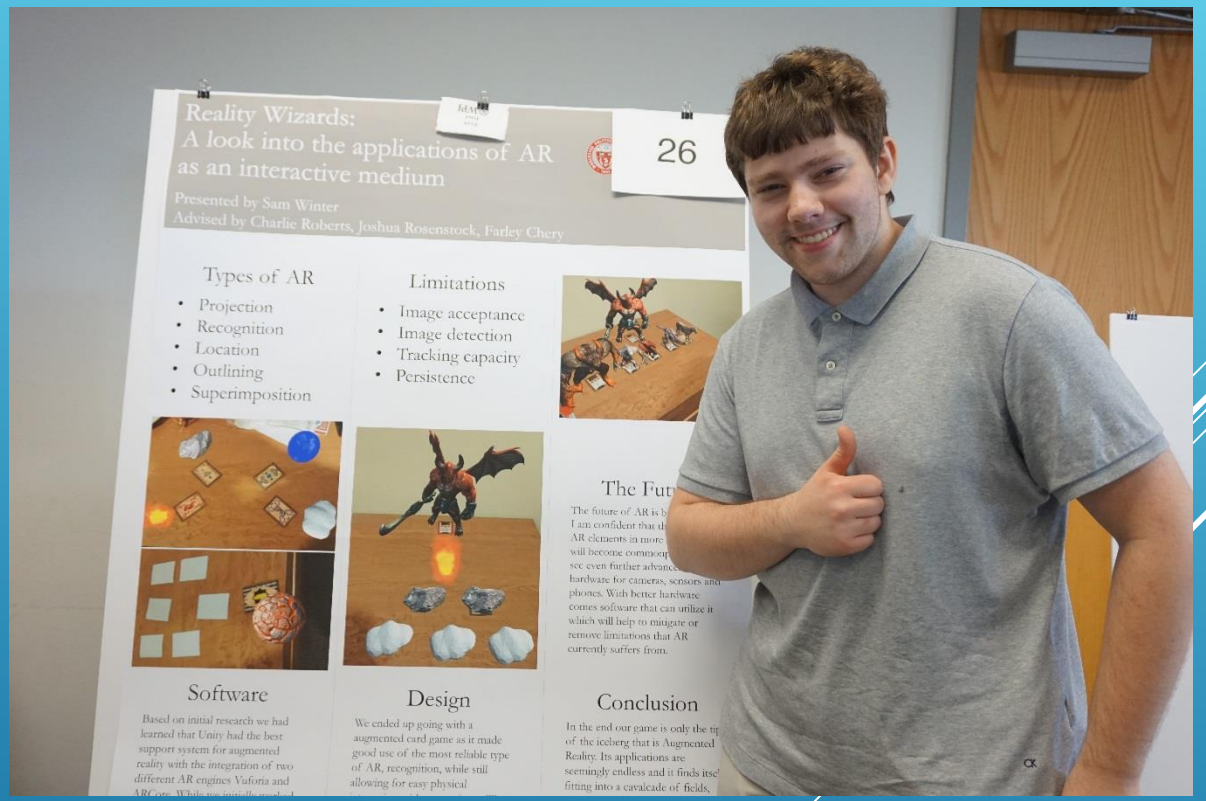
Process
Web Demo
Results
Analysis

WPI
WPI


Reality Wizards:
A look into the applications of AR as an interactive medium
Presented by Sam Winter
Advised by Charlie Roberts, Joshua Rosenstock, Farley Chery
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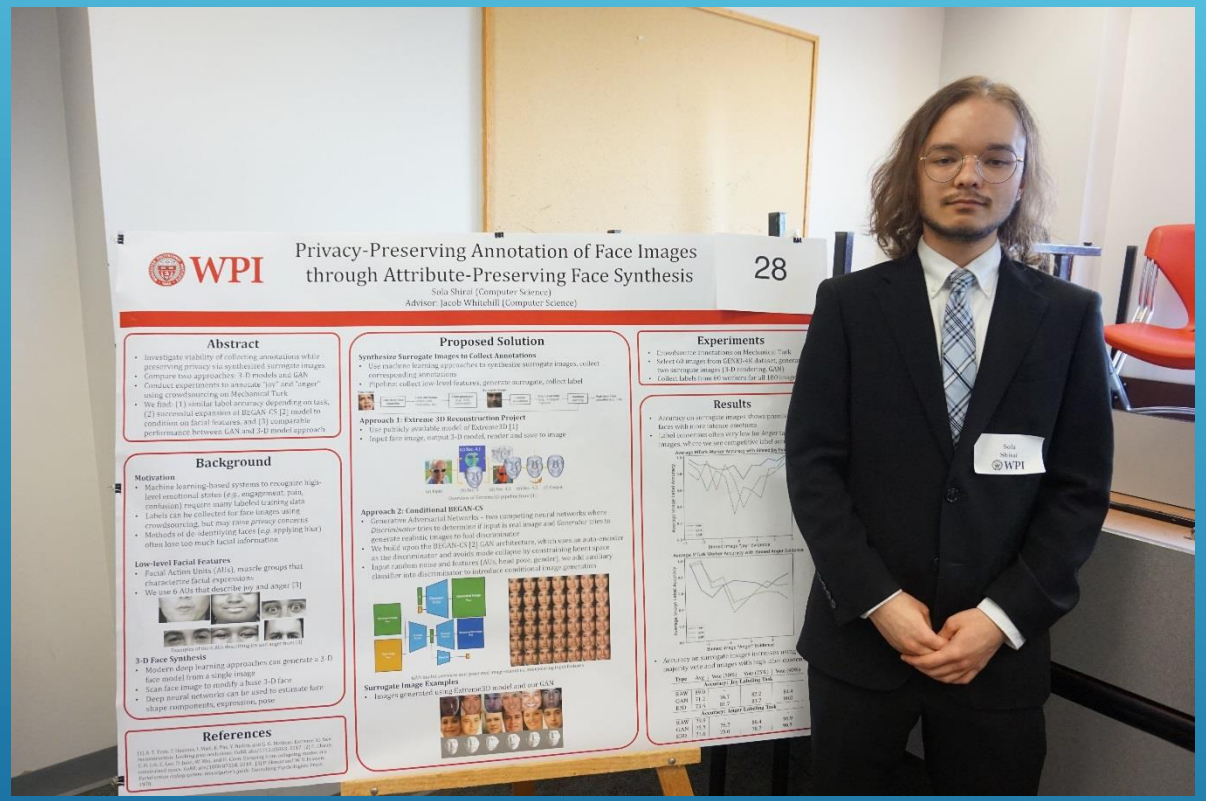
Types of AR
Projection
Recognition
Location
Outlining
Superimposition
Limitations
Image acceptance
Image detection
Tracking capacity
Persistence
Software
Design
Conclusion


WPI
Privacy-Preserving Annotation of Face Images through Attribute-Preserving Face Synthesis
