Ibne Farabi Shihab

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Education

Iowa State University — Ames, IA
Ph.D., Computer Science — *Anticipated Dec 2025*

Iowa State University — Ames, IA
M.S., Artificial Intelligence — *Graduated Jan 2024*

BRAC University — Dhaka, Bangladesh
B.Sc., Computer Science & Engineering — *Graduated 2018*

Professional Summary

Accomplished Data Scientist and AI Engineer with expertise in computer vision, reinforcement learning, and autonomous systems. Experience developing sophisticated AI solutions for transportation safety, environmental analysis, and quantum computing applications. Strong technical knowledge in Python programming, machine learning frameworks, and data engineering. Proven record of translating complex analyses into actionable insights and leading cross-functional initiatives to improve system accuracy and operational efficiency.

Experience

SoilSerdem — Ames, IA
Data Scientist — *Jan 2024 – Dec 2024*

- Engineered a precision Soil Mapping Engine boosting mapping accuracy by 35%, enabling data-driven decisions for 10+ farms
- Designed QGIS tool scripts for AWS integration, reducing hosting costs while increasing processing speed by 20%
- Optimized cloud architecture reducing infrastructure costs while maintaining performance
- Developed environmental data models improving prediction capabilities for resource allocation decisions
- Led cross-departmental machine learning initiatives enhancing data-driven decision-making

Iowa State University — Ames, IA
Graduate Assistant — *August 2020 – Present*

- Led development of navigation solutions for Iowa DOT snowplow operations, significantly reducing accident risks and improving response times during extreme weather events
- Developed real-time crash detection system with narrative generation using LLMs, creating an efficient incident reporting pipeline through synthetic video simulations of adverse conditions
- Engineered multimodal video-text understanding systems that enhanced identification of critical safety hazards, enabling more timely traffic management interventions
- Designed data-driven frameworks that measurably reduced operational risks and contributed to decreased highway incident rates for Iowa DOT
- Developed Quantum Neural Networks increasing anomaly detection accuracy by 10% for next-generation network security applications
- Implemented reinforcement learning algorithms that optimized cellular simulations and improved efficiency in CAR T-cell therapy research
- Published multiple peer-reviewed research papers on crash analysis and traffic systems, contributing valuable insights to the transportation safety community
- Served as Teaching Assistant for graduate courses in Motion Planning, Programming, Databases, Machine Learning, and Deep Learning, consistently receiving positive student feedback

Etalyc Inc — Ames, IA
Data Engineer Intern — *May 2021 – Jul 2021*

- Developed analytics protocols improving data processing efficiency and traffic prediction accuracy
- Created ML models for pedestrian movement prediction to improve safety at high-risk intersections
- Generated reports identifying traffic optimization opportunities for urban planning decisions

The University of Vermont — Burlington, VT
Graduate Teaching Assistant — *Aug 2019 – May 2020*

- Delivered machine learning instruction focusing on practical applications and fundamental concepts
- Created teaching materials and exercises increasing student engagement and skills assessment

AI Training Program — Dhaka, Bangladesh
Trainee — *Oct 2018 – Feb 2019*

- Led a team of three to deliver a traffic sign detection system with 95% accuracy
- Implemented efficient team communication strategies resulting in streamlined project execution

Skills

- **Programming:** Python, Java, SQL, C++, R, Go
- **Web:** FastAPI, Flask, Streamlit, React
- **Databases:** MySQL, PostgreSQL, MongoDB, SQLite, Elasticsearch, Athena
- **DevOps:** AWS, Git, GitHub, Jenkins, Docker, Kubernetes
- **ML & AI:** PyTorch, Scikit-learn, Keras, ONNX
- **LLM:** Azure Databricks, LangChain, Ollama
- **Vector DBs:** Chroma, Faiss, Pinecone
- **Data Engineering:** Spark, Hadoop, ETL, Kafka
- **Monitoring:** Splunk, Datadog
- **CV & Simulation:** OpenCV, SUMO, Isaac Gym, CARLA
- **RL:** Ray, RLlib, Stable Baselines3
- **Visualization:** Tableau, Matplotlib, Plotly, QGIS
- **Analysis:** R Studio, MATLAB
- **Quantum:** torchquantum, Qiskit, PennyLane
- **Expertise:** Crash Analysis, Prompt Engineering, Predictive Modeling, Time Series, Autonomous Systems
- **Certifications:** Google Cybersecurity, Meta DB Engineer