Asiful Arefeen

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I am interested in Explainable AI, Machine Learning application in digital/mobile health, AI driven intervention in metabolic health, passive sensing, embedded system and algorithm development. Part of my work focuses on developing counterfactual explainable AI systems for better behavioral modification and disease management. I am also skilled in working with LLMs for processing unstructured data.

SKILLS

- **Programming Languages:** Python, Matlab, R, C/C++, Assembly language, SQL
- **Deep learning frameworks:** TensorFlow, Keras, PyTorch, AWS SageMaker, Google Cloud Platform
- **Libraries:** Scikit-learn, Pandas, Numpy, Scipy, PuLP, OpenCV, Matplotlib, Seaborn, Plotly
- **Tools:** Powerpoint, LaTex, MS Office

EDUCATION

Arizona State University	**Phoenix, AZ**
PhD in Biomedical Informatics	*Aug 2021 -*
Arizona State University	**Phoenix, AZ**
Masters in Computer Science	*Jan 2024 -*
Arizona State University	**Phoenix, AZ**
Masters in Biomedical Informatics	*Aug 2021 - May 2023*
Washington State University	**Pullman, WA**
Completed 12 credits towards PhD in Computer Science	*Aug 2020 - Aug 2021*
Bangladesh University of Engineering & Technology	**Dhaka, Bangladesh**
BS in Electrical & Electronic Engineering	*Feb 2015 - April 2019*

EXPERIENCE

Mayo Clinic Endocrinology	**Phoenix, AZ**
Research Affiliate	*Fall'2023 -*

- Developed counterfactual technique to reduce abnormal glycemic events

Embedded Machine Intelligence Lab, ASU	**Phoenix, AZ**
Graduate Research Assistant	*Fall'2021 -*

- Teaching BMI 310: App Development for Population Health

Embedded & Pervasive Systems Lab, WSU	**Pullman, WA**
Graduate Research Assistant	*Summer'2021*

Washington State University	**Pullman, WA**
Graduate Teaching Assistant	*Fall'2020 - Spring'2021*

- CPT_S 427 Computer Security
  - Set quizzes and graded them
- CPT_S 121 Program Design and Development C/C++
  - Held lab and office sessions, graded assignments
- CPT_S 122 Data Structures C/C++
  - Held lab and office sessions, graded assignments

SELECTED PUBLICATIONS

Preprints...

1　**Arefeen, A.**, & Ghasemzadeh, H. (2023). Designing User-Centric Behavioral Interventions to Prevent Dysglycemia with Novel Counterfactual Explanations. *ArXiv, abs/2310.01684.*

Peer reviewed Journals..

2 **Arefeen, A.**, Akbari, A., Mirzadeh, S., Jafari, R., Shirazi, B., & Ghasemzadeh, H. (2023). Inter-Beat Interval Estimation with Tiramisu Model: A Novel Approach with Reduced Error. *ACM Transactions on Computing for Healthcare.*

3 Alinia, P., **Arefeen, A.**, Ashari, Z.E., Mirzadeh, S., & Ghasemzadeh, H. (2023). Model-Agnostic Structural Transfer Learning for Cross-Domain Autonomous Activity Recognition. Sensors (Basel, Switzerland), 23.

Peer reviewed Conferences...

4 **Arefeen, A.**, & Ghasemzadeh, H. (2023). Glysim: Modeling and simulating glycemic response for behavioral lifestyle interventions. In *IEEE EMBS International Conference on Biomedical and Health Informatics (BHI).*

5 **Arefeen, A.**, Jaribi, N., Mortazavi, B.J., & Ghasemzadeh, H. (2022). Computational Framework for Sequential Diet Recommendation: Integrating Linear Optimization and Clinical Domain Knowledge. *2022 IEEE/ACM Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE)*, 91-98.

6 **Arefeen, A.**, Fessler, S.N., Johnston, C., & Ghasemzadeh, H. (2022). Forewarning Postprandial Hyperglycemia with Interpretations using Machine Learning. *2022 IEEE-EMBS International Conference on Wearable and Implantable Body Sensor Networks (BSN)*, 1-4.

CURRENT PROJECTS

User study: Meal Macronutrients Estimation through Passive Sensing	*June 2022 -*
GlySynth: Autoregressive Framework for Synthetic Glycemic Response Generation	*September 2022 -*
Effective Data Labeling with Human-Model Partnership for Multi-task Active Learning	*June 2023 -*
GlyMan: A Glycemic Management Framework using Patient-Centric Counterfactuals	*June 2024 -*

GRANTS & AWARDS

- 2024 College of Health Solutions (CHS) Student Heat and Health Research Challenge Award
- NIH T32 Institutional Training Grant for AI in Precision Nutrition (AIPrN) Research (2024-ongoing)
- NSF Student Travel Award to attend IEEE BHI'23
- ASU Graduate College University Grant 2023-24
- ASU Graduate College University Grant 2022-23
- NSF Student Travel Award to attend IEEE/ACM CHASE'22

NOTABLE COURSES

- CPT_S 223 Advanced Data Structures and Algorithms
- CPT_S 570 Machine Learning
- CPT_S 534 Neural Network Design and Application
- Math 420 Linear Algebra
- Math 511 Advanced Linear Algebra
- BMI 598 Embedded Machine Learning
- BMI 515 App Biostats Med & Informatics
- BMI 555 Stat Learning for Data Mining
- BMI 550 Translational Bioinformatics
- STP 530 Applied Regression Analysis
- CSE 579 Knowledge Representation & Reasoning