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.

EMPLOYMENT EXPERIENCE

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

- **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
Major industry partners: Trillium Technologies, McKinsey, Google Cloud, NVIDIA

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
[In press] *Software Development for Extraterrestrial Radar Detection with Radio Telescopes*
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.**
- 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

Ph.D. (Astronomy), Cornell University 08/2017 – 06/2023
MS (Astronomy), Cornell University 08/2017 – 12/2019
BS–MS (Physics) Dual Degree with Distinction, IISER Pune 08/2012 – 05/2017