Tyrone Zeka

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Personal Statement

As an MSc Computer Science student with a strong foundation in machine learning, deep learning, and data science, I am passionate about leveraging advanced analytics and cloud technologies to solve complex, real-world problems. My experience in oceanographic data preprocessing, time-series forecasting, and anomaly detection has equipped me with the skills to handle large datasets, optimize workflows, and drive impactful insights. I am eager to apply my expertise in Python, machine learning, and big data to contribute to innovative projects.

Experience

- **Marine Big Data and Cloud Computing Research Group** *Sep 2023 - Present*
  Machine Learning Research Assistant Qingdao, China
  - Developed preprocessing pipeline for Argo oceanographic data using Python and Hadoop, reducing data noise by 15% and improving dataset quality for downstream ML analysis.
  - Implemented automated data cleaning scripts for large-scale ocean big data, saving approximately 5 hours of manual processing time.
  - Optimized data ingestion workflows in Hadoop, decreasing processing latency by 20%, enabling faster access to cleaned datasets for predictive modeling tasks.
  - Collaborated with team to design a cloud-based storage solution for processed ocean data, streamlining analysis workflows and cutting retrieval times by 25% for researchers.

Projects

- **Battery Health Forecasting with Deep Learning** *June 2024 - Present*
  Tools: Python, PyTorch, Pandas, NumPy [ ]
  - Developed an LSTM-based model using PyTorch to predict lithium-ion battery state of health (SoH), achieving a mean absolute error of 5-7% on NASA PCoE Battery Dataset.
  - Initiated automated preprocessing pipeline for charge-discharge cycle data, reducing manual feature engineering time.
  - Engineered time-series features from battery voltage and current measurements, enhancing prediction accuracy for remaining useful life (RUL) by 10% compared to baseline models.
  - Implemented modular evaluation framework to compare model performance, streamlining analysis workflows and cutting validation time by 30% for iterative experiments.
- **Ocean Data Quality Control with MAE with Multi-Frequency Fusion** *Nov 2024 - Present*
  Tools: Python, PyTorch, NumPy, SciPy [ ]
  - Developed a Transformer based MAE with fusion model, for ocean sst data quality control achieving an over 90% accuracy in anomaly detection and reconstruction.
  - Engineered a multi-resolution fusion layer to integrate high- and low-resolution SST embeddings, improving anomaly detection precision and recall.
  - Created visualizations for anomaly patterns, aiding climate research applications.

Education

- **Ocean University Of China** *Aug 2023 - Current*
  MSc Computer Science,GPA: 3.7/4.00 Qingdao, China
  - Thesis: An Ocean SST Data Quality Control Model Based on Masked Autoencoder with Multi-Frequency Fusion
- **Ocean University Of China** *Aug 2018 - July 2023*
  BSc Computer Science, GPA: 3.7/4.00 Qingdao, China

Skills

- **Programming & ML:** Python, TensorFlow, PyTorch, Scikit-learn, NumPy, Pandas, Scipy Jupyter Notebook, Data Analysis, Experimental Design
- **Big Data & Cloud Technologies:** Hadoop, Spark, AWS, Data Preprocessing, Feature Engineering
- **Databases and Devops:** PostreSQL, MongoDB,Git, Docker, Linux
- **Specialized Area:** Deep Learning, Time Series Analysis, Anomaly Detection

Additional Information

Languages: English(Proficient), Chinese (HSK 3), Shona (Native)
Interests: Badminton, Boxing, Weight Lifting, Cultural Exchange