AUGMENTED REALITY UI/UX

Contact: Dr. SeungJun Kim (sjunikim@cs.cmu.edu)

The goal of this project is to brainstorm promising AR applications such as games like Pokemon Go or more practical real-world applications and their use case scenarios. We will identify 5~10 use case scenarios, and then present UI/UX evaluation methods for each of the scenarios. If interested, please visit and fill out - https://goo.gl/forms/JecmD3jux2tvUWaP2

Student requirement: Any related skills and experience - e.g., illustrator, photoshop, scenario development, making demo videos

CYBER-LEARNING

Analysis of Time-Series Sensor Data from a Cyber-Learning Experiment

Contact: Dr. SeungJun Kim (sjunikim@cs.cmu.edu)

The goal of this project is to support student learning by adapting computer-based tutoring to individual learning phases and real-time capabilities. We already have a large amount of sensor data streams (e.g., eye tracking states, physiological responses) collected from a human-subject experiment in Education and will perform a series of statistical analysis and create real-time models to predict student’s learning states with machine learning algorithms. If interested, please visit and fill out - https://goo.gl/forms/JecmD3jux2tvUWaP2

Student requirement: programming experience - e.g., SPSS / Python and Java libraries for machine learning.

DESIGN-BASED LEARNING RESEARCH, CITIZEN SCIENCE, INFORMAL SCIENCE EDUCATION

Contact: Lauren Allen < lallen@andrew.cmu.edu>

The Learning Media Design Center is leading an interdisciplinary team of entomologists, educators, software engineers, designers, and learning scientists in identification practices in citizen-based water quality monitoring projects. Undergraduate research assistants on this project, “Learning to See, Seeing to Learn” will participate in qualitative learning science data collection and analysis, including transcription of audio-recorded data, analysis of transcripts and screencast data, and design-based research to support the development of an online teaching collection aquatic macroinvertebrates
HCII Research/Independent Study
Fall 2016

(see our IxDA award-winning prototype at: www.macroinvertebrates.org). Data analyses will be translated into design challenges, probes, and activities for a codesign workshop taking place in March 2017.

We are looking for an enthusiastic, detail-oriented collaborator and critical thinker looking for research experience in social sciences, design based learning research, HCI user research. A background and interest in entomology, informal science education, and citizen science is desirable.

The HCII faculty mentor will be Marti Louw, Director of the Learning Media Design Center, and the student(s) will be working closely with postdoctoral research associate Dr. Lauren Allen. Successful candidates will need to obtain standard Pennsylvania Act 153 background clearances and pass an IRB certification module to work with human subjects data. This is a NSF-funded Research Experience for Undergraduates (REU) part-time position (up to 20 hours/week).

Interested students should email their resume and description of experience to Lauren Allen <lallen@andrew.cmu.edu>.

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EDUCATION / DATA MINING

Using Multi-Modal Data Streams to Enhance Understanding of Student Learning
Contact: Ran Liu <ranliu@cmu.edu>

The increasing use of educational technologies in classrooms is producing vast amounts of process data that capture rich information about learning as it unfolds. The data that are automatically logged by these technologies is quite rich and has been useful towards understanding student learning processes. However, they do not capture all of the important affective and contextual phenomena that are relevant to learning. A major challenge in incorporating more contextually rich data streams into models of learning is collecting and integrating data from different sources and at different grain sizes.

We have developed methods that streamline both the collection and integration of multi-modal data streams (audio, screen video, student-facing webcam video) in addition to computer-logged data of students using EdTech in their classrooms. We’ve used these methods to collect and integrate audio, dialogue, and various sources of video computer-logged data across two studies – one of 4th and 5th graders learning about fractions through computer-supported collaboration, and one of students individually engaging with a Chemistry “Virtual Lab” tutor.

