

APP DEVELOPMENT, Learning Analytics, Citizen Science, Informal Science Learning

The Learning Media Design Center is leading an interdisciplinary team of entomologists, educators, software engineers, designers, and learning scientists to improve identification practices and training supports in citizen-science based water quality biomonitoring projects. Undergraduate research assistants on this NSF funded project Learning to See, Seeing to Learn will participate in design research and development activities related to the expansion of this online teaching collection and explorable image guide to freshwater insects (see our 2015 IxDA award-winning prototype at: www.macroinvertebrates.org).

In particular, we are looking for a student interested in app development to build, test, and iterate a mobile version of our teaching collection based on existing wireframes and user testing results, and/or an interest in learning analytics and data mining to explore usage patterns during completion of controlled tasks on our existing website. Candidates should have app development skills for web-based app creation including graphic and interaction design skills, as well basic coding abilities in one or more of the following: p5.js, Java, HTML5, Python, React Native. An interest in photography, insects, informal science learning, and citizen science is desirable.

The HCI faculty mentor will be Marti Louw, Director of the Learning Media Design Center, and the student(s) will be working closely with a postdoctoral research associate Jessica Roberts <jarobert@andrew.cmu.edu>. This is a NSF Research Experience for Undergraduates (REU) fellowship is part-time position (up to 15 hours/week) for the 2018-2019 academic year with the potential to continue over the summer. Interested students should email their resume or description of experience and a portfolio link to <<jarobert@andrew.cmu.edu>>.

DESIGN

Designing Medical Information to Close the Communication Gap Between Patients and Clinicians

Contact: Jodi Forlizzi, forlizzi@cs.cmu.edu

Statement of work

Our goal is to discover and design new delivery experiences for information used in the healthcare setting: structured data, open notes from electronic healthcare records, and care

procedures from clinical pathways. We will take steps to investigate new and more effective presentations of this information to patients (e.g., graphic, abstracted, conversational). The goal

is to close the communication gap between patients and members of a clinical care team.

We will undertake the following two phases: 1) Collect information sources and understand the communicative intent for both clinicians and patients to reveal the gap between intention and interpretation, and 2) Iterate information designs with the goal of closing the communication gap.

We are seeking students with expertise in HCI, design, and language technologies for this work

Design-Based Learning Research, Citizen Science, Informal Science Education

The Learning Media Design Center is leading an interdisciplinary team of entomologists, educators, software engineers, designers, and learning scientists to improve identification practices and training supports in citizen-science based water quality biomonitoring projects. Undergraduate research assistants on this NSF-funded project *Learning to See, Seeing to Learn* will participate in qualitative and quantitative learning science data collection and analysis, including transcription of audio-recorded data, analysis of transcripts and screencast data, as well as user and design-based research activities to support the development of an online teaching collection and guide to freshwater insects.

We are looking for an enthusiastic, detail-oriented collaborator and critical thinker with research experience in the social sciences, education and human centered design methods. A genuine interest biology and the details of science, informal science learning, and citizen science is also desirable.

The IDEATE 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 Jessica Roberts < jarobert@andrew.cmu.edu >. Research assistants 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) fellowship part-time position (up to 20 hours/week) for the 2018-2019 academic year with the potential to continue over the summer. Interested students should email their resume and description of experience to <jarobert@andrew.cmu.edu>.

Design Based Learning Research, IoT Smart Documentation, Maker Learning

The Learning Media Design Center is looking for an undergraduate research assistant to work with an interdisciplinary team of design researchers, technology developers and learning scientists from CMU's HCI, School of Architecture and Integrated Innovation

Institute (III) to develop smart documentation tools to support learning practices in creative, maker-based studio environments. Undergraduate research assistants on this NSF-funded project ***Smart Spaces for Making: Networked Physical Tools to Support Process Documentation and Learning*** will participate in design research and development activities working with project site partners including Quaker Valley High School, CMU's IDeATe program, and AlphaLab Gear's *Startable* youth program at the Community College of Allegheny County.

The prospective candidate will work with project team members to synthesize generative design research, facilitate visioning activities, and develop concepts and iterative prototypes. We are seeking strong skills in communication and interaction design, a background developing excellent user experiences, and a ready set of innovative design inquiry methods—including participatory and usability testing techniques—to understand the problem space and collaboratively refine solutions with the project team and users. Students should have a genuine interest in inclusive education and the design of learning technologies.

