Haotian Wang

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Education

Duke University Aug. 2022 – May 2024
Master of Engineering in Computer Engineering *Durham, NC*

North Carolina Agriculture and Technical State University Aug. 2019 – May 2021
Bachelor of Science in Electrical and Computer Engineering *Greensboro, NC*

Henan Polytechnic University Sept. 2016 – July 2019
Bachelor of Science in Electrical Engineering *Jiaozuo, China*

Professional Experience

Electric Power Research Institute (EPRI) June 2023 – Aug. 2023
Assistant Engineer (Student Employee) *Charlotte, NC*

- Developed a VBA-based tool to analyze over 400k data points from a large-scale energy storage pilot plant, boosting data processing efficiency by 20% and delivering dynamic visual insights to support strategic decision-making.
- Authored 3 detailed analytical reports for the Energy Storage Technology Database (ESTD), accelerating the ETL cycle by 15% and uncovering key trends in energy storage technologies

Nuclear Power Operations Research (Shanghai) Co., Ltd. Dec. 2021 – Apr. 2022
Research Assistant *Shanghai, China*

- Built a predictive maintenance model using 100k+ sensor data points, reducing equipment downtime by 15% through real-time anomaly detection.
- Providing actionable insights that contributed to the patent CN116929758A on turbine temperature prediction, optimizing resource allocation, and reducing resource consumption by 10%.

Duke University May 2024 – Present
Research Assistant *Durham, NC*

- Developed an original analysis framework for evaluating emerging technologies to enhance autonomous vehicle safety, generating insights that inform strategic planning and technology adoption.

Academic Experience

Intelligent Edge-Cloud Control System with RAG & NLP Mar. 2024 – May 2024
Team Leader *Duke University, NC*

- Spearheaded the design and deployment of a real-time edge device control system using Rust and Qdrant, achieving 99.8% uptime on a Kubernetes cluster for robust device management.
- Streamlined the CI/CD process by implementing automated GitLab/GKE pipelines with Docker containerization, reducing deployment latency by 40% and significantly enhancing system responsiveness.

GenAI-Enhanced NLP Sentiment Analysis of Movie Reviews Nov. 2023 – Dec. 2023
Team Leader *Duke University, NC*

- Led a sentiment analysis project on a 50k IMDB reviews dataset, employing GenAI techniques such as tokenization and data augmentation for pre-processing, achieving an overall accuracy rate of 88% in gauging public opinion.
- Deployed a GenAI-enhanced Naive Bayes model with 92% accuracy, collaborating with the neural network team to optimize performance and reduce processing time to 5 seconds, thereby enabling near real-time data analysis.

License Plate Recognition: Traditional and Deep Learning Oct. 2023 – Dec. 2023
Team Leader *Duke University, NC*

- Led the development and comparative evaluation of traditional OCR methods and convolutional neural networks (CNN) for license plate recognition, achieving over 95% accuracy in 130 seconds on a test dataset of 100k images.
- Directed a team to design and implement four innovative recognition approaches, producing a comprehensive final report and improving processing efficiency by 35%, which informed subsequent optimization strategies.

Technical Skills

Programming: Python (pandas, NumPy), C/C++, Rust, SQL, VBA
System Design: Microservices, REST API, Distributed Systems, IoT Protocols
Cloud & DevOps: AWS, Docker, Kubernetes, CI/CD
Tools & Frameworks: Tableau, Git, Linux, Arduino