AKSHAY SURESH

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Freelance researcher with 6 years of experience performing statistical data analysis and signal processing using Python. Key contributor to 3 machine learning frameworks with broad-reaching scientific impacts. Interested in building artificial intelligence tools to solve complex real-world challenges and generate sustainable benefit for humanity.

RESEARCH EXPERIENCE

Graduate Researcher, Cornell University   08/2017 – 06/2023
Artificial Intelligence and Signal Processing for Automated Astrophysical Event Discovery
Skills: Deep learning, high-performance computing (HPC), Python, PyTorch, numpy, pandas, bash scripting

- **Constructed a deep neural network from scratch to classify and flag over 95% of interference signals in noisy data**, thus minimizing human input in large-scale data processing. ⬀
- Designed an automated memory-efficient signal processing pipeline to crunch big data at speeds exceeding 500 GB/hr on supercomputing platforms.
- Mentored 2 undergraduate students on machine learning research internships.

Machine Learning Researcher, Frontier Development Lab USA   06/2022 – 08/2022
Time series forecast of rates of induced earthquakes from carbon sequestration
Skills: Time series forecasting, software optimization, PyTorch, pandas, Google Cloud Platform (GCP)

- **Reduced modeling time from 22 hours to 3 minutes** on a tablet using numerical computing best practices, efficient optimizers, and dimensionality reduction methods. ⬀
- Integrated physics-based constraints with a time series forecasting technique (long short-term memory model) to enable accurate earthquake forecasts for safe climate change mitigation activities.
- Lowered the entry barrier for code operation from an estimated global pool of 10,000 seismologists to at least 5 million people with basic computing skills.
- Interfaced with an interdisciplinary team of seismologists, data scientists, public policy makers, and industry stakeholders to deliver rapid prototype software in 8 weeks.

Visiting Research Scientist, UC Berkeley   09/2021 – 06/2022
Software Development for Extraterrestrial Radar Detection with Radio Telescopes (*Press release:* ⬀)
Skills: Production code development, Python, scikit-learn, numpy, pandas

- **Developed novel open-source software in active use** by the radio astronomy community. ⬀
- Enabled the first searches for repeating radar-like signals from about 600,000 stars near the center of the galaxy.

LEADERSHIP EXPERIENCE

Data Science Project Leader, Erdös Institute   05/2022, 04/2023
Budgeting Fertilizer Usage for Sustainable Rice Cultivation in India
Skills: Python, pandas, geopandas, scikit-learn, plotly, dash, SQL, Amazon Web Services (AWS)

- **Built interactive dashboard to visualize geospatiotemporal crop yield trends across India.** ⬀
- Implemented regression models and defined metrics to evaluate forecasts of optimal fertilizer inputs for 6 data-informed cultivation environments. ⬀
- Led team meetings and organized interactions with domain experts to produce deliverables in 2 weeks.

EDUCATION

MS & PhD (Astronomy + Physics), Cornell University   08/2017 – 06/2023
BS & MS (Physics + Mathematics) Dual Degree with Distinction, IISER Pune   08/2012 – 05/2017