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Sola Shirai (Computer Science)
Advisor: Jacob Whitehill (Computer Science)
Abstract
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Experiments
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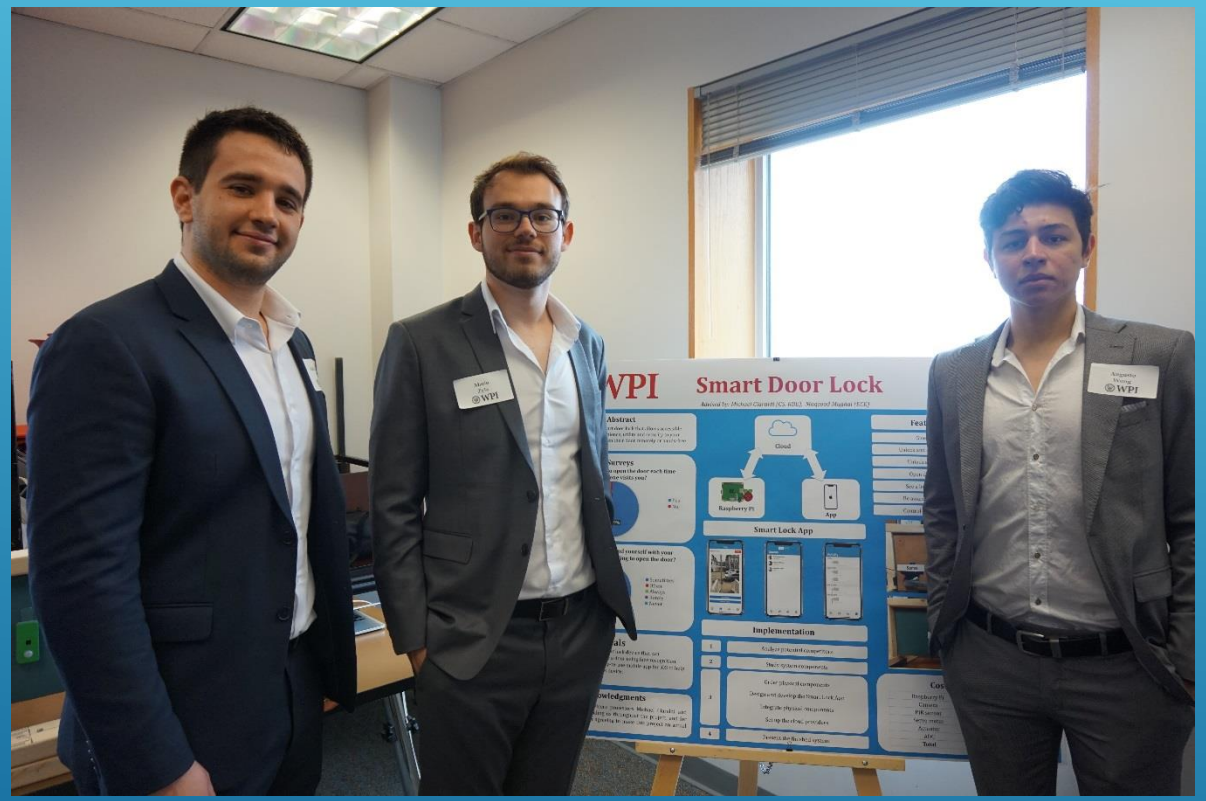
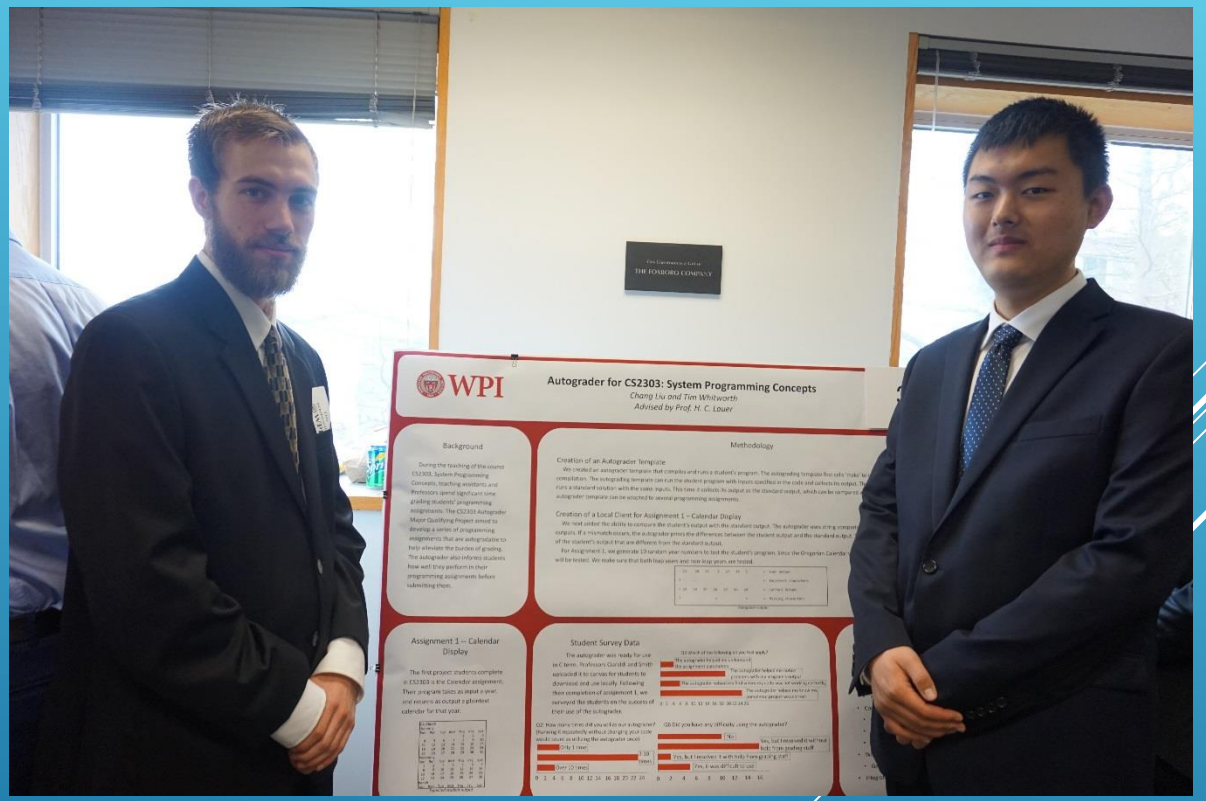
WPI
PMKS+: Recreating a Legacy Application


WPI
Smart Door Lock
Abstract
Cloud
Raspberry Pi
App
Smart Lock App
Implementation


WPI
Autograder for CS2303: System Programming Concepts
Chang Liu and Tim Whitworth
Advised by Prof. H. C. Lauer
Background
Methodology
