

# MD ZAHID HASAN

Ames, IA 50011

515-715-3013

[zahid@iastate.edu](mailto:zahid@iastate.edu)

[LinkedIn](#)

[GitHub](#)

[Google Scholar](#)

## PROFESSIONAL SUMMARY

- Machine Learning specialist with over three years of experience in Computer Vision, Multimodal learning, Vision-Language foundation models and Video action understanding for autonomous system
- Implemented deep learning frameworks like PyTorch, with a focus on fine-tuning and developing cutting-edge strategies to optimize Vision-Language models for enhanced video action recognition task
- Trained with a diverse skill set to perform both the development of advanced deep modeling techniques and their practical implementation in real-world scenarios and deployment
- 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

*Programming Languages:* Python, C/C++, MATLAB, R

*AI and ML:* PyTorch, TensorFlow, Keras, Transformers, Vision-Language Models, Multimodal foundation models, Contrastive learning, Multimodal learning, Optimizers, ViT, Large-vision-language models

*Software and Tools:* OpenCV, Scikit-learn, HuggingFace, Timm, Amazon AWS, Amazon SageMaker, MPI, CUDA, OpenMP, SciPy, PostgreSQL, Unix/Linux, LaTeX, GitHub, Azure DevOps, Microsoft Office, Weights&Biases

*Data Handling Library:* HuggingFace dataset, Tableau, Matplotlib, Numpy, Seaborn, Plotly, Pandas, AWS s3

*Others(learning):* Diffusion models, Model editing, FastAPI, MLflow, Flask, Kubernetes, Xcode, Docker

## 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-July 2024**

Master of Engineering, M.Eng., Electrical Engineering, GPA:3.81/4

## 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 (developed a data-driven multi-modal model for understanding human behavior)
- Applied feature extraction methods in large-scale, high-dimension naturalistic driving video data to analyze spatial-temporal features for cognitive impairment analyses in Alzheimer patients (used Python and PyTorch)
- Implemented real-world digital biomarker algorithm to analyze driving patterns from roadway weather conditions and drivers' speed compliance in naturalistic driving video (used Python and Vision Transformer)
- Contributed to the develop a reinforcement learning-based framework for generating naturalistic edge cases to enhance system safety in autonomous driving applications (used CARLA simulator and Scenic language)
- Collaborated with an interdepartmental and interdisciplinary team of students and faculties from the University of Nebraska Medical Center and Syracuse University
- Interested in working on multimodal generative AI for autonomous systems, vision-language models and content understanding by leveraging previous experience with video data in the autonomous driving domain

**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

**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," ML for Autonomous Driving Workshop at the 36th Conference on Neural Information Processing Systems (**NeurIPS 2022**), New Orleans, USA, 2022.
- **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 (Impact Factor 14)[[link](#)]
- **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)[[link](#)]
- Yang, H. J., Beck, J., **Hasan, M. Z.**, Beyazit, E., Chakraborty, S., Wongpiromsarn, T., & Sarkar, S., "GENESIS-RL: GEnErating Natural Edge-cases with Systematic Integration of Safety considerations and Reinforcement Learning" (submitted to a robotics conference) [[link](#)]

**PROFESSIONAL ASSOCIATIONS**

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