Tarek Hamid

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RESEARCH INTERESTS

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

EDUCATION

University of Virginia, Charlottesville, VA — *Present*
PhD in Electrical and Computer Engineering

University of Pennsylvania, Philadelphia, PA — *Aug 2023*
M.S. in Computer Science (completed 75%)

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

SKILLS

Programming Languages: Python, Java, C, TypeScript, MATLAB
Data Science Tools and Libraries: Jupyter, NumPy, Pandas, Matplotlib, SciPy, Scikit-learn, Plotly Dash
Cloud and Database Management: AWS, Docker, PostgreSQL, Oracle, MariaDB

PUBLICATIONS

1. *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.

2. *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

3. *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

4. *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.

5. *(Submitted) DermaGlow: Objective Quantification of Melanin, Erythema and Skin-tone Using Wearable Optical Spectroscopy*

Tarek Hamid, Anush Lingamoorthy, Kyle Quinn, Amanda Watson
Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.

6. *(Submitted) GlucoLux: Noninvasive Glucose Monitoring Using a Portable Spectroscopy Device*
Anush Lingamoorthy, Abhishek Murtha, **Tarek Hamid**, Kyle Quinn, Nagarajan Kandasamy, Amanda Watson
Proc. AAAI Conf. on Artificial Intelligence.

INDUSTRY EXPERIENCE

Sotera Digital Health Jul 2022 - Dec 2023
Biomedical Algorithm Engineer *Remote*

- Developed end-to-end signal processing/data science algorithms in Python for next-gen hospital wearable to extract vital signs information such as heart rate, SpO2, and blood pressure from physiological sensor data (ECG, PPG, SCG) and ported these algorithms to C for offline device use.
- Led data collection and analysis efforts for internal and external clinical trials to validate these algorithms; authored research protocols and reports on results.
- Developed APIs in Python and Plotly Dash applications to expose simulated device data to partners and hospitals that wish to analyze and use it.

Freelance Consultant, Digital Health Jan 2022 - Dec 2023
Data Scientist *Remote*

- Developed algorithms to analyze gait variability for an early-stage start-up to inform on the impact of a neurostimulation device on potential users impacted by ALS and Parkinsons.
- Built end-to-end data processing platform to extract gait events from accelerometer data and characterize variability for device assessment.

JPMorgan Chase Jun 2020 – July 2022
Software Engineer *New York, NY*

- Developed algorithms and internal customer-facing applications to report on stability of new code changes to the Chase Consumer application using metrics such as automated test pass rates, coverage, and quality with Java, Python, TypeScript, and Angular.

Department of Defense Oct 2019 – June 2020
Electrical Engineer *Picatinny Arsenal, NJ*

- Designed custom hardware and software solutions for military vehicles using Python and Altium.

Johnson Johnson Jan 2018 – Oct 2019
Scientist *Skillman, NJ*

- Led R&D lifecycle management activities under North American region for class I and II medical devices.