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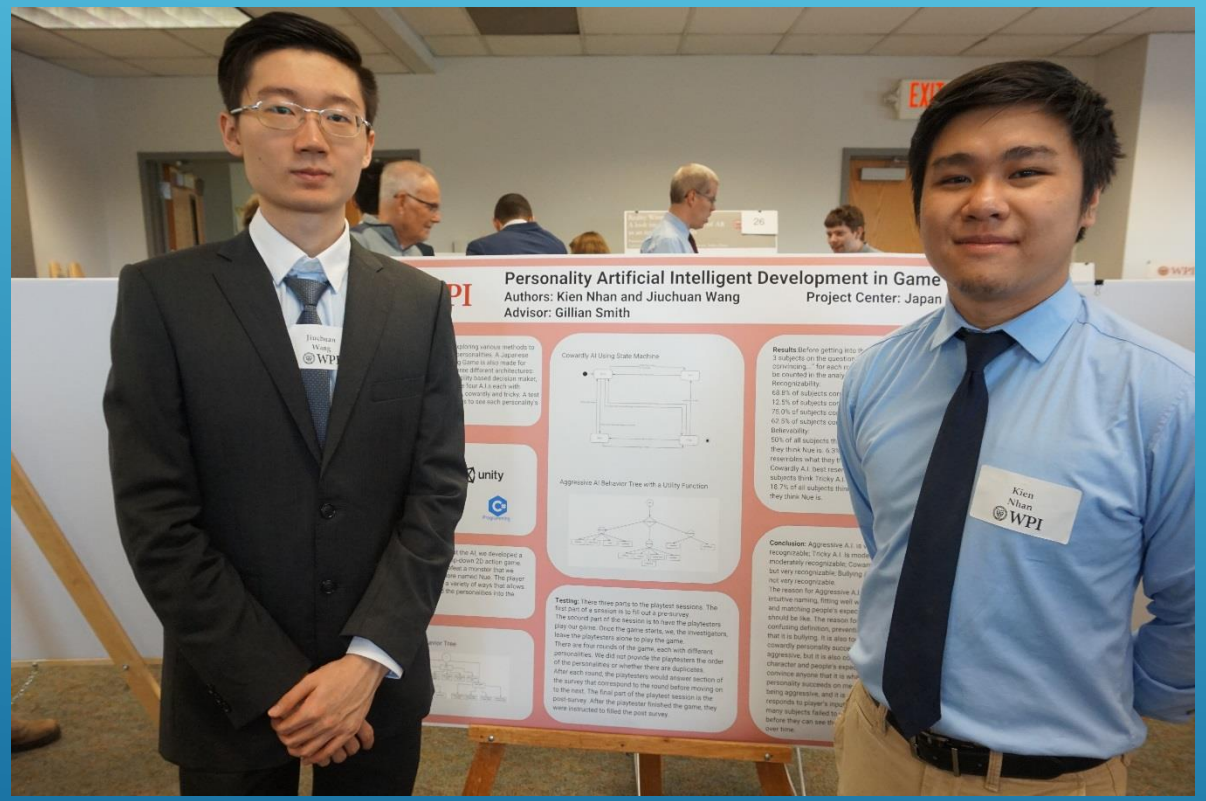
Student Survey Data


Personality Artificial Intelligent Development in Game
Authors: Kien Nhan and Jiuchuan Wang
Advisor: Gillian Smith
Project Center: Japan
Kien Nhan
WPI

WPI
The Design and Implementation of Looping
Abstract
Design
Objectives
Example Code
Test Cases
Acknowledgments
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Neural Neural Network
Ryan Racine (CS), Karsten Roberts (CS), Isaac Woods (CS)
Advisor: Professor Xiangnan Kong (CSDS)
Co-Advisor: Professor Tian Guo (CSDS)
