

HAMZA REZA PAVEL

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Summary

Ph.D. candidate in Computer Science with over 2 years of experience in machine learning and deep learning, and more than 3 years in software development. Experienced in designing deep learning models for cognitive assessment, back-end systems, and scalable algorithms. Strong research focus on human-computer interaction, VR systems, and personalized AI solutions.

Education

The University of Texas at Arlington

Ph.D. in Computer Science

August 2019 - May 2025 (Expected)

Arlington, Texas, USA

Shahjalal University of Science and Technology

B.Sc. in Computer Science and Engineering

January 2011 - October 2015

Sylhet, Bangladesh

Technical Skills

Languages: Python, C/C++, C#, F#, Java, Javascript, SQL, Bash, TypeScript, HTML, CSS.

Libraries/Frameworks: Keras, PyTorch, Tensorflow, NumPy, Pandas, Matplotlib, Scikit-learn, ROS, React, QT.

Research Skills: Data Collection, User interviews, Human-Computer Interaction, Data analysis, Experiment Design, Machine Learning, Deep Learning, Large Language Models.

Experience

The University of Texas at Arlington

Graduate Student Researcher

August 2019 – Present

Arlington, Texas

- Assessed cognitive fatigue from Gait cycle data using OpenPose, CNN, and LSTM, initially achieving 81% accuracy, and later improved the method with a Residual Graph Network to improve accuracy to 85.7%.
- Developed a shallow convolutional neural network (CNN) model for detecting cognitive fatigue from EEG data, achieving 88.17% accuracy, after designing and conducting a novel experiment to collect training data.
- Created novel heuristic-based algorithms to compute degree and closeness centrality in homogeneous multilayer networks, achieving a speedup of more than an order of magnitude compared to naive approaches.
- Worked on the development of a VR-based executive function assessment system using Unity, C#, Python, and PyTorch, integrating virtual environments and Large Language Models (LLMs) to personalize the user experience and enhance task engagement.
- Designed and conducted surveys, user studies, and interviews to validate and measure the usability of developed systems, ensuring their effectiveness and user satisfaction.
- Provided academic support as a Graduate Teaching Assistant for various courses, including Introduction to Programming, Advanced Database Systems, Database Systems, Data Mining, and Robotics, contributing to student learning outcome.

Chaldal

Senior Software Engineer

August 2018 – July 2019

Dhaka, Bangladesh

- Developed and optimized APIs using C#, F#, dotnet framework, and SQL for various features in the e-commerce system backend, enhancing customer satisfaction and streamlining user interactions.
- Engineered a rapid prototyping tool with F# and dotnet framework that accelerated the development of in-house tools by up to 70%, significantly improving the team's efficiency.
- Worked on the backend development of the Chaldal Vegetable Network(CDVN) using F# and dotnet framework, focusing on optimizing bulk supply and B2B operations, which improved the efficiency of fresh produce delivery.

Enosis Solutions Limited

Software Engineer/Senior Software Engineer

October 2015 – July 2018

Dhaka, Bangladesh

- Developed and maintained custom GUI controls using C++ and MFC for Visual Host, a cross-platform GUI framework used by ESI-group, ensuring robust and user-friendly interfaces.
- Managed and optimized the application framework and plugin architecture for ESI VisualEnvironment (a CAE application), improving system stability and extensibility.
- Monitored issues throughout the release cycle, planned development phases, and coordinated bug-fixing sprints with the team lead to ensure timely and efficient software delivery.