

# Soha Rostaminia

MOBILE HEALTH SYSTEMS · WEARABLE AND SENSOR COMPUTING · APPLIED MACHINE LEARNING

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## Education

### University of Massachusetts Amherst

MA, USA

Ph.D. Candidate in Computer Science

Feb. 2018 - PRESENT

Thesis: Enabling Daily Tracking of Individual's Cognitive State with Eyewear — Advisor: Prof. Deepak Ganesan

### University of Massachusetts Amherst

MA, USA

M.S. in Computer Science

Sep. 2015 - Feb. 2018

GPA: 3.845/4 — Advisor: Prof. Deepak Ganesan

### University of Tehran

Tehran, Iran

B.Sc. in Electrical Engineering with Bioelectrical Engineering Concentration

Sep. 2011 - May 2015

GPA: 18.47/20 (Ranked 1<sup>st</sup>) — Advisor: Prof. S. K. Setarehdan

## Computer and Technical Skills

### Programming

Python (NumPy, SciPy, scikit-learn, TensorFlow, Keras), C/C++, MATLAB — *Comfortable*: HTML, CSS, PHP

### Skills

Signal processing - Deep Learning - Human physiological and activity data measurement - Experiment design - User studies.

## Research Experience

### University of Massachusetts Amherst, MOSAIC Lab.

MA, USA

Graduate Research Assistant

Sep. 2015 - PRESENT

- My focus is on developing light and robust algorithms for low power eyewears in order to track the user's cognitive state of the mind, e.g. fatigue and drowsiness, emotion, and pain. In my latest project, I am trying to build a portable polysomnography unit in the form factor of a sleep mask with all fabric-based sensing elements.  
Supervisor: Prof. Deepak Ganesan.

### DawnLight Technologies Inc.

CA, USA

Machine Learning Research Intern

Mar. 2021 - May 2021

- My research focuses on developing machine learning and signal processing techniques to understand complex human physiology.  
Supervisor: Dr. Nathan Liu

### Bose Corporation, AI and Data Group Serving Consumer Electronics

MA, USA

Research Intern

Jun. 2019 - Aug. 2019

- Developed gesture and activity recognition technology for wearable consumer electronic products.  
Supervisors: Dr. Marko Orescanin and Dr. Kevin Larke.

### University of Tehran, fNIRS Lab.

Tehran, Iran

Undergraduate Thesis Project

2014 - 2015

- Design and Implementation of a Noninvasive Cuffless Blood Pressure Monitor. In this work, we present a system for estimating the blood pressure by means of Pulse Transit Time (PTT).  
Supervisor: Prof. S. K. Setarehdan.

## Selected Publications

### PhyMask: Sensing of Physiological Signals During Sleep with All-textile Eyewear

Journal Paper

S. Rostaminia, Z. Homayounfar, A. Kiaghadi, T. Andrew, D. Ganesan.

2021

Under Review. Transcript available upon request.

### A Mask for Longitudinal Respiration Monitoring

Journal Paper

L. Allison, S. Rostaminia, A. Kiaghadi, D. Ganesan, T. Andrew.

2021

Under Review. Transcript available upon request.

- Multimodal Smart Eyewear for Longitudinal Eye Movement Tracking** *Journal Paper*  
 Z. Homayounfar, **S. Rostaminia**, A. Kiaghadi, X. Chen, E. Alexander, D. Ganesan, T. Andrew.  
 Matter. 2020
- W!NCE: Unobtrusive Sensing of Upper Facial Action Units with EOG-based Eyewear** *Journal Paper*  
**S. Rostaminia**, A. Lamson, S. Maji, T. Rahman, and D. Ganesan.  
 Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT UbiComp). 2019
- Continuous Measurement of Interactions with the Physical World with a Wrist-worn Backscatter Reader** *Journal Paper*  
 A. Kiaghadi, P. Hu, J. Gummesson, **S. Rostaminia**, D. Ganesan.  
 ACM Transactions on Internet of Things (TIOT). 2019
- iLid: Low-power Sensing of Fatigue and Drowsiness Measures on a Computational Eyeglass** *Journal Paper*  
**S. Rostaminia**, A. Mayberry, D. Ganesan, B. Marlin, J. Gummesson.  
 Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT UbiComp). 2017

## Patent

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- Wearable Bimodal Electrode Array for Electro-oculography** *Patent Pending*  
 Z. Homayounfar, A. Kiaghadi, **S. Rostaminia**, D. Ganesan, T. Andrew.  
 U.S. Patent Application 62/932,936 filed November 2019. 2019

## Invited Talks

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- The World Behind Our Eyeglasses!** *MA, USA*  
 Turing Computer Science Program, UMass Amherst. Aug. 2019
- Unobtrusive Sensing of Upper Facial Action Units with EOG-based Eyewear** *MA, USA*  
 Data Science for Health and Well Being workshop, Data Science Research Symposium, UMass Amherst. Apr. 2019

## Honors & Awards

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- 2021 **Best PhD Forum Presentation**, International Conference on Embedded Wireless Systems and Networks (EWSN), Netherlands.
- 2021 3MT Campus Finalist, University of Massachusetts Amherst, USA. Video url: <https://youtu.be/9Fra5JqWQX4>
- 2020 **First Place Graduate Poster Award**, ACM Richard Tapia Celebration of Diversity in Computing Conference, USA.
- 2017 **Best Poster Award**, Capital Region Celebration of Women in Computing Conference (CAPWIC), USA.
- 2017 Microsoft Research and ACM Full Scholarship CRA-W Grad Workshop, USA.
- 2015 **Ranked 1<sup>st</sup>** among students in bioelectrical engineering, University of Tehran, Iran.
- 2015 **Ranked 3<sup>rd</sup>** among 120 students in electrical engineering, University of Tehran, Iran.
- 2015 Distinguished B.Sc. student award, with honorary acceptance for the M.S. program, Tehran, Iran.
- 2010-4 Recipient of the grant for undergraduate studies from the Iranian National Elites Foundation, for outstanding academic success, Tehran, Iran.
- 2010 **Silver medal** of the National Physics Olympiad, Tehran, Iran.

## Professional Service

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- 2021 Serving on the ACM Symposium on Eye Tracking Research and Applications (ETRA) as Publicity Chair and Associate Chair for short papers track program, Stuttgart, Germany.
- 2020 Reviewer for the ACM Symposium on User Interface Software and Technology (UIST).
- 2020 Reviewer for the International ACM Conference on Automotive User Interfaces and Interactive Vehicular Applications (AutomotiveUI).
- 2018-19 Graduate Student Representative, College of Information and Computer Sciences, University of Massachusetts Amherst.
- 2018 TPC member of ACM S<sup>3</sup> workshop in conjunction with MobiCom, New Delhi, India.
- 2017-18 Reviewer for proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT).
- 2017-18 Officer of Iranian Graduate Students Association (IGSA) in University of Massachusetts Amherst, USA.
- 2014-15 Vice president of Scientific and Educational Committee in the student branch of ISBME (Iranian Society for Biomedical Engineering) in University of Tehran, Iran.
- 2013 Student Committee member of 20<sup>th</sup> Iranian Conference on Biomedical Engineering, Tehran, Iran.