Professor Abu Asaduzzaman

Wichita State University
Professor
Electrical & Computer Engineering
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Professional Positions

Professor, Wichita State University, Electrical and Computer Engineering. (August 2024 - Present).

ECE Associate Chair, Department. (August 2024 - Present).

Associate Professor, Wichita State University, EECS. (August 2016 - July 2024).

Education

PhD, Computer Engineering. Florida Atlantic University, 2009.

Advanced Courses. Florida Atlantic University, 2009.

MS, Computer Engineering. Florida Atlantic University, 1997.

BS, Electrical and Electronic Engineering. Bangladesh University of Engineering & Technology (BUET), 1993.

Licensures and Certifications

Certificate of Appreciation, Wichita State University. (November 12, 2025).

Professional Memberships

American Society for Engineering Education. (August 2010 - Present).

Institute of Electrical and Electronics Engineers. (August 2003 - Present).

Awards and Honors

Travel Award to attend the NSF CSforAll PI and Community Meeting, NSF. (July 2024).

Travel Award to attend the NSF CSforAll PI and Community Meeting, National Science Foundation (NSF). (July 17, 2024).

Publications

Asaduzzaman, A., Pandi, K. R., Uddin, M. R., Thompson, C. (in press). *A Novel Strategy for Boosting Performance and Power Efficiency of Multicore WNoC Systems*. IEEE Green Technologies (GreenTech) Conference.

Hossain, M. S., Ferdous, J., Uddin, M. R., Hossain, K., Ahmed, M. I., Rahman, M. A., Sushmit, A. S., Sadeque, F., Shatabda, S., Asaduzzaman, A. (2025). *BanglaDocAtlas: A Multi-Class*

Annotated Dataset for Complex Bangla Document Layout Analysis. IEEE High Performance Extreme Computing Conference (HPEC).

Sibai, F. N., Sibai, A., Asaduzzaman, A., Abonamah, A. (in press). *Classification of Diabetic Patients with Machine Learning Methods*. IEEE International Conference on Fog and Mobile Edge Computing (FMEC).

Uddin, M. R., Asaduzzaman, A., Nawar, F., Thompson, C. (2025). *DNN-Driven Task Scheduling for High Performance Edge-Cloud Heterogeneous Systems*. IEEE High Performance Extreme Computing Conference (HPEC).

Asaduzzaman, A., Nawal, N. (2025). *Employing High-Performance PETSc Network Simulation for Business Profit Analysis*. IEEE High Performance Extreme Computing Conference (HPEC).

Thompson, C., Asaduzzaman, A., Uddin, M. R., Nawar, F. (2025). *Impact of HPC Hardware on ML Performance*. IEEE High Performance Extreme Computing Conference (HPEC).

Asaduzzaman, A., Nawar, F., Campbell, D., Sibai, F. N. (in press). *Impact of the TensorFlow Library on Neural Network Performance for Harnessing Hardware Parallelism*. IEEE Green Technologies (GreenTech) Conference.

Sibai, F. N., Sibai, A., Asaduzzaman, A., Abonamah, A. (2025). *Machine Learning for Identifying Cyber Attacks on the Electric Vehicle Power Charging Infrastructure*. IEEE International Conference on Distributed Computing in Smart Systems and the Internet of Things (DCOSS-IoT).

Uddin, M. R., Asaduzzaman, A., Gowda, S. G. (2025). *Performance Modeling of Heterogeneous Edge-Cloud Systems with Machine Learning*. IEEE High Performance Extreme Computing Conference (HPEC).

Asaduzzaman, A., Thompson, C., Sibai, F. N., Uddin, M. J. (2025). Application of Ensemble Learning Models in Computer-Aided Diagnosis of Skin Diseases. *Journal of Neural Computing and Applications (NCAA)*, 16735–16751. https://link.springer.com/article/10.1007/s00521-025-11336-w

Uddin, M. J., Lo, J., Gupta, M., Werfel, T., Asaduzzaman, A., Oltman, C., Mohyuddin, M., Nazmin, F., Rahman, M., Jashim, A., Crews, B., Kingsley, P., Marnett, L., Duvall, C., Cook, R. (2025). Polymeric Nanoparticles Enable Targeted Visualization of Drug Delivery in Breast Cancer. *Molecular Pharmaceutics*. https://pubs.acs.org/doi/10.1021/acs.molpharmaceut.4c00695

