

ABDULLAH AL MAMUN

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PROFILE HIGHLIGHTS

- Author of 15 research papers, 7 are published in peer-reviewed journals and conferences including Sensors Journal, AAAI 2025, EMBC 2025, BSN 2023, BSN 2022, and EMBC 2022. 5 papers are currently under review.
- Trained transformers and large models on supercomputers for classification, forecasting, segmentation, etc.
- Developed critical cybersecurity solutions for Windows, macOS, Ubuntu, CentOS servers and workstations as a full-time software developer. Set up and maintained HTTPS servers. Developed Android and iOS apps.
- Best Paper (Honorable Mention) Award winner at IEEE BSN 2022 conference.
- Outstanding Research Award and Teaching Excellence Award winner at ASU GSG Awards.

SKILLS

Deep Learning: PyTorch, Tensorflow, JAX, Transformers, Large Language Models, Attention, Time-series, Tabular data, Object detection, Image segmentation, Counterfactuals, Generative models.

Software Development: Python, Java, C, C++, ReactJS, Shell, Hadoop, iOS (Swift), Android, {My,Oracle,Postgre}SQL.

EXPERIENCE

Graduate Research Associate, Arizona State University (Phoenix, AZ, USA) **Dec 2021 - Present**

- Authored 15 papers as a researcher at the Embedded Machine Intelligence Lab (<https://ghasemzadeh.com>).
- Designed user studies, wrote IRB protocols, developed infrastructure, recruited participants, collected and analyzed data. Implemented API interfaces to access and process data on AWS S3, Spotify, Google Drive, etc.

Teaching Duties:

- Taught BMI 311: Modeling Biomedical Knowledge as the sole instructor in Fall 2024. Core topics: AI architecture, KNN, Random Forest, SVM, Neural networks, Validation methods, Deep learning, Clustering, etc.
- Designed multiple chapters of the BMI 310: App Development for Clinical and Pop. Health course at ASU.

Research and Teaching Assistant, Washington State University (Pullman, WA, USA) **Jan 2021 - Dec 2021**

- Submitted a paper. Helped over 100 students in Advanced Data Structures C/C++, taught by Dr. Yan Yan.

Lecturer, United International University (Dhaka, Bangladesh) **Sep 2019 - Jan 2021**

- Taught: Software Engineering, Java and C Programming, Digital System Design, System Analysis and Design.

Software Developer, HLC Technologies Limited (Dhaka, Bangladesh) **Nov 2018 - Sep 2019**

- Developed cybersecurity solutions for Windows, macOS, Ubuntu, and CentOS platforms, patch management and configuration monitoring tools, and online learning management systems. Implemented new features every sprint.
- Reduced data transfer overhead by more than 90% after converting a query-based system to an alert reporting system. Developed tools and tutorials for easy deployment of software solutions on new servers.
- Led daily stand-up meetings. Reviewed code and fixed bugs in large projects written by other developers.

EDUCATION

PhD, Computer Science, Arizona State University (GPA: 4.00) **Expected Dec 2026**

- Advisor: Dr. Hassan Ghasemzadeh.
- Dissertation: Trustworthy AI in Digital Health with Robust and Explainable Machine Learning Solutions.

MS (With Distinction), Computer Science, Arizona State University (GPA: 4.00) **May 2025**

- Selected courses: Reinforcement Learning, Machine Learning, Neural Networks, Planning and Learning in AI, Knowledge Representation, Image Analytics & Informatics (completed 39 credit hours of graduate coursework).

BSc, Computer Science, Bangladesh University of Engineering and Technology (GPA: 3.70) **Oct 2018**

- Selected courses: Data Structures, Algorithms, Compilers, OS, Computer Architecture, Databases (160 credits).

PUBLICATIONS

1. **LLM-Powered Prediction of Hyperglycemia and Discovery of Behavioral Treatment Pathways from Wearables and Diet.** A. Mamun, A. Arefeen, S. B. Racette, D. D. Sears, C. M. Whisner, M. P. Buman, H. Ghasemzadeh. Sensors, 25(17), 5372. <https://doi.org/10.3390/s25175372>. (Impact factor: 3.5, Cite score: 8.2)
Read on the Sensors Journal website: <https://www.mdpi.com/1424-8220/25/17/5372>.

