Md Zahid Hasan

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Objective

To leverage expertise in AI and Human-centric intelligent systems to design and deploy scalable AI applications that enhance productivity and decision-making through reusable components and autonomous workflows

Credential Summary

- 5+ years of expertise in implementing ML algorithms in PyTorch, TensorFlow & AWS; extensive experience with finetuning VLM, MLLM & Transformer-based models, multi-GPU, multimodal data and Generative AI models
- Strong interest and expertise in GenAI, LLM, Agenic AI, AI tooling, self-driving challenges, distributed training etc.
- Presented and co-authored in top-tier AI/ML and Autonomous Vehicle conference (NeurIPS, ICLR, TMLR, ICCPS)

Education

Doctor of Philosophy (Ph.D.) January 2021 - December 2026

Iowa State University, Major: Electrical Engineering, Minor: Computer Science Ames, IA
GPA: 3.8/4.0, Focus Area: ML & Multimodal AI, Advisor: Soumik Sarkar & Baskar Ganapathysubramanian
Thesis: Advancing Human-centric Autonomous Systems Via AI Foundation Models

Master of Engineering (M.Eng) January 2023 - August 2024

Iowa State University, Major: Electrical Engineering Ames, IA
GPA: 3.8/4.0, Focus Area: AI/ML & Computer Vision, Advisor: Soumik Sarkar & Baskar Ganapathysubramanian

Research Experience & Employment

Agentic AI Research Intern March 2026 – August 2026

Corteva Agriscience Johnston, IA

- Building AI-powered agricultural agents with LLM-base reasoning systems to explain crop yield deviations
- Developing an Agentic pipeline translating predictions into interpretable insights, enhancing Ag sales strategies

Machine Learning Intern June 2025 – October 2025

RTX, Team: Advanced Learning & Analytics RTRC, East Hartford, CT

- Developed multimodal LLM reasoning models for scientific discovery & studied LLM Agent-based workflow
- Gained experience in industry-standard LLMs and applications in aerospace & defense (ICLR 2026 publication)

Machine Learning Research Assistant June 2021 – February 2026

Self-aware Complex System Lab, Iowa State University Ames, IA

- Expanded a multimodal AI framework to analyze distracted driving activity from everyday driving video while achieving $\sim 21\%$ reduction in training time and $\sim 23\%$ less memory usage (IEEE Transactions ITS 2024)
- Developed a Multi-Modal LLM and RL-based & informative sample generation framework to enhance Spatial Reasoning in Vision-Language models for indoor autonomous navigation task (ICCPS 2025, NSF project)
- Designed and implemented RL-guided frameworks to generate edge cases for vehicle dynamics and control, enhancing robustness in autonomous systems under extreme conditions.(IEEE IAVVC 2024, NSF project)

Deep Learning Teaching Assistant February 2025 – May 2025

Department of Electrical and Computer Engineering, Iowa State University Ames, IA

- Supported students in learning core concepts of Computer Vision, model training, DL projects and AI/ML coding

Technical Skills

Programming Languages	Python, C/C++, AI/ML coding
ML Frameworks	PyTorch, TensorFlow, CNN, Transformers, Multimodal LLM, RAG, LoRA, Multi-agent
VLM/LLM Expertise	CLIP, LlaVa, Meta Llama, OpenAI GPT, Gemma, Calude, LangChain, LlamaIndex, vLLM
Data Library	HuggingFace, Trino, AWS S3, Numpy, Pandas, HPC, PostgreSQL, VectorDB
Software and Tools	OpenCV, Scikit-learn, AWS SageMaker, AWS Bedrock, CUDA, multi-GPU, ONNX, Ollama
Platforms	Microsoft Office, MacOS, VScode, Linux, GitHub, Azure AI, Docker, Kubernetes, MLflow
Others (Learning)	PromptFlow, Pinecone, FAISS, Semantic web standards, Microsoft Agents, NVIDIA Nemo

