Ubiquitous and Mobile Computing
CS 403x: StudentLife

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College is hard...

- **Unique blend**
  - Lack of sleep
  - Tests/quizzes
  - Homework
  - Loneliness

- **Impact**
  - Academic Performance
  - Psychological well-being
How mobile apps can help

- Monitoring of psychological well-being
- Continuous sensing
  - Little user involvement
- Convenient surveys
- Identify general stress patterns
  - Term life cycle
- Pinpoint factors that increase depression/stress
Potential Usages

- Student planning and stress management
- Improve Professors’ understanding of student stress
- Improve Administration’s understanding of students’ workload
Related Work

- Technical
  - Friends and family study
  - Reality Mining
  - Senior monitoring

- Psychological
  - Health Buddy
  - Health-related academic performance
  - Ginger.io
What makes StudentLife unique?

- Continuous sensing
- Targeted at college students
- Larger combination of metrics
Program Design

- Entry and exit surveys
- 8 MobileEMA and PAM quizzes per day
- Automatic Sensing
- Activity Detection
- Conversation Detection
- Sleep Detection
Implementation – App Design

Figure 2. StudentLife app, sensing and analytics system architecture.
Implementation – Metrics

- Patient Health Questionnaire (PHQ-9)
- Perceived Stress Scale
- Flourishing Scale
- UCLA loneliness survey
Implementation – Study Structure

- 60 Students begin
  - All enrolled in CS65 Smartphone Programming class
  - Lose 12 students during study
  - 30 undergrad/18 graduate level
  - 38 male/10 female
- Given incentives for most data collection at 3 and 6 week mark
- 10 week data collection
Findings

- Fewer conversations or co-locations correlate to a higher chance of depression
- Stressed students are more likely to experience depressive symptoms
- More social interactions correlate to higher flourishing and higher GPA scores and lower PSS
- More sleep correlates to lower PSS scores
Findings (cont’d)

- Less sleep correlates to a higher chance of depression
- Students that are less active and therefore less mobile are more likely to be lonely and have lower GPAs
- No correlation between class attendance and academic performance
- Positive affect and activity duration plummet as term progresses
Findings (cont’d)
Limitations/Trade Offs

- Sample Selection
  - Voluntary - CS65 Smartphone Programming class
- User participation
  - Surveys
  - Carrying phone
  - Disinterest (Longitudinal study, EMA annoyance)
- Lost participants
- Sleep measurement inaccuracy
  - Naps
Looking Forward and Discussion

- Expansion to Northeastern and Utexas – Austin
  - Semester vs 10 week term
  - Similar results?
- Explore academic impact of not attending classes
- Privacy concerns
Questions
References

- http://i.imgur.com/YdmzDel.jpg