MD ZAHID HASAN

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PROFESSIONAL SUMMARY

- Machine Learning specialist with over two years of experience in Computer Vision, Multimodal learning, Vision-Language-based foundation models, and Video action understanding research
- Implemented deep learning frameworks like PyTorch, with a focus on fine-tuning and developing cutting-edge transformer models to optimize Vision-Language models for enhanced video action recognition
- Trained with a diverse skill set to perform both the development of advanced deep modeling techniques and their practical implementation in real-world scenarios
- Successfully collaborated with students, faculties and research scientists from diverse cultures and research groups in multiple Machine Learning and Computer Vision projects as a Graduate Research Assistant

SKILLS

Python, C/C++, PyTorch, Tensor Flow, Numpy, Pandas, SciPy, Matplotlib, OpenCV, SciKit-Learn, HuggingFace, MATLAB, R, CVXPY, Microsoft Office, Amazon Web Services (AWS), Amazon SageMaker, MPI, CUDA, OpenMP, Unix/Linux, LaTeX, GitHub, Tableau, PostgreSQL, GPT, Transformer, ViT, Foundation ML models, Optimizers

EDUCATION

Iowa State University (ISU), Ames, IA **January 2021-June 2025**
Doctor of Philosophy, Ph.D., Electrical Engineering, GPA:3.81/4

Iowa State University (ISU), Ames, IA **January 2023-June 2024**
Master of Engineering, M.Eng., Electrical Engineering, GPA:3.81/4

Bangladesh University of Engineering and Technology (BUET), Bangladesh **July 2014-October 2018**
Bachelor of Science, B.S., Electrical and Electronic Engineering, GPA:3.52/4

EXPERIENCE

ISU Electrical and Computer Engineering Department **June 2021-Present**
Machine Learning Graduate Research Assistant

- Expanded a vision-language-based framework with PyTorch to analyze distracted driving activity from naturalistic driving video (data-driven multi-modal model for understanding human behavior)
- Applied feature extraction methods in large-scale, high-dimension naturalistic driving data to analyze spatial-temporal features for cognitive impairment analyses in Alzheimer patients (used Python and PyTorch)
- Collaborated with an interdepartmental team of students and faculties from the University of Nebraska
- Implemented real-world digital biomarker algorithm to analyze driving patterns from roadway weather conditions and drivers' speed compliance in naturalistic driving (used Python and Vision Transformer)

Department of Electrical and Computer Engineering ISU **January 2021-May 2021**
Communication and Signal Processing Graduate Teaching Assistant

- Graded homework assignments, final exams, and projects for ~40 undergraduate students
- Conducted sessional class on Simulink toolbox and taught two classes and review sessions for ~15 students

BUET Electrical and Electronic Engineering Department, Bangladesh **January 2018-December 2020**
Power Systems Undergraduate Research Assistant

- Developed a power systems component Phase-locked loop using MATLAB's DSP toolbox and Simulink to analyze noisy signals and predict voltage variations in the power system.

LEADERSHIP AND SERVICE EXPERIENCE

Graduate Organization of Electrical and Computer Engineering (GOECpE), ISU **January 2024-Present**
Assistant Secretary

- Fostered a sense of community via social interactions and assisted in the professional development of the Iowa State Electrical and Computer Engineering (ECpE) graduate students
- Served as a liaison between the graduate students and the Iowa State ECpE Department
- Organized a fundraising initiative that successfully raised $300 for a student engagement event hosted by Iowa State Student Engagement

Bangladesh Students' Association (BSA), ISU **January 2021-Present**
Student Member

- Mentored incoming Bangladeshi ISU students with onboarding information and procedures
- Engaged in student outreach and promoted the organization's mission
- Collaborated with the student officers to organize on-campus events and programs

IEEE-Eta Kappa Nu: Nu Chapter (IEEE-HKN), ISU **November 2021-May 2023**
Graduate Member

- Conducted help room sessions to mentor undergraduate students and provide academic assistance
- Communicated with the student officers and assisted in organizing the Fall 2021 induction program

LICENSES AND CERTIFICATES

- CITI Program for Biomedical Research, The University of Nebraska Medical Center — April 2024
- Fundamentals of Deep Learning for Multi-GPUs, NVIDIA Deep Learning Institute — August 2022
- Machine Learning and AI Foundations, LinkedIn Learning — July 2020
- Applied Machine Learning: Algorithms, LinkedIn Learning — May 2019

PUBLICATIONS

- **Hasan, M. Z.,** Joshi, A., Rahman M., Venkatachalapathy, A., Hegde, C., Sharma, A., Sarkar S. "DriveCLIP: Zero-shot transfer for distracted driving activity understanding using CLIP," Machine Learning for Autonomous Driving Workshop at the 36th Conference on Neural Information Processing Systems (NeurIPS 2022), New Orleans, USA, 2022. url: https://dr.lib.iastate.edu/handle/20.500.12876/EzR2ZgGz
- **Hasan, M. Z.**, Basulto-Elias, G. and Tan, R. K. L., Chang, J. H., Sarkar, S., Sharma, A., Hallmark, S., and Rizzo, M. and Merickel, J. "Roadway weather challenges illuminate real-world driving biomarkers of dementia risk," Alzheimer's & Dementia, 19, e075742 (Impact Factor 14), url: https://doi.org/10.1002/alz.075742
- **Hasan, M. Z.,** Chen J., Wang J., Rahman M. S., Joshi A., Velipasalar S., Hegde C., Sharma A., Sarkar S., "Vision-Language Models can Identify Distracted Driver Behavior from Naturalistic Videos," IEEE Transactions on Intelligent Transportation Systems (Impact Factor 9.5), url: https://doi.org/10.1109/TITS.2024.3381175

PROFESSIONAL ASSOCIATIONS

Graduate Organization of Electrical and Computer Engineering (GOECpE) – Assistant Secretary **2024-present**
Iowa State Inter-Residence Hall Association – Graduate member **2023-present**
Institution of Electrical and Electronics Engineers (IEEE), Iowa State – Student member **2021-2023**
IEEE-Eta Kappa Nu: Iowa State Nu Chapter (IEEE-HKN) – Graduate member **2021-2023**