

# Undergraduate Research Symposium May 17, 2013 Mary Gates Hall

## Online Proceedings

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### POSTER SESSION 1

Commons East, Easel 47

11:00 AM to 12:30 PM

#### **U-District Job Co-op: A Design Vision for Connecting Homeless Young People to Community Jobs**

*Thuy Thanh Duong, Senior, Human Centered Design & Engineering, Informatics (Human-Computer Interaction)*

*Mary Gates Scholar*

*Mentor: David Hendry, Information School*

*Mentor: Jill Woelfer, The Information School*

Homeless young people aged up to 30 encounter difficulties when looking for work. The U-District Job Co-op is a design vision that seeks to overcome these difficulties by connecting homeless youth to short-term employment opportunities. Unlike other job search websites, the U-District Job Co-op accommodates the needs of homeless young people by inviting community members to offer mini-jobs and a system of support. Mini-jobs will help homeless young people develop life-skills and work experience that may lead to long-term, permanent employment. Support is provided by employers who offer mini-jobs and feedback, and service providers who assist with the job search and application process, facilitating communication between youths and potential employers. The initial design of the U-District Job Co-op was articulated through wireframes, representations of the layout and structure of the website. Content for the wireframes was drawn from community workshops where homeless young people and other community members discussed barriers and solutions homeless youth encounter in securing work. Three sets of wireframes were developed to show the different perspectives of how a homeless young person, service provider, and employer might interact with the U-District Job Co-op. Eight homeless young people participated in co-design activities (2 participants per activity) that provided assessment of the wireframes. In the co-design activities, homeless young people responded to designer prompts by sketching information they want to present to potential employers through the U-District Job Co-op. Quantitative analysis of the co-design data mapped the number of occurrences of features presented by homeless youth to existing wireframe features. This data informs the refinement of the wireframes. Future work includes developing the U-District Job Co-op into a fully functional website based on the refined wireframes and exploratory field deployments.

### POSTER SESSION 1

Commons East, Easel 84

11:00 AM to 12:30 PM

#### **D-Jargonizer: A Tool for Reading Technical Text**

*Meran Hill, Senior, Psychology, Informatics*

*Dane Frederick Paschal, Senior, Informatics (Information Architecture)*

*Linus Silver Willson, Senior, English, Informatics (Human-Computer Interaction)*

*David C (David) Wilcox, Senior, Informatics (Information Architecture)*

*Mentor: Amy Ko, Information School*

*Mentor: Jared Bauer, University of Washington*

While professionals in the Information Technology (IT) industry are able to read and understand new terms by associating them with previous knowledge and current context, professionals outside of the industry struggle with unfamiliar words and acronyms in dense technical documents. In these circumstances, many people turn to online resources such as Wikipedia to define or explain terms they don't understand. Yet, switching attention between reading an article and searching for information using various resources can increase cognitive load, thereby increasing perceived stress level and potentially reducing the effectiveness of both tasks. To address this problem, we propose the D-Jargonizer: a web-based tool that assists non-technical professionals as they read complex technical documents by allowing users to select and define technical terms with minimal distraction. We hypothesize that this tool will reduce cognitive load, perceived stress and make it more enjoyable for professionals outside of the IT field to read and comprehend technical documents. First, using a diagramming application, we will create a static prototype that imitates the proposed functionality of the D-Jargonizer. Students at the University of Washington who are unfamiliar with technical documents will be recruited to test perceived stress and enjoyment while using the prototype, as well as provide feedback about the overall user experience. Based on our initial user testing, we will develop a Google Chrome extension that allows users to select a term on a web page, searches for the term in an ontology based on Wikipedia entries and displays the definition in a text box on the page itself. Our tool will be tested again to confirm our hypothesis and verify usability. While the D-Jargonizer currently focuses on helping people understand technical documents, the basic

concept could be applicable to medical or legal documents in the future.

## POSTER SESSION 1

Commons East, Easel 48

11:00 AM to 12:30 PM

### Specialty Search Engine Design: an Empirical Study on the Optimization of Specialty Search Algorithms and Architecture

*Marissa Ho, Sophomore, Pre-Sciences*

*Brennen Toru Smith, Senior, Informatics (Information Architecture)*

*Mentor: William Jones, The Information School*

Specialty search engines cover the web, powering everything from product lookups to niche subject material. These small systems are tasked with indexing unique information and presenting small snippets of highly consolidated information, often on a certain domain or topic. As a result, the algorithms and techniques utilized are often different than a conventional search system, which aggregates vast amounts of diverse data. There are many different techniques employed by contemporary search systems to handle wide varieties of data. These systems are tailored to handle the widest range of data out of the box to provide a turnkey system. However, for these specialty search engines, these techniques are often too broad or do not encapsulate the scope properly. Our team's goal for the 2013 UW Research Symposium is to analyze the underlying mathematical models powering search appliances determine which algorithms have the greatest effect on the search engine's accuracy and precision while maintaining a sufficient recall rate. Our first phase is to analyze the mathematical models and algorithms which power search appliances to determine which have the greatest impact in narrowing scope and improving precision. The second phase is to implement our predictions on production servers scraping unique datasets. This data will be processed through a multivariate regression function to determine any trends and compared against our initial predicted data. Overall, our hypothesis is that current search engine platforms do not have optimal accuracy and precision and that through the analysis of the underlying data-processing techniques, these aforementioned values will be improved.