We are looking for a student to help us apply our tools and data towards a new project and/or work on further tool development. An applied project would involve using our
rich multi-modal data streams, in conjunction with the tools we have developed, to
discover and understand interesting student learning behaviors and phenomena. Some
applied project ideas include, but are not limited to, analyzing on vs. off task behavior,
student affect during educational technology use, and relating features of student
collaborative dialogue to learning outcomes.

Tool development opportunities involve incorporating more data stream linkage and
analysis capabilities and helping make our tools more user-friendly for non-
programmers. Python programming experience is a plus if the student would like to
work on tool development.

The HCII faculty mentor will be John Stamper (jstamper@cs.cmu.edu), and the student
will be working closely with Ran Liu, a postdoctoral research associate.

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**EDUCATION GAME DEVELOPMENT**

**Decimal Point**

**Contact:** Dr. Bruce McLaren (bmclaren@cs.cmu.edu)

This independent study provides an opportunity for a student to program an
educational game, using an existing game as the design template. The existing game,
developed in Flash, is called Decimal Point and has been successfully used in classrooms
to help sixth grade students learn decimals. A review of Decimal Point can be found
here: [https://www.hcii.cmu.edu/research/decimalpoint](https://www.hcii.cmu.edu/research/decimalpoint). The student will, first, review
the Decimal Point game, including its design, development, and research
results. Second, the student will develop a general framework, in HTML5 and JavaScript,
for all of the mini-games within Decimal Point (we currently have such a framework in
Flash). Third, the student will recreate 3-5 Decimal Point mini-games in HTML5 and
JavaScript. Finally, the student will write a report, describing Decimal Point, the
framework, and details in how they re-implemented the 3-5 mini-games.

Student Requirements: Knowledge of HTML5 and JavaScript

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**EDUCATION / LEARNING TECHNOLOGIES / DATA MINING**

**Title:** Closing the Loop on Discoveries from Educational Data Mining

**Contact:** Ran Liu (ranliu@cmu.edu)

As the use of EdTech becomes more ubiquitous, technologies are producing an
enormous amount of learning process data. The emerging field of Educational Data
Mining, cutting across disciplines such as cognitive science, machine learning, and
educational psychology, seeks to analyze and model these data towards the ultimate goal of improving learning outcomes. While this field has already produced a rich set of analysis techniques and models, its findings remain largely theoretical with respect to improving learning efficiency and outcomes. Few of them have been reapplied to improve educational technologies themselves. Our current project tests whether improving educational technologies based on data-driven discoveries leads to measurable learning outcomes.

We are seeking a student to work on one or a mix of the following: data mining (requires coding experience in either R or Python and preferably some experience with machine learning and/or statistical modeling), educational technology implementation (requires some basic coding experience and willingness to learn quickly; familiarity with Cognitive Tutor Authoring Tools and/or HTML5 is a plus), or helping run and analyze experiments that will take place at Montour High School (will need to obtain standard Pennsylvania Act background clearances and pass an IRB certification-training module).

This is a good opportunity for students to gain experience with various aspects of educational technologies, including design/implementation, deployment, and data analyses/modeling.

The HCII faculty mentor will be Ken Koedinger (koedinger@cmu.edu), Director of LearnLab (http://learnlab.org), and the student will be working closely with Ran Liu, a postdoctoral research associate.

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**EDUCATION RESEARCH**

**PeerPresents (Web Developer)**

Jessica Hammer / OH!Lab

Contact: Amy Shannon (amyshann@andrew.cmu.edu)

We have developed an online tool that lets students provide real-time feedback to their peers during class presentations. We are looking for a part-time developer to help us iterate the tool. Our development environment includes Node.js, MongoDB and mongoose, and the Jade HTML template engine.

We are looking for a strong programmer who can handle both front- and back-end development. Mobile development experience is a plus.
GAME RESEARCH

SCIPR: Sensing Curiosity in Play and Responding (Data Analyst)
Jessica Hammer / OH!Lab
Contact: Alexandra To (aato@andrew.cmu.edu)

We have designed games to help provoke curiosity in middle-school students, and collected data about their play experiences. We are looking for someone with quantitative data analysis skills to help explore and analyze this large, diverse dataset. Qualitative research experience a bonus but not necessary.