Asaduzzaman, A., Thompson, C., Sibai, F. N., Uddin, M. J. (2025). *Using The Cancer Genome Atlas from cBioPortal to Develop Genomic Datasets for Machine Learning Assisted Cancer Treatment*. Biology. https://www.biorxiv.org/content/10.1101/2025.02.17.638660v1

Uddin, M. J., Lo, J., Gupta, M., Werfel, T., Asaduzzaman, A., Oltman, C., Gbur, E., Mohyuddin, M., Nazmin, F., Rahman, M., Jashim, A., Crews, B., Kingsley, P., Marnett, L., Duvall, C., Cook, R. (2025). *Polymeric Micellar Nanoparticles Enable Image-guided Drug Delivery in Solid Tumors*. Biology. https://www.biorxiv.org/content/10.1101/2024.06.07.598019v2

Asaduzzaman, A., Uddin, M. R., Woldeyes, Y., Sibai, F. N. (2024). *A Novel Salary Prediction System Using Machine Learning Techniques* (pp. 38-43). IEEE International Conference on DAMT with ECTI-NCON. https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10480058

Uddin, M. R., Asaduzzaman, A., Soza, R., Minkler, C. (2024). *Avian Song Identification Using CNN* (pp. 43-47). Wichita: IEEE Green Technologies Conference (GreenTech). https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10520499

Asaduzzaman, A., D'Souza, D., Uddin, M. R., Woldeyes, Y. (2024). *Increase Security by Analyzing Password Strength using Machine Learning* (pp. 32-37). IEEE International Conference on DAMT with ECTI-NCON. https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10479995

Alqaaf, M., Nasution, A. K., Supriyan, R., Asaduzzaman, A., Altaf-Ul-Amin, M., Ono, N., Kanaya, S. *Neural Network-Based Analysis of Mammography Images for Identifying Breast Cancer Histological Subtypes*. IEEE International Conference on Future Machine Learning and Data Science (FMLDS).

Uddin, M. R., Asaduzzaman, A. (2024). *Pairing Computations at the Edge and Cloud Servers to Improve Performance of Heterogeneous Systems* (pp. 212-219). Wichita: IEEE International Conference on Fog and Mobile Edge Computing (FMEC). https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10710249

Asaduzzaman, A., Telikepalli, V. S.P.T., Uddin, M. R. (2024). *Performance Analysis of C and Python Parallel Implementations on a Multicore System Using Particle Simulation* (pp. 1-7). Wichita: IEEE International Conference on Artificial Intelligence, Computer, Data Sciences and Applications (ACDSA). https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10467885

Asaduzzaman, A., Uddin, M. R., Nawal, N., Ang, M. (2024). *Reduction of Input Features from Machine Learning Datasets for Water Quality Analysis* (pp. 1-6). IEEE International Conference on Artificial Intelligence, Computer, Data Sciences and Applications (ACDSA). https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10467928

Uddin, M. R., Asaduzzaman, A. S., Le, K., Medarametla, R. R. (2024). *Voice Activated Edge Devices Using Tiny Machine Learning Enabled Microcontroller* (pp. 38-42). Wichita: IEEE Green Technologies Conference (GreenTech). https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10520459

Sibai, F. N., Asaduzzaman, A., El-Moursy, A. (2024). Characterization and Machine Learning Classification of AI and PC Workloads. *IEEE Access, 12*, 83858-83875. https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=10555271

Asaduzzaman, A., Thompson, C. C., Uddin, M. J. (2024). Machine Learning Approaches for Skin Neoplasm Diagnosis. *ACS Omega, 9*(30), 32853-32863. https://pubs.acs.org/doi/full/10.1021/acsomega.4c03640

Uddin, M. R., Asaduzzaman, A., Sibai, F. N. (2024). *A Methodology to Optimize Edge Computing for Scalable IoT Systems*. IEEE. https://www.techrxiv.org/doi/full/10.36227/techrxiv.172055620.09900012/v1

Asaduzzaman, A., Uddin, M. R. (2024). *Dimensionality Reduction by Machine Learning for Cost-Effective Data Analysis*. IEEE:. https://www.techrxiv.org/doi/full/10.36227/techrxiv.171332281.12206851/v1

