Rawan M. Alharbi

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Research Interest

The main goal of my research is to enable a sustainable future for wearable systems. I work in the intersection of human-computer interaction (HCI), systems, and machine learning (ML), exploring how we can design wearable systems that are practical, long-lived, accurate, and helpful without sacrificing important social values.

Education

Northwestern University   **Evanston, IL**
Ph.D. in Computer Science, GPA: 3.8/4.0   *2016-Present*
Advisor: Nabil Alshurafa

Northwestern University   **Evanston, IL**
M.S. in Computer Science, GPA: 3.8/4.0   *2014-2016*
Advisor: Micheal Horn

Prince Sultan University   **Riyadh, Saudi Arabia**
B.S. in Computer Science, GPA: 3.86/4.0   *2006-2011*

Publications

R. Alharbi, C. Feng, S. Sen, J. Jain, J. Hester, and N. Alshurafa, "Heatsight: Wearable low-power omni thermal sensing," in *2021 International Symposium on Wearable Computers*, pp. 108–112, 2021.

R. Alharbi, B. Spring, and N. Alshurafa, "Measuring smoking topography in natural settings using non-contact passive wearable sensors," in *Annals Of Behavioral Medicine*, vol. 54, pp. S580–S580, Oxford Univ Press INC Journals Dept, 2001 Evans Rd, Cary, NC 27513 USA, 2020.

R. Alharbi, A. Ng, **R. Alharbi**, and J. Hester, ""i am not an engineer": Understanding how clinicians design & alter assistive technology," in *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*, pp. 1–8, 2020.

R. Alharbi, M. Tolba, L. PetitO, J. Hester, and N. Alshurafa, "To mask or not to mask?: Balancing privacy with visual confirmation utility in activity-oriented wearable cameras," *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.*, vol. 2, Sept. 2019.

N. Alshurafa, J. Jain, **R. Alharbi**, G. Iakovlev, B. Spring, and A. Pfammatter, "Is more always better?: Discovering incentivized mhealth intervention engagement related to health behavior trends," *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.*, vol. 2, pp. 153:1–153:26, Dec. 2018.

R. Alharbi, T. Stump, N. Vafaie, A. Pfammatter, B. Spring, and N. Alshurafa, "I can't be myself: Effects of wearable cameras on the capture of authentic behavior in the wild," in *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, vol. 2, (New York, NY, USA), ACM, 2018.

N. Alshurafa, **R. Alharbi**, A. F. Pfammatter, and B. Spring, "Detecting real time episodic overeating for just in time interventions," in *Annals Of Behavioral Medicine*, vol. 52, pp. S726–S726, Oxford Univ Press INC Journals Dept, 2001 Evans Rd, Cary, NC 27513 USA, 2018.

A. F. Pfammatter, **R. Alharbi**, N. Alshurafa, and B. Spring, "From sensing to theory: Implications of capturing naturally occurring behaviors in the wild," in *Annals Of Behavioral Medicine*, vol. 52, pp. S153–S153, Oxford Univ Press INC Journals Dept, 2001 Evans Rd, Cary, NC 27513 USA, 2018.

R. Alharbi, N. Alshurafa, and M. Horn, "Intuito: Opportunistic tangible programming by demonstration for physical components," in *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, CHI EA '17, (New York, NY, USA), pp. 2322–2328, ACM, 2017.

R. Alharbi, A. Pfammatter, B. Spring, and N. Alshurafa, "Willsense: Adherence barriers for passive sensing systems that track eating behavior," in *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems*, CHI EA '17, (New York, NY, USA), pp. 2329–2336, ACM, 2017.

N. Alshurafa and **R. Alharbi**, "From lab to field: Eating detection machine learning models, privacy, stigma and user-comfort of wearables," in *Annals Of Behavioral Medicine*, vol. 51, pp. S2375–S2376, SPRINGER 233 SPRING ST, NEW YORK, NY 10013 USA, 2017.

