



Tarfah Alrashed

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RESEARCH INTEREST

Human Computer Interaction, Computer-Supported Cooperative Work, Social Computing, Data Science, Crowdsourcing, Mobile Computing, 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

- 2014 – 2016 **Research Affiliate**
Massachusetts Institute of Technology (MIT)
Cambridge, MA, USA
- 2014 – 2016 **Research Associate**
Center for Complex Engineering Systems (CCES), KACST
Riyadh, Saudi Arabia
- 2012 – 2014 **Software Engineer/Intern**
California Institute for Telecommunications and Information Technology (Calit2)
San Diego, CA, USA
- 2009 – 2011 **Research Specialist**
National Center for Computation Technology and Applied Mathematics (CTAM), KACST
Riyadh, Saudi Arabia

RESEARCH PROJECTS

2014 – Current **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.*

2015 – Current **Integrated Transit System**

CCES- MIT *Project Coordinator*

- Developed a comprehensive transportation model for Riyadh that incorporates the new public transit system.
 - Investigated the impact of the new transit system on the current transportation infrastructure and people's mobility behavior to better understand the social and behavioral implications of the adoption of the new system.
 - Analyzed and queried large datasets of call detail records (CDRs), and to make these models of population flow accessible to public transit planners, I developed an interactive visualization platform to visualize the analyzed datasets and assists planners in decision making.
- Tools & Skills: SQL, JavaScript, D3, Leaflet and Node.js*

2015 – Current **Urban Energy Modeling**

CCES – MIT

- Built a 3D model of Riyadh city from LiDAR data, to construct and model urban energy.
 - Created archetypes for the existing building portfolio in Riyadh city. For each building, the location, dimensions, number of floors, height of each floor, building type, window to wall ratio, and year of construction, have been gathered.
 - Enhanced the Urban Modeling Interface (UMI) visualizer.
- Tools & Skills: JavaScript, AutoCAD, CloudCompare, Rhino and UMI.*

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

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 (2015).

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.

T. Alrashed, J. Almahmoud, M. Alrashed, 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.

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.