We particularly welcome applications from students with a background in social science or education.

GAME RESEARCH

SCIPR: Sensing Curiosity in Play and Responding (Unity Programmer)
Jessica Hammer / OH!Lab
Contact: Alexandra To (aato@andrew.cmu.edu)

We have designed three tabletop games that we would like to translate to Unity. We are primarily interested in capturing and manipulating game state, not developing GUI. If you are interested in AI, there will be the option to work on developing an AI player for one or more games.

You should have experience in Unity and/or C# programming, or be willing to learn based on experience in C/C++.

GAME RESEARCH

Games for Health (Game Feature Analyst)
Jessica Hammer / OH!Lab
Contact: Jessica Hammer (hammerj@cs.cmu.edu)

We are studying what features game designers think are important in games for health, so that we can develop better analytical and design tools. You will be reviewing the literature on automatic detection / analysis of game features (e.g. can we automatically detect whether a game is first person or isometric), and proposing techniques for detecting and analyzing features we determine as a team to be a) under-studied and b) important.
Students should have experience playing games, and a strong technical background. Experience doing literature reviews is a plus.

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**GAME RESEARCH**

The Land of a Thousand Kings (Playtest Coordinator)
Jessica Hammer / OHI Lab
Contact: Jessica Hammer (hammerj@cs.cmu.edu)

We are developing a game that helps players get to know each other better in a relatively short period of time. You’ll be coordinating playtests of the game; this includes recruiting playtesters, helping develop playtest materials, observing the playtests, and analyzing playtest data.

We particularly welcome applications from students with a background in social science, education, or design. Experience with tabletop role-playing games is a plus.

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**HCI INDEPENDENT STUDY/RESEARCH ASSISTANT WORK**

Teen Financial Literacy
Contact: John Zimmerman (johnz@cs.cmu.edu)

This project focuses on developing and assessing two tools that support parents and teens in discussing financial values. The first tool is a suite of mobile games played between parents and teens. Parents test teens, asking them questions about how much things cost. The second tool allows teens to take out loans from their parents and for the parents to charge interest. This tool focuses on planning around how the teen might pay back the loan.

Previously we conducted fieldwork on parents and teens, designed the tools and games, and started developing some prototypes. We are looking for a small team of students that can help finish prototyping these systems and help assess how parents and teens use and make sense of them.

This project can be done for pay or for independent study credit.

We are looking for students that have experience with JavaScript and CSS. We also would like students that have experience recruiting participants and running assessments of digital tools.

If you are interested, please send the following to me <johnz@cs.cmu.edu>:
Urinary incontinence is a widespread problem that affects millions of elderly adults. This condition leads to people staying home for fear of an “accident,” increased injury from dashing to a bathroom in the middle of the night, and billions of dollars spent on adult diapers and pads.

Bladder Matters is a prototype iOS/Android application that addresses three needs:

1. it provides a diary for adults to record activities relevant to urination
2. it automatically detects and logs urination events
3. it helps people avoid incontinence

This application has a prototype implementation and a backend service that supports it.

Project Goal
We want to assess the effectiveness of Bladder Matters and better understand its potential impact on people’s quality of life. We plan to conduct a field study, recruiting elder in the Pittsburgh area, provide them with the app, and interview them about how it does or does not impact their lives. Output of this study should include new insights, concerns, and detailed opportunities for improving the design

We are looking for students with an interest in UX who have an affinity for talking to/interviewing people, conducting field studies, and envisioning how technology might best fit into people’s lives.

This project can be done for independent study credit.

