

Tarek Hamid

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RESEARCH INTERESTS

Digital Health, Wearables, Biomedical Signal Processing, Machine Learning and AI for Health, Medical Cyber-Physical Systems, Ubiquitous and Mobile Computing

EDUCATION

University of Virginia, Charlottesville, VA *Present*
Ph.D. in Electrical and Computer Engineering
Dissertation: *Broad-Spectrum Multi-Wavelength PPG Algorithms for Personalized and Robust Wearable Physiological Monitoring*
Advisor: Prof. Amanda Watson

University of Pennsylvania, Philadelphia, PA *Aug 2023*
M.S. in Computer Science (50% Completed)

Johns Hopkins University, Baltimore, MD *Dec 2019*
M.S. in Biomedical Engineering

The College of New Jersey, Ewing, NJ *May 2017*
B.S. in Biomedical Engineering

PUBLICATIONS

- DermaGlow: Objective Quantification of Melanin, Erythema and Skin-tone Using Wearable Optical Spectroscopy*
Tarek Hamid, Patricia Flores, Jane Byun, Elizabeth C. Courtney, Kyle C. Quinn, Amanda Watson
Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT).
- Characterization and Feasibility of Wearable Spectroscopic Tracking of Nutrition Biomarkers*
Tarek Hamid, Elizabeth C. Courtney, Patricia Flores, Jane Byun, Afsaneh Doryab, Sibylle Kranz, Amanda Watson
IEEE Pervasive Computing Special Issue on Biosensing.
- A Multi-Wavelength Optical Sensing Framework for Calibration-Free Wearable Blood Pressure Monitoring*
Tarek Hamid, Patricia Flores, Jane Byun, Xi Chen, Haoran Zhang, Kyle Quinn, Amanda Watson
International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2025.
- RapROTO: An Open-Source Platform for Rapid Prototyping with Wearable Devices.*
Tarek Hamid, Kimberly Helm, Hyonyoung Choi, Jean Park, Claire Kendell, Stephanie Cummings, Steve Messe, Stefanie Modri, Insup Lee, Amanda Watson, James Weimer
Proc. IEEE-EMBS Int. Conf. on Body Sensor Networks (IEEE BSN), 2024.
- Wearable Sensing for Measuring Skin-tone, Melanin, and Erythema.*
Tarek Hamid, Anush Lingamoorthy, Kyle Quinn, and Amanda Watson
Proc. IEEE-EMBS Int. Conf. on Body Sensor Networks (IEEE BSN), 2024.
- Using Decision Tree Classifier to Increase Screening Test Sensitivity for the Prediction of ACL Retear.*
Tanishik Govil, **Tarek Hamid**, Kimberly Helm, Elliot Greenberg, Kevin Landrum, J. Todd R. Lawrence, Theodore J. Ganley, Amanda Watson

UBICOMP'24: Adjunct Proceedings of the 2024 ACM International Joint Conference on Pervasive and Ubiquitous Computing, Melbourne, VIC, Australia 2024

7. *SpectraVue - An Interactive Web Application Enabling Rapid Data Visualization and Analysis for Wearable Spectroscopy Research.*

Tarek Hamid, Insup Lee, Amanda Watson

UBICOMP'23: Adjunct Proceedings of the 2023 ACM International Joint Conference on Pervasive and Ubiquitous Computing, Cancun, Mexico 2023

8. *Alleviation of Arthritic Symptoms through Thermal Therapy.*

Tarek Hamid, Steven Ayala, Aakash Trivedi, Avi Shah

In Proceedings of the 2017 Northeast Biomedical Engineering Conference (NEBEC). Newark, NJ: IEEE.

9. *(In review) GlucoLux: Noninvasive Glucose Monitoring Using a Portable Spectroscopy Device*

Anush Lingamoorthy, Abhishek Murtha, **Tarek Hamid**, Kyle Quinn, Nagarajan Kandasamy, Amanda Watson

INDUSTRY EXPERIENCE

VivoSense

Algorithm Engineer

Remote

Developed algorithms and pipelines to process, analyze, and deliver wearables data from consumer smartwatches to pharmaceutical clients for use in clinical trials.

Sotera Digital Health

Jul 2022 - Dec 2023

Biomedical Algorithm Engineer

Remote

Designed and implemented signal processing and data science algorithms in Python for a next-gen hospital wearable, extracting vital signs such as heart rate, SpO₂, and blood pressure from ECG, PPG, and SCG sensor data.

JPMorgan Chase

Jun 2020 – July 2022

Software Engineer

New York, NY

Developed algorithms and internal customer-facing applications to report on the stability of new code changes to the Chase Consumer application using Python, Java, Angular, and TypeScript.

Department of Defense

Oct 2019 – June 2020

Electrical Engineer

Picatinny Arsenal, NJ

Designed custom hardware solutions for military vehicles using Altium.

Johnson & Johnson

Jan 2018 – Oct 2019

Scientist

Skillman, NJ

Led R&D lifecycle management activities for Class I and II consumer medical devices in the North American region.

HONORS AND AWARDS

SandboxAQ Global Travel Award

Aug 2025

Award of \$5,000 to cover travel expenses to present at UbiComp'2025 in Helsinki, Finland.

UVA Precision Health Initiative Grant

Feb 2025

Award of \$4,000 to cover travel expenses to present at ICASSP'25 in Hyderabad, India.

Second Runner-up for Best Paper Award

Oct 2024

Presented Raproto: An Open-Source Platform for Rapid Prototyping with Wearable Devices at IEEE Body Sensor Networks.

TEACHING EXPERIENCE

Teaching Assistant

Fall 2025 - Spring 2026

ECE 4501/6501: Sensors and Ubiquitous Computing
Department of Electrical Engineering, University of Virginia

PROFESSIONAL SERVICE AND AFFILIATIONS

Journal and Conference Reviews

1. *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)* 2025, 2026
2. *ACM Health* 2025
3. *IEEE Engineering in Medicine and Biology Society (EMBC)* 2024, 2025
4. *Elsevier Smart Health* 2024, 2025

Professional Affiliations

1. *IEEE EMBS: Technical Community on Wearable Biomedical Sensors and Systems (WBSS)*
2. *IEEE*
3. *ACM*
4. *SIGCHI*