



Tarfah Alrashed

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RESEARCH INTEREST

Human Computer Interaction, Information Retrieval, Computer-Supported Cooperative Work, Data Science, Crowdsourcing and Interactive Visualization.

EDUCATION

- 2016 - CURRENT **PhD. Computer Science**
Massachusetts Institute of Technology (MIT)
Computer Science and Electrical Engineering Department, Cambridge, MA
Advisor: David Karger
- 2012 - 2014 **M.S. Computer Science**
University of California San Diego
Computer Science and Engineering Department, San Diego, CA
- 2004 - 2008 **B.S. Computer and Information Sciences**
King Saud University
College of Computer and Information Sciences, Riyadh, Saudi Arabia

WORK EXPERIENCE

- Sep 2016 – Current **Graduate Research Assistant**
Massachusetts Institute of Technology (MIT) CSAIL
Cambridge, MA
Advisor: David Karger
- June 2018 – Aug 2018 **Research Intern**
Microsoft Research (MSR)
Bellevue, WA, USA
Advisor: Peter Bailey
- June 2017 – Aug 2017 **Research Intern**
Microsoft Research (MSR)
Redmond, WA, USA
Advisor: Susan Dumais
- Oct 2014 – Aug 2016 **Research Affiliate**
Massachusetts Institute of Technology (MIT)
Cambridge, MA, USA
- Oct 2014 – Aug 2016 **Research Associate**
Center for Complex Engineering Systems (CCES), KACST
Riyadh, Saudi Arabia

June 2012 – May 2014 **Software Engineer/Intern**

California Institute for Telecommunications and Information Technology
San Diego, CA, USA

July 2009 – Nov 2011 **Research Specialist**

National Center for Computation Technology and Applied Mathematics (CTAM), KACST
Riyadh, Saudi Arabia

RESEARCH PROJECTS

June 2018 – Aug 2018 **The Relationship Between Actions and Significance of Email**

Microsoft Research

Email remains a critical channel for communicating information in both personal and work accounts. The number of emails people receive every day can be overwhelming, which in turn creates challenges for efficient information management and consumption. Having a good estimate of the significance of emails forms the foundation for many downstream tasks (e.g. email prioritization); however, determining significance at scale is expensive and challenging. In this paper, we hypothesize that the cumulative set of actions on any individual email can be considered as a proxy for the perceived significance of that email. Two approaches are proposed to summarize observed actions on emails, which are then evaluated against the perceived significance. The first approach is a fixed-form utility metric parameterized on a set of weights, and we study the impact of different weight assignment strategies. In the second approach, we build machine learning models to capture users' significance directly based on the observed actions. For evaluation, we collect human judgments on email significance for both personal and work emails. Our analysis suggested that there is a positive correlation between actions and significance of emails, and that actions performed on personal and work emails are different. We also found that the degree of correlation between actions and significance varies across people, which is expected given the individual nature of email.

Tools & Skills: *Scope, U-SQL, C#, Python*

June 2017 – Aug 2017 **The Lifetime of Email Messages: A Large-Scale Analysis of Email Revisitation**

Microsoft Research

Communication, leading to a number of challenges related to information overload and email management. To better understand email management practices in detail, we examined the distribution of visits to emails over time. During their lifetime, emails may be visited once or several times, and with each visit different actions may be taken. Emails that are revisited over time are especially interesting because they represent an opportunity to improve email management and search. We examine a large-scale log analysis of email revisitation, the activities that people perform on revisited email messages, and the strategies they use to go back to these emails. Most emails have a short lifetime, with more than 33% having a lifetime of less than 5 minutes. Our findings have

implications for designing email clients and intelligent agents that support both short- and long-term revisitation patterns.

Tools & Skills: *Scope, U-SQL and C#*

Oct 2014 – June 2016 **City Schema – Collaborative Tangible Interface**

CCES – MIT Developed simulations for the complex systems of city infrastructures as system of systems to simulate the behaviors of these systems and their interdependencies as well as assist stakeholders in predicting future scenarios. Designed and built a collaborative tangible user interface (TUI), which provides multi-touch interactive capabilities with analytical and visualization components, as a decision support system to support collaborative city planning. Studied the usability patterns in TUI systems and their associations with system factors and group dynamics, by evaluating the different components of TUI that could correlate with user choices and affect how they use these systems. Conducted observational studies to analyze users behavior and interaction with TUI in the context of urban planning, and its impact on communication and decision-making.

Tools & Skills: *Processing, C#, SQL, Rhino, UMI, ReactIVision and CCV.*

2013 – 2014 **A Crowd sourced Approach for Wait Time Estimation**

Calit2/UCSD Developed an iOS app “Best Time to Cross the Border”, which provides commuters with wait time estimations at the US land borders to help them plan their trips ahead. Adopted Crowdsourcing approach in our iReport feature, which leverages the users as sensors by empowering them to report the border delays they experience. Validated the data submitted by the users by restricting the posting of the wait time reports to three miles radius from the border. Calculated the average wait time estimations for the last three months, using the Customs and Border Protection (CBP) wait time estimations for the US land borders along with the wait times reported by our users. Provided historical wait time trends in graphical form.

Tools & Skills: *Objective C and HighCharts.*

2010 – 2011 **My Prayers iOS App**

CTAM, KACST *Project Leader*

Developed an iOS app “MyPrayers”, which provides Muslims with their prayer times for today, future, and even past dates. Also with the location-based GPS or GSM feature users can check their prayer times wherever they are. Integrated several features into the app, such as Qibla direction using the iOS embedded compass, date converter, prayer times sharing via SMS or Email, and setting up notifications for athan, iqama and suhor.