If you are interested, please send the following to me <johnz@cs.cmu.edu>:

• short description of your relevant experience
• resume
• a list of the times you are free to regularly meet over the fall semester
Balanced Campus
Contact: Afsaneh Doryab (adoryab@cs.cmu.edu)

We have an exciting project to use passive and automatic sensing data from smartphones, smart watches, and other wearable devices to assess students’ physical and mental health (e.g., depression, loneliness, stress), academic performance (grades across all their classes, term GPA and cumulative GPA) and behavioral trends (e.g., how stress, sleep, visits to the gym, etc. change in response to college workload -- i.e., assignments, midterms, finals -- as the term progresses). Students in this project will develop applications to 1) automatically collect physiological and behavioral data from devices, 2) visualize, and 3) analyze the data.

Required qualifications include programming skills in Java, JavaScript, Python, Android and/or IOS development. Experience and interest in data analytics (machine learning, data mining, statistics, and visualization techniques) are preferred. We welcome students who are curious about research problems, are energetic, and learn fast.

HEALTH & SOCIAL COMPUTING

Redesigning Online Health Support Groups
Contact: Robert Kraut robert.kraut@cmu.edu

A high percentage of people with serious diseases participate in online health support groups to exchange informational and emotional support. We are working with the American Cancer Society to redesign their Cancer Support Network (CSN), the world’s largest online support environment for cancer patients, to improve experiences on the site and make it more effective.

This project will help improve cancer survivorís quality of life by applying your skills in interaction design, usability analysis, social science research, machine learning or programming. This semester you will help design, build, deploy and evaluate interventions to improve the site. You will have access to communication exchanged on the site, surveys of CSN users and the ability to conduct interviews with users and remote usability tests of new designs. You will work collaboratively with PhD students, who are building back-end algorithms recommending content and relationships to people on the site.
This project available for pay for undergraduate students with US citizen or permanent resident status or for independent-study credit for both undergraduates and masters students. If you are interested, contact Robert Kraut <robert.kraut@cmu.edu> with the following:

GPA
Resume
Short description of your relevant experience

INTELLIGENT TUTORING SYSTEMS

Contact: Jack Mostow (mostow@cs.cmu.edu)

Help Carnegie Mellon’s $15M Global Learning XPRIZE team develop, remotely user-test, data-mine, and improve RoboTutor, an Android tablet app in English and Swahili for children ages 7-10 who have little or no access to schools in developing countries to learn basic reading, writing, and numeracy without adult assistance. See cmurobotutor.org for exciting details.

Student requirements: Please follow instructions at www.cmu.edu/scs/robotutor/join-the-team ASAP if interested.

INTERACTIVE DRIVER INTERFACES IN CARS

Contact: Dr. SeungJun Kim (sjunikim@cs.cmu.edu)

The goal of this project is to design intelligent driver workload managers that enable drivers to safely interact with interruptive intervention of cyber information space in cars. We will design and build a simulated driving test-bed that helps experimenters perform studies on human-vehicle interaction and automotive user interfaces. Engineering or programming tasks can include the interoperation of an open driving simulator, a motion platform, a wheel joystick, and an eye tracker, as well as the design of simulated driving environments. If interested, please visit and fill out - https://goo.gl/forms/JecmD3jux2tvUWaP2
Student requirement: programming experience - e.g., Java / Processing / Android
SMARTPHONES

MessageOnTap: Intelligent Agents for Streamlining Communications on Messaging Apps
Contact: Jason Hong (jasonh@cs.cmu.edu)

MessageOnTap is an intelligent agent we are building for offering auto-responses and fast responses to messages on your smartphone. For example, if you get a text message, your smartphone might check your location data or calendar and auto-respond “I’m driving, will get back to you soon” or “I’m in a meeting right now”. As another example, a friend might ask “Can you send me the pictures at the park last weekend”, and your smartphone might show you a preview window of your photos, making it very fast and easy to respond.

We’re looking at improving the intelligent agent in a number of ways, including managing privacy issues with auto-responses, making the agent work with other messaging apps, and offering crowd analysis of messages to improve responses.

