Postgraduate Seminar Series

Venue: Graduate Seminar Room
Date & Time: July 18, 2026 at 3:30 PM

Speaker Information

Md Benzir Ahmed (Std No. 1016054001) is a part time Ph.D. student in the department of CSE, BUET. Alongside his doctoral studies, he serves as a faculty member in the department of CSE at United International University (UIU), Bangladesh. He holds a Master's degree in Computer Science from North Dakota State University, USA. He brings with him nearly a decade of valuable and relevant industry experience. His research focuses on advancing machine learning in healthcare, with a strong emphasis on diabetes management. He is currently pursuing PhD under the guidance of Dr. Mahmuda Naznin, Professor, CSE, BUET. Benzir will be presenting his ongoing research in this session.

Non-invasive Multi-Modal Data-Driven Approach For Predicting Blood Glucose Level After Meal

Predicting 2-hour postprandial blood glucose (BGAfter) is important for diabetes management, but many meal-aware models require manually entered nutritional information. This study investigates whether image-derived meal representations combined with pre-meal blood glucose (BGBefore) can provide comparable prediction performance with lower input burden. The proposed multimodal framework includes a nutritionally supervised meal-image model and a BG prediction model that combines BGBefore or 17 physiological features with nutritional facts, PCA features, VAE features, or joint embeddings. Performance was evaluated using RMSE, MAE, R-squared, and Clarke Error Grid analysis. Image-derived meal features achieved broadly comparable performance to expert-estimated nutritional facts, although differences were generally modest relative to fold-wise variability. In the BGBefore-only setting, the best image-based configuration achieved an RMSE of 43.52 mg/dL, compared with 47.20 mg/dL for the nutritional-fact-based model. With 17 physiological features, the best model achieved an RMSE of 32.10 mg/dL. Across the main configurations, 98.15%–98.89% of prediction–reference pairs were located in Clarke Error Grid Zones A+B. These findings suggest that image-derived representations may reduce manual nutritional entry at inference time. However, the small cohort and absence of temporal and behavioral modeling limit generalizability and clinical interpretation.