The Human-Computer Interaction Institute (HCII) faculty mentor and Principal Investigator, Marti Louw <martil@cmu.edu>, Director of the Learning Media Design Center, will serve as project lead and advisor. This NSF Research Experience for Undergraduates (REU) fellowship is a part-time position (up to 15 hours/week) with the potential to continue over the summer. Interested students should email their resume or description of experience and a portfolio link to Samantha Weaver <sbweaver@cmu.edu>.

DIGITAL STORYTELLING

Character Creation Assistance Tool

Geoff Kaufman and Anna Kasunic
Research Categories: Digital Storytelling

Contact: Anna Kasunic (akasunic@andrew.cmu.edu)

In this project we are designing a flagging tool for writers of fiction, game worlds, etc. (character creators) to avoid character representations that may be stereotyped or misrepresented in stories, especially along demographic lines (e.g. gender, race/ethnicity, sexuality). Emphasis on brainstorming, prototyping; opportunities for programming if interested.

Research Categories: Digital Storytelling

DIGITAL STORYTELLING, VR

Storytelling in VR workshops for LGBTQIA+ individuals

Geoff Kaufman and Anna Kasunic

Research Categories: Digital Storytelling, VR

Contact: Anna Kasunic (akasunic@andrew.cmu.edu)

In this project, you will help design and facilitate small workshops with those who identify as LGBTQIA+ to help them consider how they would choose to tell aspects of their experience as LGBTQIA+ in an immersive VR setting. This project will likely not involve any direct engagement with VR; the focus is on the process of conceptualizing stories for VR media, and exploring participants' struggles, hesitations, concerns, and rewards therein.

EDUCATION RESEARCH

PeerPresents (Developer)

Jessica Hammer / OH!Lab

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

PeerPresents, an existing online peer feedback system, allows students to give real-time feedback on in-class presentations and helps the presenters organize the comments they receive. During the fall semester, we are running studies in three different CMU game design courses to collect data about how students reflect on the feedback they receive.

We are seeking multiple student research assistants to help us collect and analyze data. You will learn to conduct classroom observations, interview participants, analyze qualitative data, and report your findings. Most of the work for this position can be completed on your own schedule, but you **must** be available from 11:30am - 2:30pm and 3-5:30pm on the following Tuesdays: Sept 11, Sept 25, Oct 23, and Nov 13.

This opportunity can be filled as an independent study or a paid position.

EDUCATION RESEARCH

Can I Learn by Watching Others Play? (Research Assistant)

Jessica Hammer / OH!Lab

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

With the rise of streaming platforms such as Twitch, many people now choose to watch others play games instead of playing games themselves. Playing educational games can

be an effective way to learn. We are investigating if someone can learn by *watching someone else play* an educational game (Portal 2). This work could lead to future opportunities like using Twitch to stream educational games for schools.

We are seeking multiple student research assistants to help coordinate and run our pilot study. You will gain experience collecting and analyzing qualitative and quantitative data in an educational games setting. Experience with Portal 2 and/or college-level introductory physics concepts is a plus, but neither is required.

This opportunity can be filled as an independent study or a paid position.

EDUCATION RESEARCH

SCIPR Teacher Guide (Writer)

Jessica Hammer / OH!Lab

Contact: Alexandra To (aato@cs.cmu.edu)

We are looking for a strong researcher/writer to create a teachers' guide summarizing what we have learned during our research on the SCIPR project. You will be writing gameplay guidance for our game *Outbreak*. You will also be interviewing project team members to digest what we have learned about curiosity, and then make it actionable for teachers.

This opportunity can be filled as an independent study or a paid position.

GAME RESEARCH

Escape With Science! (Research, Design, and Prototyping)

Jessica Hammer & Amy Ogan / OH!Lab

Contact: hammerj@andrew.cmu.edu

Have you ever wanted to build an escape room? We are fusing science education and escape room design. This fall, we will be learning about escape room design, selecting educational theories we want to integrate, and of course designing and prototyping puzzles. You should expect to contribute in at least two of those areas, as part of a student team.

Any prior experience with craft or fabrication, including knitting, laser cutting, prop-making, is a big plus. Please indicate any experience with these areas in your inquiry email

GAME RESEARCH

Transformational Game Design (Teaching Assistant)

Jessica Hammer / OH!Lab

Contact: hammerj@andrew.cmu.edu

Be the teaching assistant for my transformational game design studio course! I need help with course administration, from answering student questions to tracking down readings to making sure assignments get submitted on time. You should expect to work 6-8 hours per week outside of class, in addition to attending the majority of class sessions.