SMARTPHONES

Inferring User Interests and Activities based on Geotagged Photos and Tweets
Contact: Jason Hong (jasonh@cs.cmu.edu)

How much can your smartphone infer about you based on your photos and tweets, if all it had were your geotags? Can it figure out that you like baseball, apples, or Taylor Swift? Can it figure out where you went on vacation, what foods you like, where your friends live, and what kinds of activities you like doing?

This project will involve (a) extracting a person's geotags from smartphone photos, (b) crawling metadata from Yelp, Flickr, Foursquare, Wikipedia, and other places to build a World Knowledge Graph that describes what those places are and what people do there, and (c) combining these two to build a model of a person's interests and activities. Looking for 2-3 people with strong dev skills for this work.

Ideal Skills: Some subset of Android programming, web programming, databases, machine learning, information visualization
SMARTPHONES

Urban Analytics for Neighborhoods
Contact: Jason Hong (jasonh@cs.cmu.edu)

If you just moved to Pittsburgh, you probably had a bunch of questions about what neighborhood to live in. How safe is it? How noisy is it? How hard is it to find parking? Where do people go shopping? What do people like the most about this neighborhood? What do they complain the most about? Are people in this neighborhood friendly? How does this neighborhood make people feel?

Given tons of geotagged metadata from Yelp, Flickr, Foursquare, Wikipedia, and other places, we are building a World Knowledge Graph that describes places. We are interested in using this data to build better models and interactive visualizations that can be used to characterize neighborhoods and answer questions like the ones above.

Ideal Skills: Web programming, databases, machine learning, information visualization

SMARTWATCH APPS & USER INTERFACES

Development of Smartwatch Apps and User Interfaces Usable in Real-World Scenarios
Contact: Dr. SeungJun Kim (sjunikim@cs.cmu.edu)

The goal of this project is to test the usability of wearable devices (e.g., smartwatches, wrist bands, etc) in real-word activities such as driving or healthcare. We will design a series of novel wearable prototypes and deploy them in real-world scenarios. Students will be asked to conduct pilot studies in their naturalistic environment. Engineering or programming tasks may include Android programming to build apps for smartwatches. If interested, please visit and fill out - https://goo.gl/forms/JecmD3jux2tvUWaP2

Student requirement: programming experience - e.g., Java, Android SDK, Android Wear

SOCIAL COMPUTING

Mentoring and Career Coaching in Online Communities
Contact: Maria Tomprou (mtomprou@cs.cmu.edu)

More and more people turn to online communities such as StackExchange or online platforms like Quora to seek career advice.
Our goal is to improve the quality of decision making when people seek for career advice in online communities, what we call online mentoring.

There are two main activities you can get involved with on this project. First, using log data from StackExchange we will examine how people use the online communities for seeking career advice and solving work-related problems. Second, we will analyze patterns of behaviors in online communities to measure how career advice and mentoring through online communities can impact people’s decision making to improve their careers and work lives.

The project is for you if you want to improve people’s decision making about careers and work lives by applying skills in interaction design, usability analysis and testing, social science research and programming.

Interested students should send their resume along with GPA to mtomprou@cs.cmu.edu.

SOCIAL COMPUTING / DATA ANALYTICS (MACHINE LEARNING, DATA MINING, STATISTICS, VISUALIZATION)

Social Matching
Contact: Afsaneh Doryab (adoryab@cs.cmu.edu)

This project uses data collected from smartphone sensors (such as GPS, Bluetooth, and accelerometer) to match and recommend people to people based on their current situation and context, common interests, needs, or skills. Application examples for campus students are matching potential mentors and mentees, finding roommates, group mates, etc. Students in this project will be involved in developing applications and algorithms for opportunistic matching and recommendation, doing user studies and evaluation of the application, and writing papers.