Tools & Skills: *Objective C and SQLite.*

PUBLICATIONS

L. Verou, **T. Alrashed**, & D. Karger. "Extending a Reactive Expression Language with Data Update Actions for End-User Application Authoring." The 31st Annual ACM Symposium on User Interface Software and Technology (UIST'18). Berlin, Germany.

T. Alrashed, A. H. Awadallah, & S. Dumais. "*The Lifetime of Email Messages: A Large-Scale Analysis of Email Revisitation*". In Proceedings of the 2018 Conference on Human Information Interaction & Retrieval (CHIIR '18). ACM, New York, NY, USA, 120-129, 2018.

L. Gilpin, D. Olson & **T. Alrashed**. "*Perception of Speaker Personality Traits Using Speech Signals*." In Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems, p. LBW514. ACM, 2018.

T. Alrashed, J. Almahmoud, M. Alrished, S. Alsubaiee, M. Alsaleh, & C. S. Olascoaga. "*Social Communities in Urban Mobility Systems*." In International Conference on Social Computing and Social Media, pp. 177-187. Springer International Publishing, 2016.

J. Almahmoud, A. Almalki, **T. Alrashed** & A. Alwabil. "*Prototyping Complex Systems: A Diary Study Approach to Understand the Design Process*." In International Conference of Design, User Experience, and Usability, pp. 187-196. Springer International Publishing, 2016.

T. Alrashed, A. Almalki, S. Aldawood, T. Alhindi, I. Winder, A. Noyman, A. Alfaris & A. Alwabil. "*An Observational Study of Usability in Collaborative Tangible Interfaces for Complex Planning Systems*." AHFE 2015 Proceedings, Volume 3, pp. 1-6614.

T. Alrashed, A. Almalki, S. Aldawood, A. Alfaris & A. Al-Wabil. "*Coding Schemes for Observational Studies of Usability in Collaborative Tangible User Interfaces*." In HCI International 2015-Posters' Extended Abstracts, pp. 3-6. Springer International Publishing, 2015.

S. Aldawood, F. Aleissa, A. Almalki, **T. Alrashed**, T. Alhindi, R. Alnasser, M. Hadhrawi, A. Alfaris & A. Al-Wabil. "*Collaborative Tangible Interface (CoTI) for Complex Decision Support Systems*." In Design, User Experience, and Usability: Users and Interactions, pp. 415-424. Springer International Publishing, 2015.

SELECTED PRESS

March 2013 **Smartphone app speeds up border crossings**,
Los Angeles Times, <http://articles.latimes.com/2013/mar/26/local/la-me-abcarian-border-20130327>

March 2013 **Calit2 Border App Wins Third Place at Mobile World Congress**,
UC San Diego News Center,
http://ucsdnews.ucsd.edu/pressrelease/calit2_border_app_wins_third_place

November 2012 **New Mobile App Tells Users When to Cross the Border**,

The Guardian UC San Diego, <http://ucsdguardian.org/2012/11/19/new-mobile-app-tells-users-when-to-cross-the-border/>

- November 2012 **iPhone app lets border crossers determine best time to cross U.S. border,**
Homeland Security News Wire, <http://www.homelandsecuritynewswire.com/dr20121109-iphone-app-lets-border-crossers-determine-best-time-to-cross-u-s-border>
- November 2012 **Students Build App To Determine The Best Time To Cross Border,**
KPBS, <http://www.kpbs.org/news/2012/nov/12/students-build-best-border-crossing-times-app/>
- November 2012 **Crowdsourcing Feature Lets iPhone Users Determine Best Time to Cross U.S. Border,**
UC San Diego News Center, http://ucsdnews.ucsd.edu/pressrelease/best_time_to_cross_us_b

INVITED TALKS

- April 2015 **City Schema - Collaborative Tangible Interface**
Simulation and Modeling Class, Prince Sultan University, Riyadh, Saudi Arabia
- April 2015 **City Schema - Urban Planning Tangible tools**
Architectural Engineering Department, Alfaisal University, Riyadh, Saudi Arabia
- March 2015 **Collaborative Urban Planning Tangible Tools, Demo and Presentation**
Arriyadh Development Authority (ADA), Riyadh, Saudi Arabia
- March 2013 **Democratizing Border Crossings: One App at a Time**
Rotary Club (Carlsbad Chapter) Meeting, Calit2, San Diego, CA
- October 2012 **Border Wait Times Estimation Application, KACST Visit**
Calit2, San Diego, CA

AWARDS

- 2015 Graduate PhD Scholarship, Center for Complex Engineering Systems, King Abdulaziz City for Science and Technology (KACST).
- 2014 Letter of Recognition, Von Liebig Entrepreneurism Center Graduate Curriculum, UCSD.
- 2013 Second place, Mobile World Congress (MWC), in Barcelona, Spain.
- 2011 Graduate Masters Scholarship, King Abdulaziz City for Science and Technology (KACST).

CERTIFICATES & COURSES

August 2015 **Modeling Urban Sustainability: Energy, Daylight, and Walkability**
Massachusetts Institute of Technology (MIT)

June 2015 **Design Thinking**
Systems, Applications, & Products in Data Processing (SAP)

May 2015 **Behind and Beyond Big Data**
Stanford University

COMPUTER SKILLS

Programming Languages: C, C++, C#, Objective C, Java, Processing.

Web Programming: HTML, CSS, JavaScript, D3, Leaflet, and SQL.