You should be highly organized and a strong communicator. The ability to give game design feedback is a big plus.

This is a paid position. I am willing to split this position among two students if desired.

GAME RESEARCH

SCIPR Curiosity Tabletop Games (Lead Research Assistant)

Jessica Hammer / OH!Lab

Contact: Alexandra To (aato@cs.cmu.edu)

We are designing and studying non-digital game-based interventions to empower marginalized youth by increasing comfort with curiosity. We have recently conducted play sessions comparing three versions of a board game and are looking for a person comfortable leading the effort to bring this data through the analysis phase to written research paper. This position calls for comfort with qualitative and/or quantitative data analysis, reading and synthesizing key findings from research papers, and scientific writing. Although we are looking for an individual with experience in these areas, it is more important to be highly self-driven and independent!

GAME RESEARCH

SCIPR Curiosity Tabletop Games (Game Designer)

Jessica Hammer / OH!Lab

Contact: Alexandra To (aato@cs.cmu.edu)

We are designing and studying non-digital game-based interventions to empower marginalized youth by increasing comfort with curiosity. We have recently designed three versions of a board game and have conducted playtest sessions to get feedback

HCI Research/Independent Study

Fall 2018

on those designs. We are looking for someone who can pick up the existing design and incorporate that playtest feedback to polish the final game materials and help us produce high-fi versions of the game. Experience with game or visual design desired, but it is more important to be highly self-driven and independent!

GAME RESEARCH

Playtest Night (Playtest Coordinator)

Jessica Hammer / OH!Lab

Contact:

We run a weekly playtest night to help game designers at CMU find playtesters and to build community among game designers at CMU. Your responsibilities will include: setup and teardown of the weekly playtest night; ordering food; publicizing the event; maintaining the group's Facebook page; and collecting data about how to improve

playtesting at CMU.

This is a paid position.

GAME / INTERACTION DESIGN RESEARCH

Designing an Online Advice-Seeking Game for Undergraduates

Geoff Kaufman

Contact: Geoff Kaufman (gfk@cs.cmu.edu)

In this project we are developing an online social game for seeking/providing advice to help mitigate issues of belongingness and experiences of stress and anxiety among undergraduates. In the fall, heavy emphasis will be placed on prototyping and playtesting the game with in-person and virtual groups and conducting initial evaluations of the game on players' well-being and comfort with seeking help with social and academic struggles.

Research Categories: Game/Interaction Design

GAME / INTERACTION DESIGN / VR / PHYSIOLOGICAL SENSING

VR & Biosignals Project

Geoff Kaufman, Anna Kasunic, and Fannie Liu

Contact: Anna Kasunic (akasunic@andrew.cmu.edu)

In this project we are looking at different ways to use affective experiences in VR to increase cognitive understanding of other people's experiences and emotions; this will involve designing Social VR interactions with biosignals (e.g. heart rate, skin conductance etc) that are sensed and displayed within the VR environment. In the fall, heavy emphasis will be placed on prototyping a variety of interactions involving biosignal sensing and laying the groundwork for future stages of the project.
Research Categories: VR, Game/Interaction Design, Physiological Sensing

PRIVACY AND SECURITY

PrivacyGrade: Crowd Analysis of Android Apps
Category: Privacy and Security, Smartphones
Contact: Jason Hong (jasonh@cs.cmu.edu)

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. The goal of this project is to (a) extend the web site with new search and browsing functionality, (b) add some visualizations of what web sites these apps are communicating with, and (c) update the grades by updating the analysis of apps. Expecting students to average at least 10 hours a week on this research, for pay or independent study. Send resume, GPA in primary major(s), and links to any relevant projects.

Ideal Skills: some subset of HTML/CSS/JavaScript, UX Design, experience with D3 and Vega visualization tools, databases, Unix

PRIVACY AND SECURITY

Designing User Interfaces for Privacy-Enhanced Android
Category: Privacy and Security, Smartphones
Contact: Jason Hong (jasonh@cs.cmu.edu)

The goal of the Brandeis project is to make it vastly easier for developers and end-users to manage privacy in the context of sensor-based smartphone apps. We are looking for students to help with the design of user interfaces to help people understand what data an app might collect about them, specify privacy policies, and check that everything is ok. Expecting students to average at least 10 hours a week on this research, for pay or independent study. Send resume, GPA in primary major(s), and links to any relevant projects.