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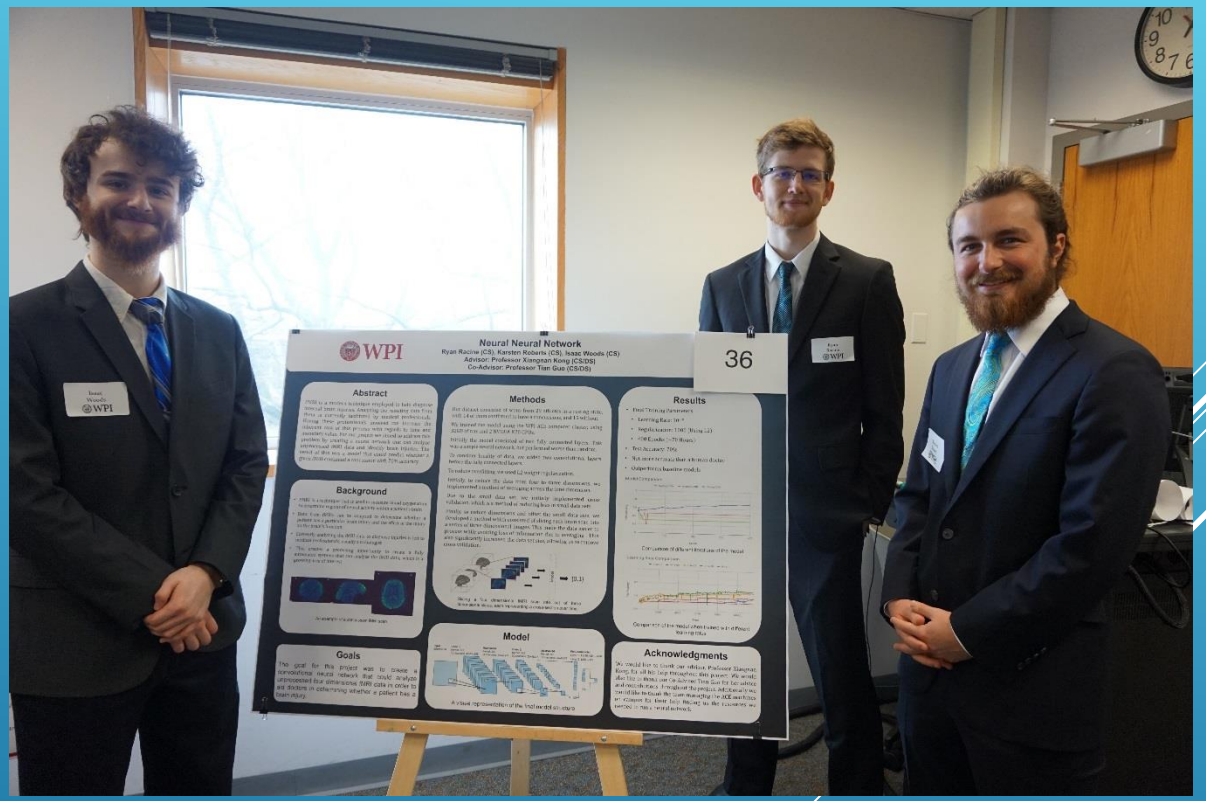
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Neural Neural Network
Ryan Racine (CS), Karsten Roberts (CS), Isaac Woods (CS)
Advisor: Professor Xiangnan Kong (CSDS)
Co-Advisor: Professor Tian Guo (CSDS)
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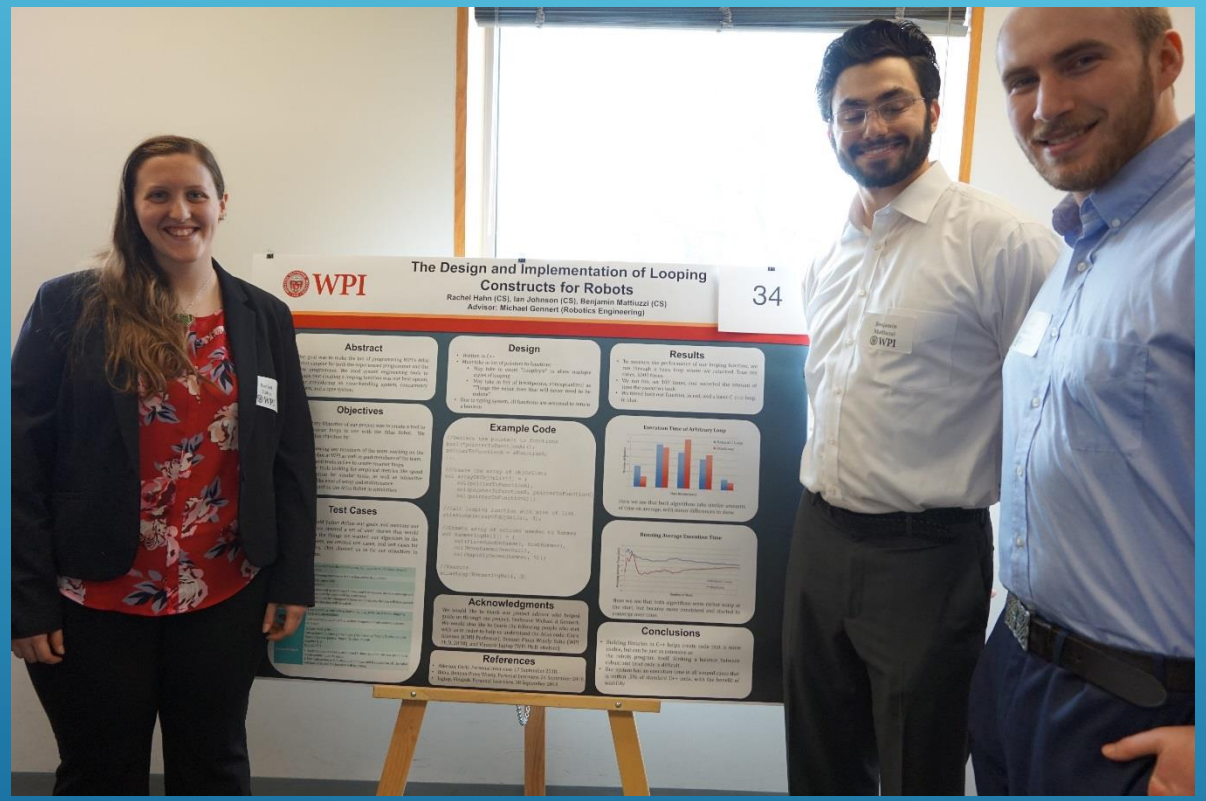
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The Design and Implementation of Looping Constructs for Robots
Rachel Hahn (CS), Ian Johnson (CS), Benjamin Mattiuzzi (CS)
Advisor: Michael Gennert (Robotics Engineering)