Asaduzzaman, A., Thompson, C., Uddin, M. J. (2024). *Improving CADx System Performance for Skin Disease Detection using Ensemble Machine Learning Models*. IEEE. https://www.techrxiv.org/users/766264/articles/870192-improving-cadx-system-performance-for-skin-disease-detection-using-ensemble-machine-learning-models

Asaduzzaman, A., Thompson, C. C., Uddin, M. J. (2024). *Machine Learning Approaches for Skin Neoplasm Diagnosis*. Biology. https://doi.org/10.1101/2024.05.12.593773

Asaduzzaman, A., Pandi, K. R. (2024). *Dynamic Job Scheduling using the Least Utilized Cores for Enhanced Performance and Thermal Management in WNoC*. IEEE. https://www.techrxiv.org/doi/full/10.36227/techrxiv.172254504.47143293

Presentations

Asaduzzaman, A. (Presenter), Wichita Healthcare Summit, "Automated Prescreening Data Analysis for Healthcare Services," Wichita State University (WSU), Wichita State University (WSU), Wichita, KS, United States. (2024).

Asaduzzaman, A., IEEE International Conference on Information and Communication Technology (ICICT), "Navigating the Challenges of Machine Learning in Genomic Data Analysis," Dhaka, Bangladesh. (October 2024).

Asaduzzaman, A. (Presenter), IEEE International Conference on Information and Communication Technology (ICICT), "Navigating the Challenges of Machine Learning in Genomic Data Analysis," BUET Institute of Information and Communication Technology (IICT), Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh. (2024).

Contracts, Fellowships, Grants and Sponsored Research

Jones, A. (Principal), Asaduzzaman, A. (Co-Principal), "Fleet Management Platform," Sponsored by STTR for Wichita State University Training & Technology Team (T3), Federal, $539,998.00. (June 2025 - May 2027).

Asaduzzaman, A. (Principal), "A Promising Approach to Employ Machine Learning for Genomic Data Analysis in Advancing Cancer Treatment," Sponsored by Flossie E. West Memorial Trust, Private, $32,000.00. (May 2025 - December 2025).

Research Activity

"Machine Learning Driven Surrogate Framework for Predicting Stability of Scalable Power Grids via Data Sampling and Dimensionality Reduction" (Complete). (August 2025).
Asaduzzaman, A., Uddin, M. R., and Maldonado, D. A., "Machine Learning Driven Surrogate Framework for Predicting Stability of Scalable Power Grids via Data Sampling and Dimensionality Reduction," Argonne National Laboratory (ANL) and Wichita State University, 2025.

Teaching Experience

ECE 394, Intro Computer Architecture, 2 courses.
ECE 707, Machine Learning Essentials and Applications, 3 courses.
ECE 875, Computer Sys in Data Analytics, 1 course.
ECE 876, MS Thesis, 1 course.
ECE 878, MS Directed Project, 2 courses.
ECE 976, PhD Dissertation, 4 courses.

Directed Student Learning

Dissertation Committee Member, "Advancing Robotic Refill Friction Stir Spot Welding with Artificial Intelligence and Machine Vision." (January 15, 2025 - Present).
Advised: Michael Milhon

Dissertation Committee Member, "IMPROVING FLAME RESISTANCE OF AIRCRAFT INTERIORS VIA ELECTRO-SPUN POLYMERIC NANOCOMPOSITE FIBERS." (January 15, 2025 - Present).
Advised: Zaara Ali

Dissertation Committee Member, "Cybersecurity, Information Assurance and Privecy." (January 15, 2025 - Present).
Advised: Muhammad Tashfeen

Dissertation Committee Member, "Power and Energy Systems." (January 15, 2025 - Present).
Advised: Eric Pereira

Dissertation Committee Chair, "Synergizing Machine Learning with Heterogeneous System Design." (January 2025 - Present).
Advised: Fairuz Nawar

Supervised Research, "An Exploration of Brain Image Processing Using MATLAB." (August 2023 - Present).
Advised: Anne Perera

Dissertation Committee Chair, "Modeling, Simulation, and Analyzing Systems." (January 2023 - Present).
Advised: Md Raihan Uddin