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

PRIVACY AND SECURITY

Smartphone Calendar Scheduling with Privacy

Category: Privacy and Security, Smartphones

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

The goal of this project is to build a smartphone calendar scheduling app that (i) can help find the intersection of everyone's calendars quickly, and (ii) do so in a privacy sensitive way. This project will involve some UI design, Android app implementation, and use of our PrivacyStreams programming framework (see privacystreams.github.io). If time permits, also extend the app to help fill out those innumerable doodle scheduling polls. Expecting students to average at least 10 hours a week on this research, for pay or independent study. Send resume, GPA in primary major(s), and links to any relevant projects.

Ideal Skills: UX design, Android programming. Experience with privacy, security, and Android is a plus.

PRIVACY AND SECURITY

Anyone Analyze Apps

Category: Privacy and Security, Smartphones

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

The goal here is to build a community resource that makes it easy for anyone in the world to analyze Android apps and to share their code and results. We've already crawled tens of thousands of apps, and want to set up an extensible analysis pipeline. Think of it like MapReduce customized for app analysis. Expecting students to average at least 10 hours a week on this research, for pay or independent study. Send resume, GPA in primary major(s), and links to any relevant projects.

Ideal Skills: Web services, databases, Unix, operating systems.
Experience with privacy, security, and Android is a plus.

PRIVACY AND SECURITY

ClearTerms: Simplifying Terms and Conditions

Category: Privacy and Security, Web

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

Nobody reads Terms & Conditions on web sites. What if we could predict what people would care the most about, and just highlight those? Our team has collected a great deal of crowd data and created preliminary language models and a web site to showcase our results. We're looking for people to help improve our language model for analyzing policies. Expecting students to average at least 10 hours a week on this research, for pay or independent study. Send resume, GPA in primary major(s), and links to any relevant projects.

Ideal Skills: Basic NLP and/or machine learning

PRIVACY AND SECURITY

IoT Hub for Privacy and Security

Category: Privacy and Security, IoT

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

The Internet of Things is coming. How can we protect everyday people from all of the likely privacy and security risks? We're investigating how centralized hubs can help offer new kinds of services that can help with privacy, security, and management of lots of devices. Examples include checking for software updates for devices, easy ways of blocking unexpected network traffic, and simple kinds of end-user programming to connect devices together. We're looking for UX designers as well as software developers. Expecting students to average about 10 hours a week on this research (more is fine), for pay or independent study. Send resume, GPA in primary major(s), and links to any relevant projects.

Ideal Skills: Some subset of Android programming, Linux, web programming, UX design, networking

PRIVACY AND SECURITY

Social cybersecurity mini-games and everyday interventions

Contact: Cori Faklaris (cfaklari@andrew.cmu.edu)

Category: Privacy and Security

Research on the human factors of cybersecurity often treats people as isolated individuals rather than as social actors within a web of relationships and social influences. This project leverages known social influence principles to improve cybersecurity behavior and enhance security tool adoption. There are two independent study opportunities associated with this research effort:

Cybersecurity mini-games: The independent study student on this project will work on designing and developing web-based security-related mini games. The student may also have an opportunity to conduct evaluations of these mini games.

Everyday micro-interventions: The independent study student on this project will work on designing and developing interaction techniques that incorporate cybersecurity training and information into people's everyday workflows. The student may also have an opportunity to conduct evaluations of these interventions.

We are looking for students who are interested in interaction design and web programming (front-end or back-end). Familiarity with (or interested in learning) Python or Ruby a plus. Javascript also a plus. Interested students should send their resume, major GPA, and links to any relevant projects to cfaklari@andrew.cmu.edu

QUALITATIVE RESEARCH

VR Home (Research Assistant)

Jessica Hammer / OH!Lab

Contact: Lauren Herckis (lrhercki@cmu.edu)

This project has been exploring the idea of hybrid virtual-physical homes. Imagine adding virtual rooms in your real house: what kinds of rooms might you like, and how would you expect to spend your time there? We are looking for a research assistant to help us dig deep into qualitative interviews, playtest materials, and other products of research to identify user needs and explore new AR/VR development opportunities.