2. **Domain-Informed Label Fusion Surpasses LLMs in Free-Living Activity Classification.** S. B. Soumma, A. Mamun, H. Ghasemzadeh. AAAI Conference on Artificial Intelligence (AAAI'25) Extended Abstract. Read on the AAAI website: <https://ojs.aaai.org/index.php/AAAI/article/view/35301>.
3. **Designing Deep Neural Networks Robust to Sensor Failure in Mobile Health Environments.** A. Mamun, S. I. Mirzadeh, H. Ghasemzadeh. IEEE Engineering in Medicine and Biology Conference (EMBC 2022). Read on the NSF website: <https://par.nsf.gov/servlets/purl/10325313>.
4. **Multimodal Time-Series Activity Forecasting for Adaptive Lifestyle Intervention Design.** A. Mamun, K. S. Leonard, M. P. Buman, H. Ghasemzadeh. IEEE Wearable and Implantable Body Sensor Networks (BSN 2022). Read on the NSF website: <https://par.nsf.gov/servlets/purl/10389477>. (Best paper honorable mention award winner)
5. **Neonatal Risk Modeling and Prediction.** A. Mamun, C.-C. Kuo, D. W. Britt, L. D. Devoe, M. I. Evans, H. Ghasemzadeh, J. Klein-Seetharaman. IEEE Conference on Body Sensor Networks (BSN 2023). Read on IEEE Xplore: <https://ieeexplore.ieee.org/document/10331196/>.
6. **Enhancing Metabolic Syndrome Prediction with Hybrid Data Balancing and Counterfactuals.** S. P. Sah, A. Mamun, S. B. Soumma, H. Ghasemzadeh. IEEE Engineering in Medicine and Biology Conference (EMBC 2025). Read on arXiv (IEEE EMBC accepted version): <https://arxiv.org/abs/2504.06987>.
7. **Freezing of Gait Detection Using Gramian Angular Fields and Federated Learning from Wearable Sensors.** S. B. Soumma, S. M. R. Alam, R. Mahi, U. N. Mahi, A. Mamun, S. M. Mostafavi, H. Ghasemzadeh. IEEE Engineering in Medicine and Biology Conference (EMBC 2025). Read (EMBC accepted version): <https://arxiv.org/abs/2411.11764>.

AWARDS & HONORS

- Best Paper (Honorable Mention) Award at the IEEE BSN 2022 conference (2022).
- Outstanding Research Award at ASU Graduate Student Government (GSG) Awards Program (2024).
- Teaching Excellence Award at ASU Graduate Student Government (GSG) Awards Program (2024).
- Invited Talk: Time-Series Wearable Activity Forecasting at ASU Machine Learning Day (2023).
- Invited Talk: AZ Health Data Integration Meeting (2025).
- Full Membership of Sigma Xi, The Scientific Research Honor Society (2025).
- Multiple Travel Awards by IEEE, ASU GSG, ASU Graduate College (2023 – 2025).

ACADEMIC SERVICES

- Mentored research projects of undergraduate and high school students. Outcomes: Full-contributed accepted paper in IEEE EMBC 2025. 1-page technical abstract accepted at BSN 2024.
- Reviewed 29 journal and conference submissions: 5 IEEE JBHI, 1 AAAI 2026, 1 BHI'23, 6 BHI'24, 1 BHI'25, 1 PerCom'23, 5 CHIL'24, 2 CHIL'25, 4 ML4H'24, 1 IEEE EMBC'25, and 2 IEEE BSN'25 submissions.
- Member of Program Committee: AAAI 2026

PAPERS UNDER-REVIEW AND PREPRINTS

1. **Use of What-if Scenarios to Help Explain Artificial Intelligence Models for Neonatal Health.** A. Mamun, L. D. Devoe, M. I. Evans, D. W. Britt, J. Klein-Seetharaman, & H. Ghasemzadeh. ACM Transactions on Computing for Healthcare (**under review, revision pending**) (Impact factor: 8.0, Cite score: 15.6). Read: <https://arxiv.org/abs/2410.09635>.
2. **Trustworthy AI in Digital Health: A Comprehensive Review of Robustness and Explainability.** A. Mamun, S. B. Soumma, H. Ghasemzadeh. Progress in Biomedical Engineering (**under review**). (Impact factor: 7.7). Read on Preprints.org: <https://www.preprints.org/manuscript/202507.2387/v1>.
3. **AIMI: Leveraging Future Knowledge and Personalization in Sparse Event Forecasting for Treatment Adherence.** A. Mamun, D. J. Cook, H. Ghasemzadeh. Smart Health (**under review**) (Cite score: 7.7). Read: <https://arxiv.org/abs/2503.16091>.
4. **AI-Powered Wearable Sensors for Health Monitoring and Clinical Decision Making.** S. B. Soumma, A. Mamun, H. Ghasemzadeh. Current Opinion in Biomedical Engineering (**under review, revision pending**). (IF: 4.2) Read on Preprints: <https://www.preprints.org/manuscript/202507.2601/v1>.
5. **The Effect of Music Listening on Stress Inoculation: Analysis of Psychological and Physiological Outcomes.** N. T. Chatrudi, R. K. Sah, A. Mamun, M. Belgrave, A. Habibi, M. J. Cleveland, H. Ghasemzadeh. International Journal of Stress Management (**under review**) (5-year impact factor: 4.2)
6. **Multimodal Physical Activity Forecasting in Free-Living Clinical Settings: Hunting Opportunities for Just-in-Time Interventions.** A. Mamun, K. S. Leonard, M. E. Petrov, M. P. Buman, H. Ghasemzadeh. IEEE Sensors (submission pending) (Impact factor: 4.5). Read on arXiv: <https://arxiv.org/abs/2410.09643>.

7. **Hybrid Label Fusion Approach using Domain Knowledge Surpasses LLM for Human Activity Recognition in Free-Living Contexts** (tentative title). S. B. Soumma, A. Mamun, N. Chaytor, D. J. Cook, H. Ghasemzadeh. IEEE Sensors (submission pending) (Impact factor: 4.5)
8. **Actsafes: Predicting violations of medical temporal constraints for medication adherence**. P. Seegmiller, J. Gatto, A. Mamun, H. Ghasemzadeh, D. J. Cook, J. Stankovic, S. M. Preum.
Read on arXiv: <https://arxiv.org/abs/2301.07051>.