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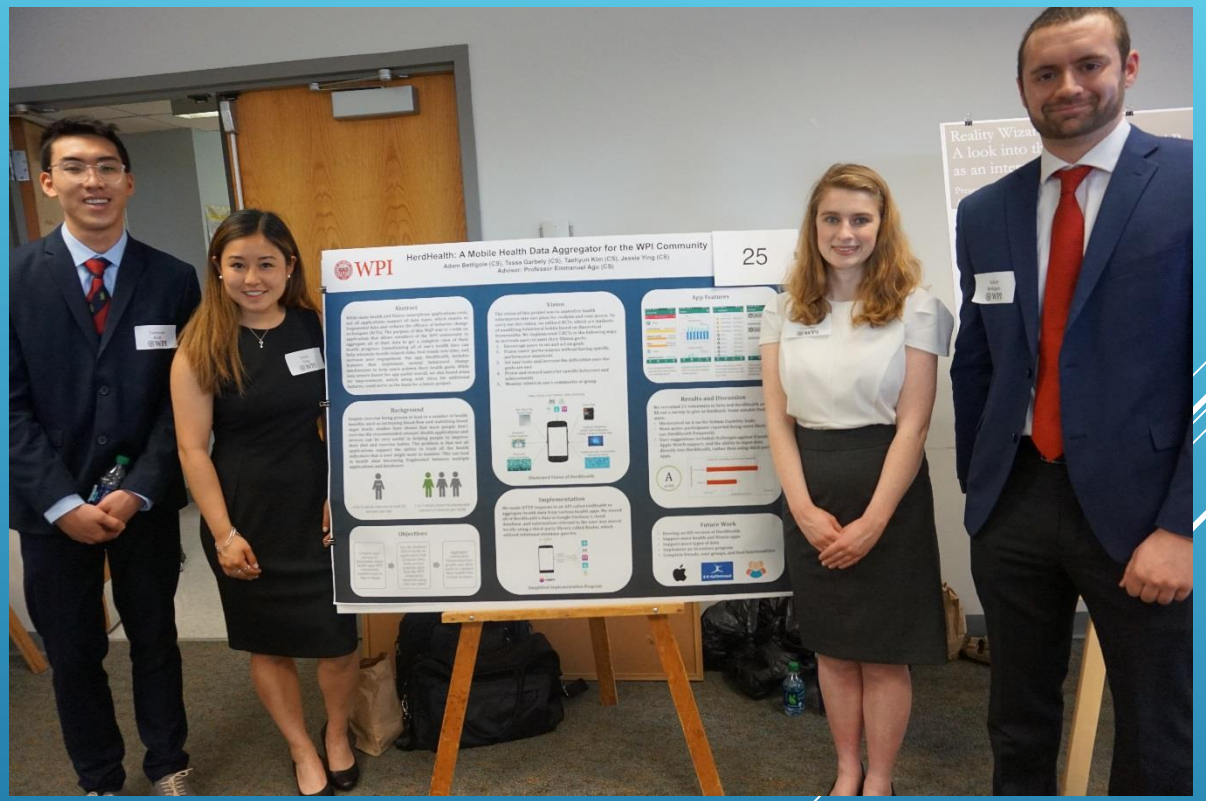
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HerdHealth: A Mobile Health Data Aggregator for the WPI Community
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ConText, A FAERS Analysis Tool
U.S. FOOD & DRUG
Our Project
~17,000,000 Reports
Project Impacts
ConText Web Interface
Case Summary
Report Table
Report Text
Stack Design
Python
Javascript
Evaluation

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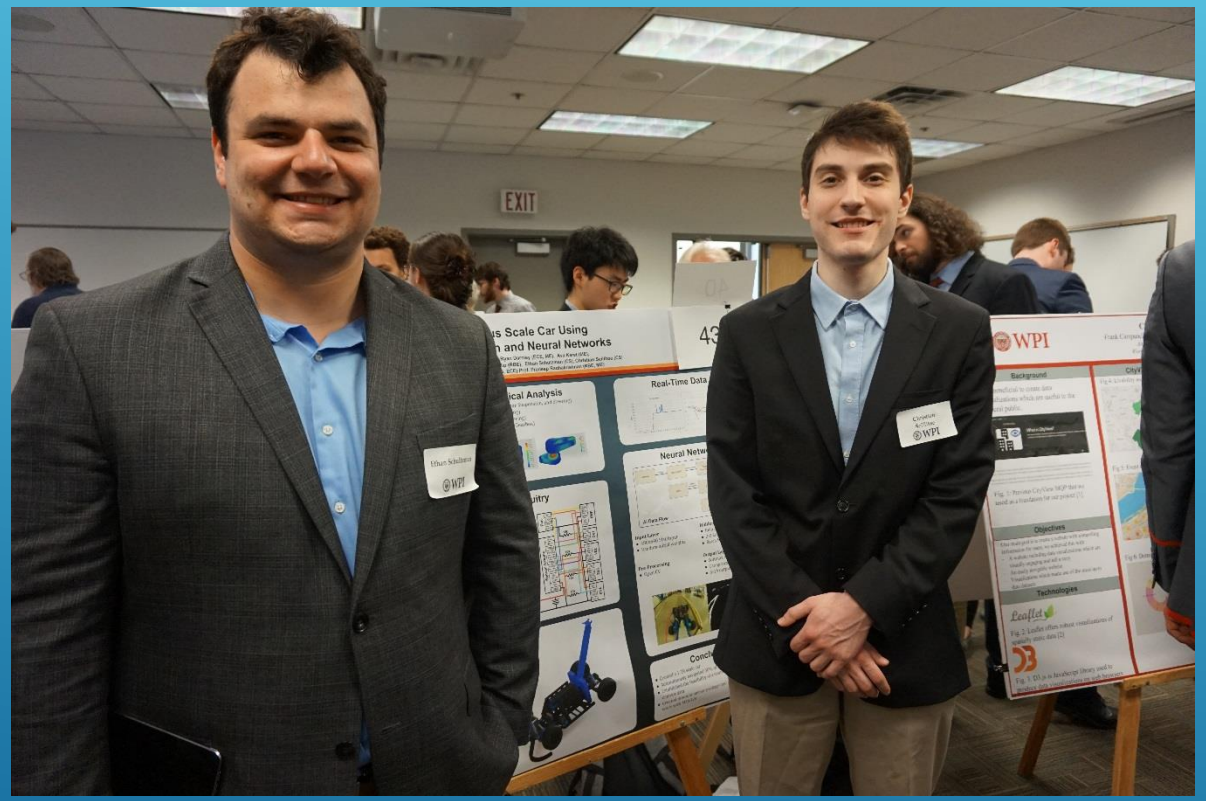
RMC 2019


EXIT
WPI
Real-Time Data
Objectives