Key Research Interest

- Human-centric AI in Autonomous system
- Generative AI-based multi-agent workflows
- Multi-hop reasoning, causal analysis & uncertainty quantification
- Optimized finetuning (speed & scale) of AI foundation models

Academic Award

- Iowa State Graduate and Professional Student Senate Leadership Award (2025)
- IEEE Computational Intelligence Society travel award for the IEEE CAI conference (2025)
- Iowa State Professional Advancement Grants (PAG) by the Graduate & Professional Student Senate (2025)
- Iowa State Electrical & Computer Engineering Department's Professional Development Support (PDS) Award (2025)
- Iowa State College of Engineering Tuition award as the Graduate Research Assistant (Spring 2021 – Present)

Selected Publications

- **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 (**IEEE T-ITS**), vol. 25, no. 9, pp. 11602-11616, Sept. 2024. (**Impact Factor 8.4**)
- **Hasan, M. Z.**, Joshi, A., Rahman, M., Venkatachalapathy, A., Sharma, A., Hegde, C., Sarkar, S., "DriveCLIP: Zero-shot transfer for distracted driving activity understanding using CLIP," 36th Conference on Neural Information Processing Systems (**NeurIPS 2022**) Machine Learning for Autonomous Driving Workshop, New Orleans, LA.
- Luo, H., Jiang, Z., **Hasan, M. Z.**, Chen, Y., Sarkar, S., "FROST: Filtering Reasoning Outliers with Attention for Efficient Reasoning," 14th International Conference on Learning Representations (**ICLR 2026**), Rio de Janeiro, Brazil.
- Jiang, Z., **Hasan, M. Z.**, Saadati, N., Balu, A., Liu, C., Sarkar, S., "Balancing Utility and Privacy: Dynamically Private SGD with Random Projection," Transactions on Machine Learning Research (**TMLR 2025**)
- Yang, C., Feuer, B., Jubery, Z., Deng, Z. K., Nakkab, A., **Hasan, M. Z.**, Chiranjeevi, S., Marshall, K., Baishnab, N., Singh, A. K., Singh, A., Sarkar, S., Merchant, N., Hegde, C., Ganapathysubramanian, B., "BioTrove: A Large Curated Image Dataset Enabling AI for Biodiversity," 38th Conference on Neural Information Processing Systems (**NeurIPS 2024**) Datasets and Benchmarks Track, Vancouver, BC, Canada, 2024. (**Top-3% Spotlight paper**)
- Full list of publications can be found here: [Link]

Conference Experience

- **Oral Presentation** 2025 IEEE Conference on Artificial Intelligence (IEEE CAI), Santa Clara, CA
- **Poster Presentation** 6th Midwest Machine Learning Symposium (MMLS 2025), Chicago, IL
- **Poster Presentation** 36th Conference on Neural Information Processing Systems (NeurIPS 2022), New Orleans, LA

Leadership & Service Experience

Assistant Secretary January 2024 – Present

Graduate Organization of Electrical and Computer Engineering (GOECpE), Iowa State Ames, IA

- Organized a fundraising initiative for a student engagement event hosted by Iowa State Student Engagement
- Served as one of the program chairs for the IBM Qiskit Fall Fest 2024 event held at Iowa State campus

Ambassador August 2024 – Present

Cultural Ambassador Program, Iowa State Ames, IA

- Facilitated cross-cultural exchange by pairing with students from diverse backgrounds and interests
- Developed interpersonal and communication skills through multicultural activities and discussions

Senator August 2024 – Present

Graduate and Professional Student Senate, Iowa State Ames, IA

- Represented the graduate and professional student body as a whole on the Student Government
- Developed and disseminated ideas for the improvement of graduate and professional education at Iowa State

Extra-curricular Involvement

- Treasurer, All Tech Is Human – Iowa State Chapter: managed finances and budgeting
- Assisted in organizing the IEEE-HKN Fall 2021 induction program at Iowa State campus
- Involved in blood donation to support local hospitals and emergency response needs for American Red Cross Iowa