Undergraduate Research Instructor. (2025).
Advised: Yoel Woldeyes

Master's Thesis Committee Member, "Safety-Critical Control Of Robotic Systems In Webots Using Control Barrier Functions." (August 15, 2024 - July 15, 2025).
Advised: Aaditya Acharya

Master's Thesis Committee Member, "Smart Manufacturing Analytics: Root Cause Analysis and Predictive Decision-Making in Aerospace Quality Control." (August 15, 2024 - May 15, 2025).
Advised: Siddharth Alagiri

Master's Thesis Committee Member, "Flexible Reinforcement Learning Based Beam-Forming for Amplify-and-Forward Relay Systems." (August 15, 2024 - May 15, 2025).
Advised: Walter Roensch

Supervised Research, "Handwritten PDF to Excel Conversion: Evaluating Automation Tools for Accuracy and Efficiency." (January 2024 - May 15, 2025).
Advised: Md Reza-E-Rabbi

Supervised Research, "Predicting Performance of Heterogeneous Edge-Cloud Systems using Machine Learning Models." (January 2024 - May 15, 2025).
Advised: Sonu Gowda

Supervised Research, "Replication of Power Sequencing Logic on a NetApp Expander Module (IOM12B) using Lattice CPLD Breakout Board." (2024).
Advised: Declan Dsouza

Supervised Research, "Dynamic Task Scheduling to Improve Performance and Distribute Heat Uniformly on Multicore Systems." (2024).
Advised: Koteswara Rao Pandi

Mentoring

Chithien Kim (Undergraduate). Approx. 30 hours. August 15, 2025 - Present.

Corbin Leakwood (Undergraduate). Approx. 30 hours. August 15, 2025 - Present.

Dillon Busby (Undergraduate). Approx. 30 hours. August 15, 2025 - Present.

My Hoang (Undergraduate). Approx. 30 hours. August 15, 2025 - Present.

Christian Thompson (Graduate Student). Approx. 120 hours. January 2023 - Present.

Merve Ozdemir (Faculty Member). September 2024 - June 2025.

Dan Khuu (Undergraduate). 2024.

James Earnst (Undergraduate). 2024.

McKinley Bahr (Undergraduate). 2024.

Teaching Innovation and Curriculum Development

New Course. ECE 477G (Introduction to Hardware Security). August 15, 2025 - Present.
ECE 477G, Introduction to Hardware Security, Spring 2026
Developed this course in Fall 2025 and scheduled to teach it for the very first time in Spring 2026. This course introduces the role of hardware solutions in enhancing computing security and building trust. Important topics include fundamentals of hardware security for integrated circuits and systems, attacks, physically unclonable functions, and secure processor systems.

Curricular Development. BS in Computer Engineering. August 2024 - Present.
Served as the ECE Associate Chair; oversaw ECE Curriculum Committee and Undergraduate Enrichment and Research Committee; reviewed Student Outcome assessment reports, Knowledge Probe assessment reports, and related materials;

Curricular Development. BS in Electrical Engineering. August 2024 - Present.
Served as the ECE Associate Chair; oversaw ECE Curriculum Committee and Undergraduate Enrichment and Research Committee; reviewed Student Outcome assessment reports, Knowledge Probe assessment reports, and related materials;

Revise Existing Course. ECE 394 (Introduction to Computer Architecture). 2024.
Reviewed and assigned textbook materials ("Computer Organization and Design: ARM Edition" by David A. Patterson and John L. Hennessy); developed and taught handouts using materials from similar books ("Structured Computer Organization" by Andrew S. Tanenbaum and Todd Austin and "Computer Organization and Architecture: Themes and Variations" by Alan Clements); conducted interactive practice sessions;

Revise Existing Course. ECE 696 (Hardware-Based Cybersecurity). 2024.
Developed handouts and taught materials from several contemporary popular books (including "Hardware-based Computer Security: Techniques to Defeat Hackers from Biometrics to Quantum Cryptography" by Roger R. Dube, "Security Engineering: A Guide to Building Dependable Distributed Systems" by Ross Anderson, and "Computer Security Handbook" by Seymour Bosworth, M. E. Kabay, and Eric Whyne); conducted interactive practice sessions; introduced challenging research topics that require theoretical knowledge, critical thinking, and innovative problem-solving approaches;

