Konstan Aftop A Ndruru

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About Me

I'm a third-year Meteorology student at Bandung Institute of Technology, currently pursuing a minor in Data Science and AI. With a strong foundation in atmospheric science, I've developed solid analytical and data-driven skills, especially in environmental and climate contexts. I've worked as a research and teaching assistant in statistics and data processing, and also taught mathematics to sharpen my communication of complex ideas. I'm aiming for a career as a Machine Learning Engineer or Data Scientist in sectors like air quality, agriculture, or energy, and I'm passionate about continuous learning, collaboration, and solving real-world problems with data.

Education

Institut Teknologi Bandung - Meteorology | 2022 - Present

Experience

Machine Learning Engineer Cohort
Coding Camp by DBS Foundation | Feb 2025 – Present

- Developed individual projects including data analysis dashboards with Streamlit, image classification, and time-series forecasting using machine learning and deep learning techniques.
- Collaborated with machine learning, frontend, and backend teams to prepare production-ready models for deployment in SuaTalk, a baby cry detection and recommendation app.
- Successfully improved model accuracy to 91% through iterative experimentation and optimization.

Research Assistant – Master's Thesis Project (ITB–PLN Collaboration)
Institut Teknologi Bandung (ITB) | Feb 2025 – Present

- Contributed to a research project on future rainfall projections and their implications for hydropower potential at Mrica Reservoir under the ITB–PLN partnership.
- Focused on processing and analyzing GCM (Global Climate Model) outputs, conducting ensemble analysis and deriving rainfall trends and variability using Python (Pandas, Xarray, Matplotlib).
- Supported the analytical workflow used in a graduate thesis to inform long-term planning in the energy sector.

Projects

SuaTalk – Baby Cry Cause Detection & Recommendation Web App

- Improved the baby cry classification model's accuracy to 91%, enhancing its reliability in detecting various causes of crying.
- Collaborated with a backend engineer to deploy the trained model into a production-ready web application for real-time usage.
- Integrated model predictions into finetuned generative AI prompts, enabling the system to generate personalized care recommendations for new parents.

Rain Classifier – WCPL ITB

- Initiated and developed a Python automation tool to classify rainfall intensity (e.g., heavy rain or no rain) from WCPL model's spatial forecast maps, automating a previously manual repetitive task.
- Solved inefficiencies in a weather verification course by implementing a pixel-based color extraction algorithm to detect rainfall from daily forecast maps.
- Deployed the tool via a GitHub Actions cron job for daily automated execution, reducing manual workload by up to 50% and improving consistency.

PM2.5 HAQAST Downloader GUI

- Designed a user-friendly graphical interface to download PM2.5 pollutant data from the HAQAST data portal.
- Aimed at non-programmers such as students, researchers, and policy practitioners, making air quality data more accessible without requiring coding knowledge.

Volunteer Experience or Leadership

Head of Academic Division
HMME Atmospahira ITB | Jan 2025 – Present
Organized peer tutoring and academic archive systems to support student learning and academic collaboration within the Meteorology department.

Skills

- Python Programming
- ETL Pipeline
- AI & Machine Learning
- GUI with Python Tkinter
- Fast and Adaptive Learner