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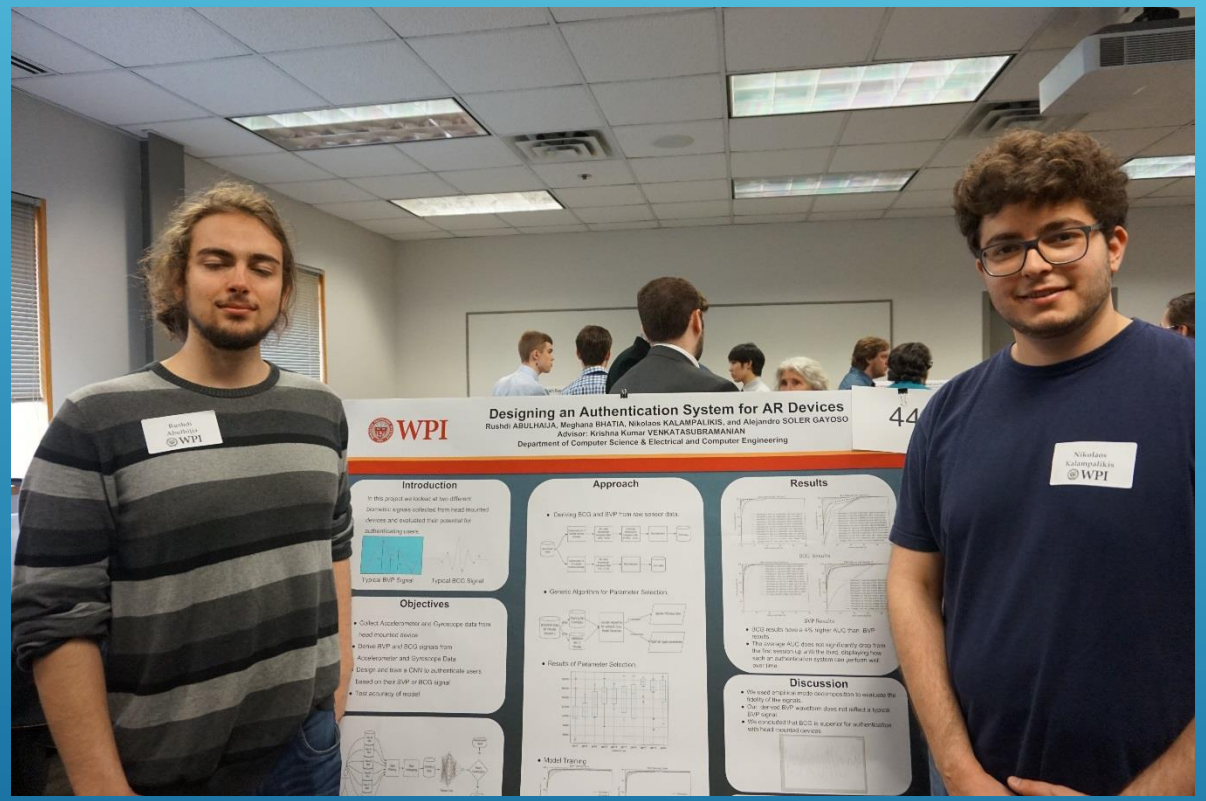
Designing an Authentication System for AR Devices
Rushdi ABULHAIJA, Meghana BHATIA, Nikolaos KALAMPALIKIS, and Alejandro SOLER GAYOSO
Advisor: Krishna Kumar VENKATASUBRAMANIAN
Department of Computer Science & Electrical and Computer Engineering
WPI
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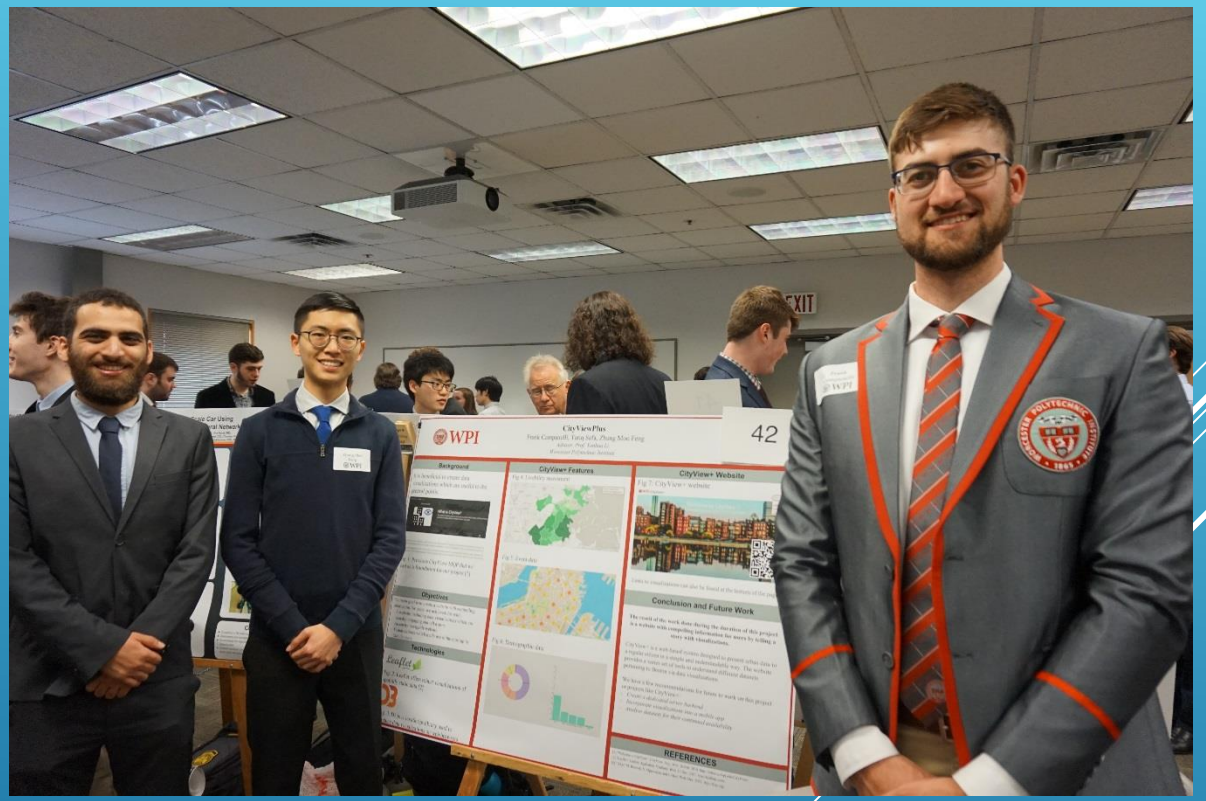
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REFERENCES

Design of a Smart Robotic Piano-Playing Arm
Anthony Topper (CS)
Thomas Maloney (RBE & HU)
WPI
Prof. Xiangnan Kong (CS)
Prof. Scott Barton (RBE & HU)