Experience with qualitative research is a plus.

This is a half- (mini) or full-semester independent study opportunity.

QUALITATIVE RESEARCH

Race and Identity on Social Media (Research Assistants)

Jessica Hammer / OH!Lab

Contact: Alexandra To (aato@cs.cmu.edu)

We are studying how people leverage their social networks through digital media (e.g.,

social media platforms, text messages, video call, etc.) to cope with instances of racialized aggression (e.g., microaggressions, threats of violence, etc.). We have conducted interviews with people who have been the targets of racialized aggression and are in need of research assistance in organizing this data and analyzing these interviews to understand key themes. Prior experience not needed - on the job you will learn qualitative research methods. You may also read and review related scientific literature related to the topics listed above and may assist in writing a research paper.

RESEARCH

Wanted: Research Assistants for research on Multi-modal End-User Programmable Intelligent Conversational Assistant for Smartphones

Professor Brad A. Myers

Contact: Toby Li <tobyli@cs.cmu.edu>

Intelligent virtual assistants on smartphones like Siri and Google Assistant can perform tasks on the user's behalf, but their capabilities are limited to the apps and services they support, without a way for users to teach them new tasks. Prof. Brad Myers and PhD student Toby Li in the HCI (along with collaborators across SCS) have a research project on designing and building a multi-modal smartphone intelligent agent that enables the users to program it to perform new tasks by demonstration and natural language instructions. We have finished the development of a first version of the system and are looking for students to help design and develop new features. We need students who are experienced programmers in Java, preferably with background in natural language processing. More details about this project is available at <http://www.cs.cmu.edu/~NatProg/sugilite.html> and <http://toby.li/research/>.

Possible projects may focus on a wide range of topics from interface design and user research to semantic parsing, dialog systems and machine learning depending on student interests.

This project can be done for pay or for independent study credit, but for credit is preferred. We envision this taking about 9 to 12 hours per week during the Fall semester, and continuing into the Spring and summer are also options.

Required skills: Strong Java programming skills

Preferred skills: Android development, natural language processing, UX design and research

Please send to Toby Li <tobyli@cs.cmu.edu>:

(1) your grade or level and degree program (e.g., Masters of HCI or Junior in CS), (2) if

you are an undergraduate, then whether you are a US citizen, (3) your resume, (4) a list of your grades in CS and any HCI classes, (5) a description of your related experience, (6) whether you want to work for money or credit, and (7) how many hours per week you want to work.

SOCIAL COMPUTING DESIGN

Exploring RoastMe 'reddiquette' in other contexts

Geoff Kaufman and Anna Kasunic

Contact: Anna Kasunic (akasunic@andrew.cmu.edu)

This project follows up on previous mixed methods study of r/RoastMe (a subreddit where people post photos of themselves to be roasted). In our previous work, we found that despite the harsh and targeted nature of the humor on RoastMe, participants in RoastMe display genuine care and concern for the targets of their jokes, and those who

are roasted feel they gain insights into themselves and build resilience. For this project, we'd be using digital probes to explore how the RoastMe paradigm of 'leaning in' to

harsh language and ridicule could work in other contexts, e.g. (one example) to build resilience before posting a photo to an online dating site. Emphasis on producing a series of prototypes (4), each starting from lo-fi and moving towards more polished, medium-to-high-fidelity prototypes.

Research Categories: Social Computing, Design

TECHNICAL RESEARCH

Exploring Co-Presence in VR using Depth Cameras (Technical Assistant, Programmer)

Jessica Hammer / OH!Lab

Contact: ahenson@andrew.cmu.edu

This project explores co-located co-presence between multiple participants in VR, through body tracking, wayfinding, and realtime depth video streaming. The project uses the HTC Vive and the Intel RealSense depth camera, and is being developed in collaboration with two Pittsburgh experimental dancers. The project will conduct a user study through playtests and interviews. The project seeks to ask :

- How can a person in VR perceive someone in their physical space while in headset?
- How does depth video representation of people affect a user's experience of co-presence while in VR?

HCI Research/Independent Study

Fall 2018

The project seeks a technical researcher / programmer who is proficient in the Unity game engine, specifically writing their own custom shaders, understands GLSL, and potentially Unity Networking. This person should have experience working with the Vive, and be comfortable with trigonometry, matrices, and interested in applying this knowledge to realtime camera streaming inside Unity.