S. Zhang, **R. Alharbi**, M. Nicholson, and N. Alshurafa, "When generalized eating detection machine learning models fail in the field," in *Proceedings of the 2017 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2017 ACM International Symposium on Wearable Computers*, UbiComp '17, (New York, NY, USA), pp. 613–622, ACM, 2017.

S. Zhang, **R. Alharbi**, W. Stogin, M. Pourhomayun, B. Spring, and N. Alshurafa, "Food watch: Detecting and characterizing eating episodes through feeding gestures," in *Proceedings of the 11th EAI International Conference on Body Area Networks*, BodyNets '16, (ICST, Brussels, Belgium, Belgium), pp. 91–96, ICST (Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering), 2016.

Teaching Experience

Wireless and Mobile Health (mHealth)   **Evanston, IL**
Co-Instructor   *Winter 2021 and 2020*

o Redesigned the mhealth course readings and assignments to cover important topics in mhealth that spans the area of wearable systems, human computer interaction and machine learning.
o Mentored students working on a quarter long mhealth project.

Computing Everywhere: Building Android App Workshop   **Evanston, IL**
Instructor   *January 2019*

o Designed a two hour workshop to teach non-computer science students how to build and deploy their own Android mobile apps
o Used block based approach method to teach students about the concepts of variables, loops, conditional statement, logical and mathematical operations.
o Used a hands on guided approach to teaching the material.

iDTech Programming Academy   **Lake forest, IL**
Instructor   *July 2013–August 2013*

o Taught C++ , Java , Python and JavaScript to beginner programmers
o Helped students in designing and building their games.
o Observed what barriers and facilitators that face teenagers upon learning how code in order to understand the best way to design IntuiteCoder (Master's thesis).

Industry Experience

Ericsson   **Riyadh, Saudi Arabia**
Service Engineer   *February 2011 – June 2012*

Configured, integrated and troubleshooted new and existing solutions on the Service Delivery Platform using UNIX, Shell, Java, and Network skills.

Conference Presentations

Oral

HeatSight: Wearable Low-power Omni Thermal Sensing   *UbiComp '21*

To Mask or Not to Mask?: Balancing Privacy with Visual Confirmation Utility	*UbiComp '19*
I Can't Be Myself: Effects of Wearable Cameras on the Capture of Authentic Behavior	*UbiComp '18*

Poster

Measuring smoking topography in natural settings using non-contact passive wearable sensor	*SBM '19*
Detecting real time episodic overeating for just in time interventions	*SBM '18*
Will Participants Wear Passive Sensing Devices Long Enough to Study Eating Behavior?	*Obesity week '17*
Intuito: Opportunistic tangible programming by demonstration for physical components	*CHI '17*
Willsense: Adherence barriers for passive sensing systems that track eating behavior	*CHI'17*

Awards and Achievements

The Peter and Adrienne Barris Outstanding Teaching Award	*2021*
Rising Stars in EECS	*2020*
SIGCHI Student Travel Grant	*2019*
UbiComp Travel Award	*2018*
Best Paper Award at 2017 Obesity Weeks eHealth/mHealth Section	*2017*
Best Paper Award at IEEE BODYNET	*2016*
PerCom NSF Travel Award	*2016*
Master's funding	*2014-2016*
Top Five High School Graduate National Award	*2007*

Services

Co-Director

Northwestern Graduate Women in computing	*2019*

Reviewer

IMWUT '20 - Interactive, Mobile, Wearable and Ubiquitous Technologies	*2020*
CHI '20 - CHI Conference on Human Factors in Computing Systems	*2019*
IMWUT '19 - Interactive, Mobile, Wearable and Ubiquitous Technologies	*2019*
BHI '19 - IEEE EMBS International Conference on Biomedical & Health Informatics	*2019*
CHI '19 - Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems	*2019*
CHI '19 - Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems	*2018*

Conference and Workshop Volunteer

NSF-funded workshop on Technology for Automated Capture of Diet Student Volunteer	*2020*
Ubicomp '18 Student Volunteer	*2018*