## POSTER SESSION 1

Commons East, Easel 83

11:00 AM to 12:30 PM

### Chess Scouter

*Andre Le Stackhouse, Senior, Informatics (Human-Computer Interaction)*

*Ari David Ashkenazi, Senior, Informatics (Human-Computer Interaction)*

*Brenna Smith, Senior, Informatics*

*Dominic Carlo Andrilla, Senior, Informatics*

*Mentor: Amy Ko, Information School*

*Mentor: Jared Bauer, University of Washington*

Though the rules of chess can be learned in a day, people spend years learning the nuances of the game that can make them masters. Important strategic details often go unnoticed or are not fully understood by novice players. Tactical play refers to maneuvers that limit an opponent's options, or present multiple problems simultaneously resulting in a tangible gain. Moves like pins, forks, and skewers all fall into tactical play. Positional play refers to maneuvers that strengthen a player's position on the board or weaken an opponent's. Space, or how many squares a player controls, is an aspect of positional play. We speculate that by just seeing these strategic details, novice players could play stronger games of chess. We will be designing and implementing a set of visualizations that can be overlaid onto a digital chessboard that may help novice players more quickly and meaningfully see potential patterns, threats, and opportunities in hopes of helping them play more successful games. Our application could serve as a tool for further research on the relationship between visualization and chess learning, but our focus for the remaining quarter is only to design the application through research of chess and collection of feedback from chess players of all levels, and to implement a working application that may run in a web browser. Assuming the project is a success, future work may include a within-subjects study that compared how well novice chess players fared against a consistent chess AI both with the visualizations enabled, and without based on victories, losses, total moves until the end of game, and total value of pieces lost versus pieces captured.

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## SESSION 1Q

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### TOMORROW'S TECHNOLOGICAL SOLUTIONS AND APPROACHES FOR TODAY'S PROBLEMS

*Session Moderator: Marc Dupuis, Computing and Software Systems*

**389 MGH**

1:15 PM to 2:45 PM

\* Note: Titles in order of presentation.

## **UW Mobile Payments Battleground**

*Ezra Park, Senior, Informatics, Business Administration*  
*Brian Fu, Senior, Informatics (Human-Computer Interaction)*

*Curtis John (Curtis) Howell, Senior, Business Administration (Entrepreneurship), Informatics*  
*Mentor: Katie Davis, Information School*

This research discusses the investigations of a research project regarding the likelihood of adoption of particular mobile payment platforms by University of Washington students. Mobile payments have been around for several years now, but users have been slow to adopt the technology. Recently, companies are beginning to invest in this technology despite its previously slow growth. College students are also usually at the forefront of technology adoption, but this has not been the case with mobile payments. This research project details our investigational study of determining which type of mobile payments platforms UW students are most likely to adopt and will continue as follows: First, we discuss background information to define some key terms, concepts and technologies. Next, we detail the methods that we used to find the answer to our research question. These methods included research methods often used for usability research including focus groups and surveys. We report on the findings from our investigation at the end of our research paper. Given the data and analysis of our research, our findings have the potential to inform both consumers but most importantly mobile payment providers.

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## **SESSION 1Q**

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**389 MGH**

*1:15 PM to 2:45 PM*

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#### **Improving the Method for Ordering and Paying for Drinks at Bars**

*Curtis John (Curtis) Howell, Senior, Business Administration (Entrepreneurship), Informatics*  
*Ezra Park, Senior, Informatics, Business Administration*  
*Patrick Stanton Siu, Senior, Informatics (Human-Computer Interaction)*  
*Mentor: Amy Ko, Information School*

Our capstone project discusses a redefinition of a social bar experience. Opening and closing tabs at bars is stressful, time consuming and frustrating. Today, the process to order a

drink at a bar is tedious: wait in line, order a drink, then hand a bartender a credit card to open a tab. Stand in the same line for each subsequent drink as well as to close the tab. This process is time-consuming and detracting from a customer's bar experience. With the imminent rollout of mobile payments as a ubiquitous brick-and-mortar payment method, we identified an opportunity to utilize mobile payments technology to develop an elegant solution to order drinks at a bar. One of our goals is to eliminate as much friction from the experience as possible, which will allow users to better enjoy their drinks with their friends. The service will handle ordering, paying and tipping for menu items, as well as offer additional value-added features that are only possible when customers order and pay for drinks from a mobile device. While we will focus on the bar scenario, our technology platform will be applicable to several other verticals including restaurants and stadium venues. By employing the user-centered design process supplemented with usability research, we seek to create a solution that redefines the bar experience.

## **POSTER SESSION 3**

**MGH 241, Easel 163**

*2:30 PM to 4:00 PM*

#### **Designing Mentoring Profiles for Online Health Communities**

*Carly Dupont (Carly) Cahill, Senior, Design: Interaction Design*

*Bridget Christine Weis, Senior, Design: Interaction Design*  
*Mentor: Andrea Hartzler Hartzler*

Online health communities provide networks that enable people to talk about and share their health related experiences. These communities, such as CancerConnect.com, DiabeticConnect.com, Patientslikeme.com, offer a broad base of personal health expertise, but discovering more experienced members, or "peer mentors," with shared circumstances is difficult. To address this issue, we are designing mentoring profiles that illustrate a user's health interests based on terms that are extracted from their posts from within the online community. Mentoring profiles can be used to connect users with peer mentors who share similar health interests and could provide personalized advice. In this study we are applying principles of user-centered design to develop mentoring profiles for cancer patients and caregivers who interact within CancerConnect.com. Through an iterative design process, we have developed a set of designs that we are implementing as profile prototypes. This set includes a text-based, tag cloud, and timeline variation of the mentoring profile. In particular, we are examining designs that can scale to variations in users' posting frequency. Through a user study with cancer patients and caregivers, we are assessing those prototypes for interpretability, usability, and design preferences. Conducting a user study to receive feedback on the designs will enable us

to understand how well users comprehend and use the different designs. Findings from this study will inform the future implementation of scalable mentoring profiles in online communities. This research contributes novel insights for optimizing the design of innovative matchmaking technology that connects individuals with helpful, experienced peers in online communities.