Abstract
Objectives
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Objective 3
Auditory Data
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WPI
Performing Binary Classification of Contest Profitability for DraftKings
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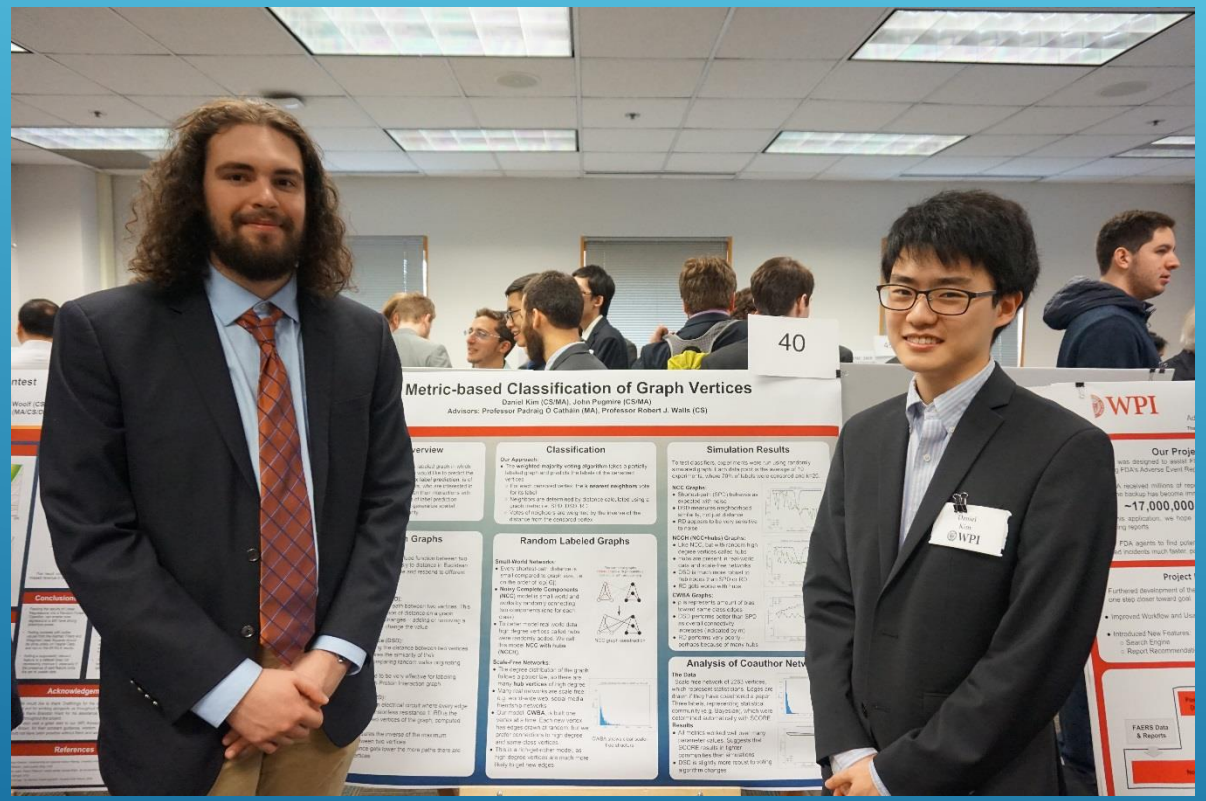
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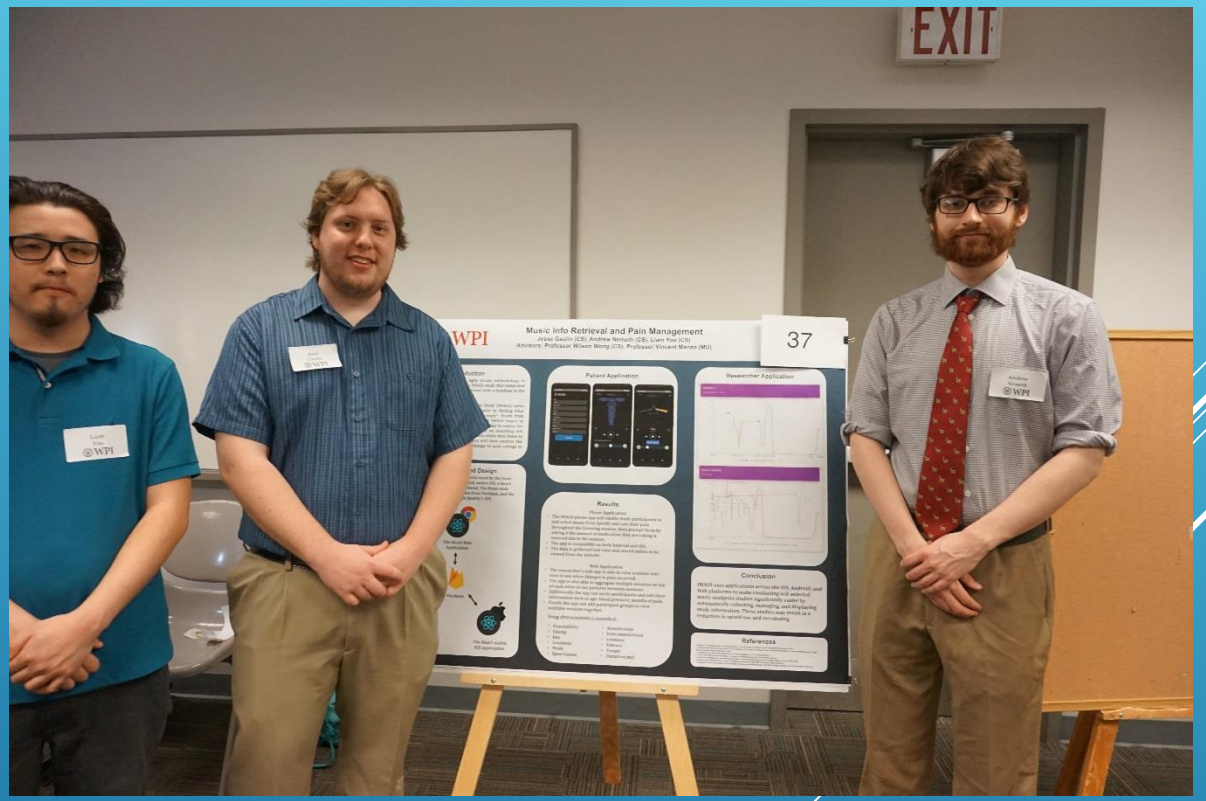
Metric-based Classification of Graph Vertices
Daniel Kim (CS/MA), John Pugmire (CS/MA)
Advisors: Professor Padraig Ó Catháin (MA), Professor Robert J. Walls (CS)
Classification
Simulation Results