Revise Existing Course. ECE 707 (Machine Learning Essentials and Applications). 2024.
Developed handouts and taught materials from several contemporary popular books (including "Machine Learning Yearning" by Andrew Ng, "Understanding Machine Learning: From Theory to Algorithms" by Shai Shalev-Shwartz and Shai Ben-David, and "Machine Learning for Engineers: Using data to solve problems for physical systems" by Ryan G. McClarren); conducted interactive practice sessions; introduced challenging research topics that require theoretical knowledge and programming skills;

Revise Existing Course. ECE 875 (Computer Systems in Data Analytics). 2024.
Developed handouts and taught materials from several contemporary popular books (including "Computer Architecture: A Quantitative Approach" by John L. Hennessy and David A. Patterson and "The Future of Computing Performance: Game Over or Next Level?" by National Research Council); conducted interactive practice sessions; introduced research topics that require a strong foundation in theoretical knowledge, and skills in technical reading, writing, and presentation;

Curricular Development. BS in Computer Engineering. August 2023 - July 2024.
Served as the ECE Curriculum Committee Chair; reviewed Knowledge Probe assessment reports, Student Outcome assessment reports, and related materials; evaluated course proposals and modifications;

Curricular Development. BS in Electrical Engineering. August 2023 - July 2024.
Served as the ECE Curriculum Committee Chair; reviewed Knowledge Probe assessment reports, Student Outcome assessment reports, and related materials; evaluated course proposals and modifications;

University Service

Chair, ECE T&P Committee. (August 15, 2025 - Present).

ECE Representer, CoE T&P Committee. (August 15, 2025 - Present).

ECE Coordinator, CoE ABET Accreditation Committee. (June 1, 2025 - Present).

Associate Chair, ECE Department Associate Chair. (August 2024 - Present).

ECE Representer, CoE T&P Committee. (August 2024 - Present).

Chair/Member, ECE Department Committees. (August 2021 - Present).

Member/Chair, CoE Curriculum Committee. (August 2021 - Present).

Moderator/Judge, WSU/CoE competitions (such as GRASP and WISE). (August 2011 - Present).

Member, WSU Faculty Senate Rules Committee. (August 2024 - July 2027).

Chair, CoE Curriculum Committee. (August 2023 - July 2024).

Professional Service

Mentor/Collaborator, Mentor/Collaborator: WSU Training & Technology Team (T3), WSU Ennovar Technology Services & Solutions. (2014 - Present).

Reviewer/Referee, Journal Reviewer: IEEE Transactions on Cloud Computing; IEEE Access; Elsevier Journal on Computers and Electrical Engineering; Springer Journal on Design Automation for Embedded Systems; Springer Journal on Multimedia Tools and Applications; Elsevier Journal on Ad Hoc Networks; Springer Journal on Molecular Neurobiology, and MDPI Algorithms. (2012 - Present).

Reviewer/Referee, NSF Reviewer: Serve as panel reviewer of NSF programs, including Resilient & Intelligent NextG Systems, Graduate Research Fellowships Program (GRFP), EPSCoR RSV Panel-2, and Transforming Undergraduate Education in Science (CS) Type-1. (2012 - Present).

Committee Member, TPC/IPC Member: IEEE Conferences include ABC, CCWC, ECTI-CON, ICCIT, ICEEE, ICIEV, ICOSST, ICSCT, IEMCON, IPCCC, ISEC, NoCArc, SECon, SKIMA, TENSYMP, and VLSIS, and Scopus Bulletin of Electrical Engineering and Informatics (BEEI) Conference. (2011 - Present).

Session Chair, IEEE Integrated STEM Education Conference, WORLDCOMP PDPTA, IASTED PDCS, and IEMS Conference. (2011 - Present).

R5 Meeting Chair and R5 Program Chair, R5 Meeting Chair and R5 Program Chair: 2025 IEEE Green Technologies (GreenTech) Conference and Region 5 Annual Meeting, Wichita, KS. 2025. (May 2025).

Public Service

Asaduzzaman FAAR-CV, https://www.wichita.edu/academics/engineering/CAPPLab/_documents/PDF/AA_FAAR-CV_Aug24plus.pdf. (August 2024 - Present).

Volunteer, Wichita East High School Tournaments, Wichita, KS. (2021 - Present).

Volunteer, WSU College of Engineering, Wichita, KS. (2011 - Present).