Required qualifications include programming skills in Java/Python, Android and/or iOS development. Experience and interest in doing user studies, algorithm development, machine learning, and data analysis are preferred. We welcome curious, energetic, and fast learning students.
SOCIAL RESEARCH

Twitter Activism Study (Data Analyst)
Jessica Hammer / OH!Lab
Contact: Judeth Oden Choi (jochoi@andrew.cmu.edu)

Interested in activism? We have a large dataset of scraped tweets from online activists that we would like to analyze this semester. You will be running both exploratory and experimental analyses on this dataset, looking both at Twitter feature use (e.g. hashtags, retweets) and at tweet content (e.g. sentiment analysis). We are looking for someone with a strong statistics background and/or with experience working with large text datasets.

SOCIAL COMPUTING, EDUCATIONAL TECHNOLOGY/LEARNING SCIENCE

RAPT: Rapport-Aligned Peer Tutor
Contact: articulab-coterie@mailman.srv.cs.cmu.edu (Professor Justine Cassell)

We know that there are people who can easily make friends, instinctively knowing how to make others like them; then there are those who have to try harder – or even find it impossible to connect with others. Intrigued by the evidence that shows that rapport and interpersonal closeness leads to positive outcomes in peer tutoring, doctor-patient conversations, and many other tasks, we are studying interactions between friends and strangers to try to understand differences in how they build, maintain (and sometimes destroy!) rapport, and the effects of this relationship-building on small group learning.

Using the results of our human-human study, we are then building a virtual peer that will employ the same methods to build rapport with students while it tutors them, and while it is tutored by them. We have 2 open positions on this project:

(1) we have opportunities for undergraduate or masters students to study videos of teens being tutored by a real friend or by a virtual teenager to understand the social and tutoring behaviors that impact rapport between them (using similar techniques to what you learned in Methods). Video data annotation experience is preferable for this position, however we are willing to teach these skills.

(2) Integrating RAPT with an Intelligent Tutoring System
We are integrating the RAPT virtual peer with an Intelligent Tutoring System so that RAPT can act as a peer tutor to high school students in the domain of algebra. We are looking for a student to work with the team to implement the algebra learning modules (domain model, model of expertise) so that RAPT can build interpersonal closeness with a high school student, and use its social awareness to improve learning gains in algebra.
learning. For this position, technical skills in C++, C#, Java, and some understanding of intelligent tutoring systems are preferable.

For more information on the project, see the RAPT project page http://articulab.hcii.cs.cmu.edu/projects/rapt/

Student requirements: Undergraduate, MHCI, METALS. Please send a CV and the details of which project you are interested in.

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**SOCIAL COMPUTING / MOBILE COMPUTING**

**SARA : Socially Aware Robot Assistant**

**Contact:** articulab-coterie@mailman.srv.cs.cmu.edu (Professor Justine Cassell)

We are living in the era of intelligent personal assistants. However, Siri, Cortana, even M all act as if they have just met you. They never change the way they talk to you – or even employ anything they know about you. We are inventing a personal assistant of the future - SARA, Socially-Aware Robot Assistant that can build a relationship with a user, and then employ that relationship to better achieve the user's goals. SARA is an embodied intelligent personal assistant that analyses the user’s visual (head and face movement), vocal (acoustic features) and verbal (conversational strategies) behaviors to estimate, in real time, the level of interpersonal closeness that the user feels for the system, and then uses its own appropriate nonverbal behaviors (body movements synthesized on an intelligent agent), vocal (acoustic features) and verbal behaviors (language) to maintain or increase interpersonal closeness so that the user is willing to disclose information that will allow the system to better serve the user's goals. We have several open positions on the project:

(1) Natural Language Understanding and User Model of SARA

We are looking for a student to build a conversational interaction based personal assistant agent. You will improve the natural language understanding process using state-of-the-art machine learning techniques, and build user models to realize long term relationships with users. For this position, technical skills, experience and interest in natural language processing, software engineering and/or machine learning are preferable.