Random Labeled Graphs
Analysis of Coauthor Netw
WPI


EXIT
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Music Info Retrieval and Pain Management
Patient Application
Researcher Application
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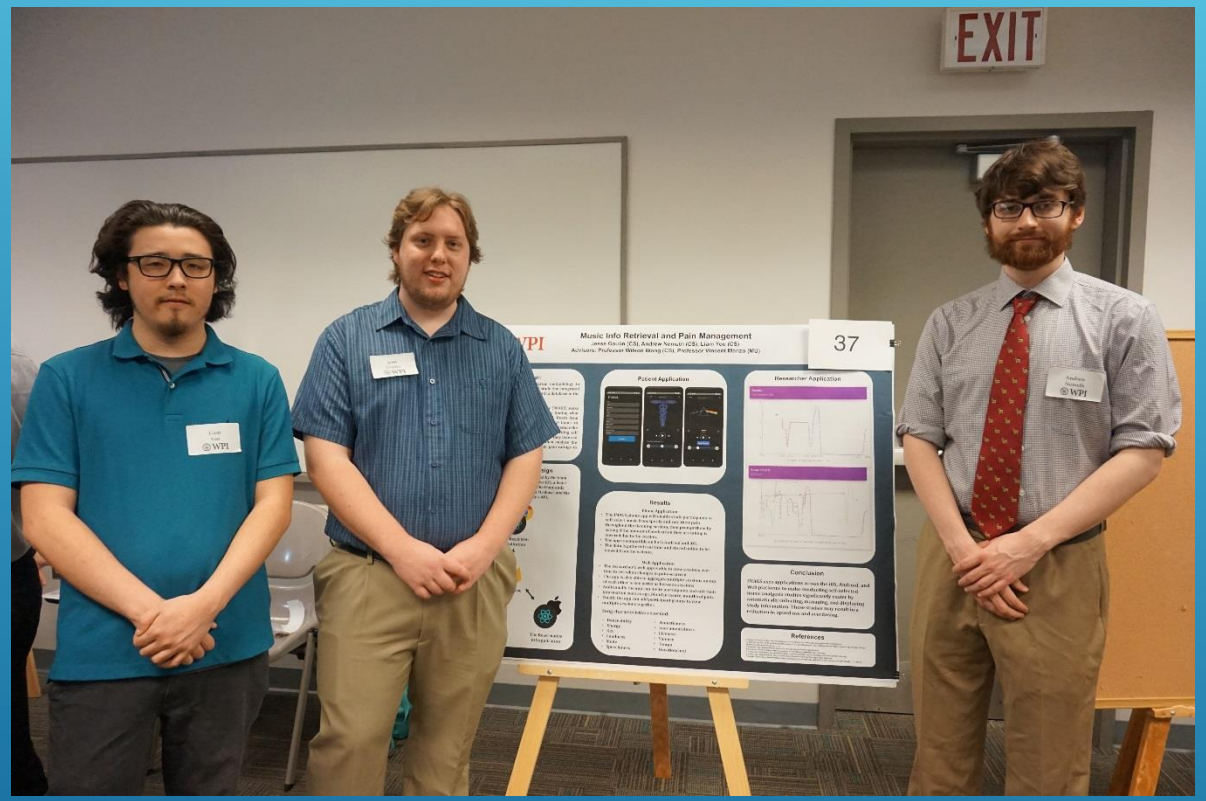
EXIT
Music Info Retrieval and Pain Management
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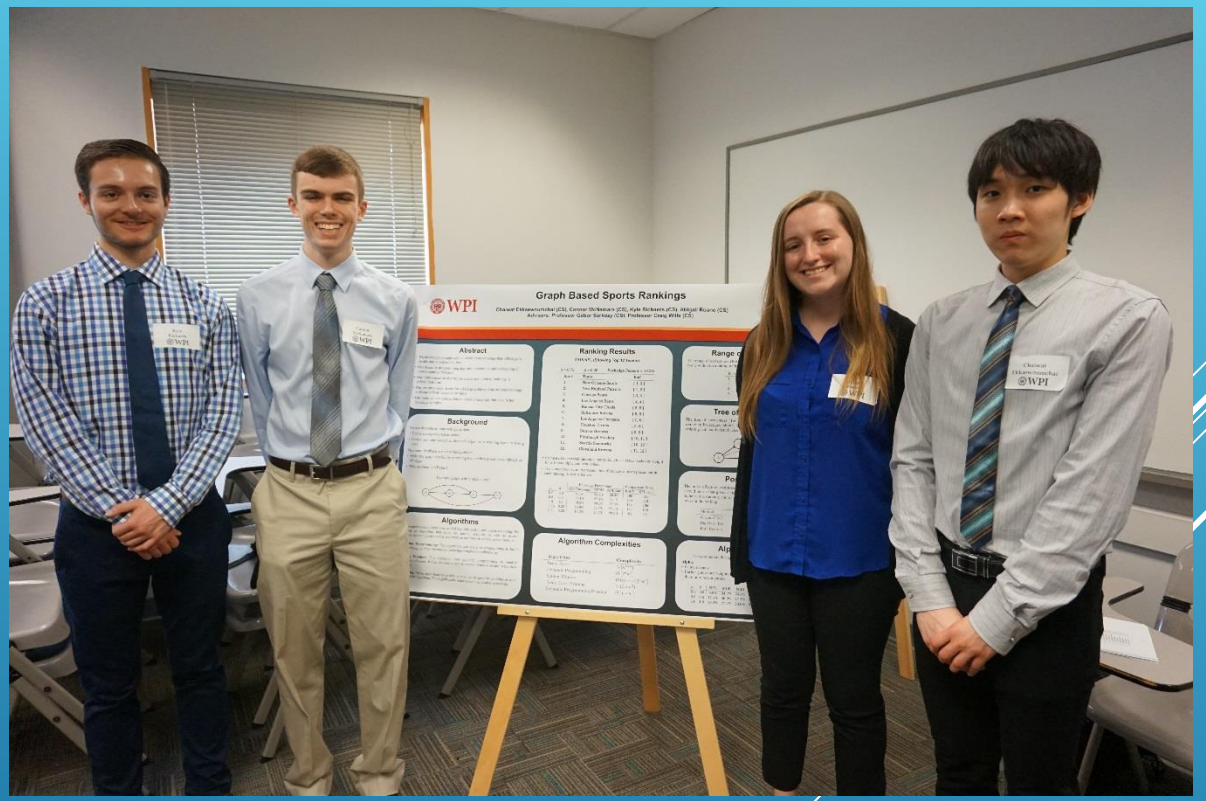
WPI
Graph Based Sports Rankings
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Ranking Results
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Algorithm Complexities