HAMZA REZA PAVEL

Ph.D. Candidate in Computer Science

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EDUCATION

Ph.D. in Computer Science
The University of Texas at Arlington
Aug. 2019 – Dec. 2024(Expected)

B.Sc. in Computer Science and Engineering
Shahjalal University of Science and Technology
Jan. 2011 – Sept. 2015

EXPERIENCE

Graduate Teaching Assistant/Research Associate
The University of Texas at Arlington
Sept 2019 – Present Arlington, TX, USA

- Developed deep learning-based solutions to detect activities from RGB videos for assessing attention in children.
- Built deep learning models to detect cognitive fatigue of individuals from RGB videos of their gait.
- Created novel heuristic-based algorithms to detect centrality measures in homogeneous multi-layer networks.
- TA for *Intro to Programming* and *Database* course.

Senior Software Engineer
Chaldal Limited
Aug. 2018 – Jul. 2019 Dhaka, Bangladesh

- Developed a tool named *TypeAlgebra* to generate service layer APIs and front-end code from predefined state machines which reduced the development time of in-house tools by 70%.
- Created the back-end of in-house communication tools to replace email using *TypeAlgebra*.
- Implemented a verification system for transactions made using foreign credit cards to reduce fraud.

Sr.Software/Software Engineer
Enosis Solutions Limited
Oct. 2015 - Jul. 2018 Dhaka, Bangladesh

- Added functionalities to a cross-platform GUI framework written in C++ using MFC, OpenGL, etc.
- Developed GUI for a CAD application to visualize the outputs of thermal and static simulations using C++, QT, and OpenGL.

HONORS & AWARDS

- **Session Chair & Conference Coordinator**, ACM PETRA 2023, Greece
- **Doctoral Consortium Award**, ACM PETRA 2022/2023, Greece
- **Graduate School Travel Grant**, UTA 2023, USA
- **I-Engage Mentorship Summer Research Grant**, UTA 2023, USA
- **Best Poster Award**, ACM PETRA 2022, Greece

TECHNICAL SKILLS

- **Languages:** Python, C, C++, C#, F#, Java, SQL, Bash, TypeScript, HTML, CSS
- **Libraries/Frameworks:** Keras, PyTorch, Tensorflow, NumPy, Pandas, Matplotlib, Scikit-learn, ROS, React.

PROJECTS

Cognitive Fatigue Assessment from Gait Cycle
- Built a supervised model that utilizes body key points to predict cognitive fatigue of an individual from RGB videos of Gait with an accuracy of 81%.

Assessing Executive Function in Children
- Developed computer vision and deep learning methods to automatically assess the executive function score of children, offering a cost-effective, sensor-free solution suitable for home or classroom use.

EEG Based Cognitive Fatigue Detection
- Worked on developing a shallow CNN-based model to classify cognitive fatigue using EEG signals, achieving 88.17% accuracy in classification.

IoT on Ti Microcontroller
- Developed DHCP client, TCP server, and MQTT client firmware for Texas Instrument Tiva series M4 microcontrollers.

Detecting Fake Movie Reviews
- Built an unsupervised Variational Autoencoder-based model to identify fake/anomalous movie reviews using the IMDB dataset, achieving over 72% accuracy after extensive dataset preprocessing.

PUBLICATIONS

- **An EEG-based Cognitive Fatigue Detection System** In *PETRA* 2023.
- **Assessment of Cognitive Fatigue from Gait Cycle Analysis.** In *Technologies 11, no. 1 (2023): 18*
- **Automated System to Measure Static Balancing in Children to Assess Executive Function.** In *PETRA* 2022.
- **Degree centrality algorithms for homogeneous multilayer networks.** In *KDIR* 2022.

See Google Scholar