(2) User Studies of the Personal Assistant

You will work in a team to collect data from people interacting with SARA and while doing this you’ll learn what it takes to set up a user study and analyze data to discover how people interact with such a socially-aware personal assistant agent. For students with these interests and skills there is the possibility to explore (a) crowdsourcing data annotation, and to explore (b) using neural nets to learn behavior patterns from the
data.

For more information on the SARA project as a whole, see the project page http://articulab.hcii.cs.cmu.edu/projects/sara/

Student requirements: Undergraduate, MHCI, METALS

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**TEXTURE FROM FRICTION**

**Contact:** Roberta Klatzky, Psychology (klatzky@cmu.edu)

I have two devices that create friction differences across glass surfaces. The issue is what kinds of textures can be created and what textured surfaces might be used for. Useful attributes for student assistants (other than interest and reliability, of course!): can code on PC or Android, experience with Matlab. Experience students can gain: collecting human subject data, experimental design and analysis, developing applications.

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**USABLE PRIVACY & SECURITY**

**Privacy-Enhanced Android: Designing User Interfaces for Smartphone Privacy**

**Contact:** Jason Hong (jasonh@cs.cmu.edu)

The goal of this project is to make it vastly easier for developers and end-users to manage privacy in the context of sensor-based smartphone apps. This is a large DARPA project with the aim to achieve order of magnitude improvements for privacy.

We are looking for 2 students to help with the design and implementation of user interfaces to help people understand what data an app might collect about them, specify privacy policies, and check that everything is ok.

Ideal Skills for design: Visual design, interaction design. Experience with privacy, security, and Android is a plus.

Ideal Skills for implementation: Android implementation. Experience with UX, privacy, and security is a plus.
The broad goal of the PrivacyGrade project is to help developers, consumers, and regulators understand and improve the privacy of smartphone apps. So far, we have downloaded and analyzed the privacy of a million smartphone apps at PrivacyGrade.org.

There are four subprojects for PrivacyGrade:

I. We want to add new functionality to PrivacyGrade.org so that volunteers can come to our site and help rate the acceptability of various app behaviors, as well as flag unusual behaviors. Example questions might include "Does this seem to be an app designed specifically for children?" and "How comfortable are you with this app using your location data for advertising?"

II. We want to add new functionality to continuously crawl apps from Google Play, analyze them, and update the web site. Currently, we do this in batch, but would prefer an ongoing service that does this.

III. Create a subsite for PrivacyGrade where developers can upload apps, run our analysis, and get tips and hints as to how to improve their apps.

IV. Do lots of analysis and visualizations of our existing apps, and add these to our web site. Examples include: how do apps for kids compare to apps not targeting kids? How do grades differ for different categories? Which permissions are the most unusual for a given category? Which ad libraries are the most egregious in collecting data?

Ideal Skills: Some subset of Android programming, machine learning, web programming, databases, crowdsourcing, visual design

UX

Personalizing In-Store Service Encounters
Contact: John Zimmerman (johnz@cs.cmu.edu)

This project investigates how to marry digital personalization with face-to-face encounters customers have with frontline employees. Current research shows people appreciate personalized service when frontline employees exceed their needs. They appreciate the effort the employee has made. People also appreciate the utility that comes from digital personalization, such as Netflix’s movie recommender. Our work
attempts to marry these together. Can we provide digital summaries of customers to frontline employees such that they can personalize their performance towards an individual customer.

For the fall, we want a team of students to help develop a set of scenarios describing possible service encounters from both the customer and employee point of view. When then want to run an online study to assess which situations produce improved perception of service quality and which simply seem creepy.

We are looking for students with experience generating scenarios, drawing storyboards, and/or running studies using crowdwork systems like Mechanical Turk.

This project can be done for independent study credit.

If you are interested, please send the following to me <johnz@cs.cmu.edu>:
• short description of your relevant experience
• resume
• a list of the times you are free to regularly meet over the fall semester