Atma B. Mani

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Engineering Manager and Geospatial Expert with over 15 years of experience in data engineering, cloud computing, and spatial analytics. Experienced in leading teams, developing scalable solutions, and optimizing data processing pipelines. Recognized speaker at industry conferences and company-sponsored events.

WORK EXPERIENCE

Staff Software Engineer,   One Concern [2022 - present]

Built scalable data engineering pipelines that compute risk scores from natural hazards for millions of properties across multiple geographies. Built scalable web mapping services. Collaborated with Product, Engineering, Science and Customer Success teams to streamline and convert initiatives into engineering sprints.
Responsibilities:

- **Architected pipelines** using Argo + Kubernetes + Python + Snowflake stack to process 900 million property records and 9 trillion hazard records. **Productionized ML models** from data science team. Used novel spatial indexing schemes to partition data and run massively parallelized computations.
- **Built Mapping APIs** using GDAL + GCS + FastAPI + GKE stack that query data spread over 200,000 rasters. Used latest cloud-native geospatial tooling and reduced storage cost by 90%.
- **Led** system design reviews, cross functional team syncs. Authored and maintained system architecture docs.

Key accomplishments:

- Reduced data lake cost by a **factor of 10** while improving interpolation speed by a **factor of 100** by migrating OLAP DB to a compact, cloud-native, streamable raster storage format.
- Identified bottlenecks in key data pipelines and optimized them by **12x** using innovative GRPC protocols.

Engineering Manager, Principal Engineer, Product Owner   Esri [2019 – 2022]

Product Owner & Manager for a team of 4 engineers that built the **2nd most popular developer API** for Esri. The ArcGIS API for Python is a Python library with spatial analysis, deep learning and data management tools for the **ArcGIS Ecosystem.** Managed staffing, resource allocation, merit cycle, and administration. Promoted 2 engineers from L2 to L3.
Responsibilities:

- **Product Owner** – Envisioned product road map, planned release cycles, and feature priority by collaborating with customers. Articulated them as backlog items, managed sprints, oversaw QA & CICD.
- **Executive briefings:** Briefed C-suite & board of directors on product growth, roadmap and won buy-in for critical decisions.
- **Tech Lead** – Designed and developed key components and frameworks for the Python library. Performed code reviews. Oversaw automated tests and code quality. Authored and reviewed documentation.
- **Developer Evangelism -** Delivered keynote, plenary, workshops and seminars at national and international conferences attended by over 15,000 participants. Published press articles and engineering blogs.

Key accomplishments:

- Taught spatial analysis in 2020 **Spatial Data Science MOOC** which reached over 70,000 students and received over 25,000 4.5-star reviews.

- **Elevated** the Python library to become a [foundational library](#) into key Enterprise, Desktop, and SaaS offerings which lowered the barrier to entry and increased usage of the library.

Senior Product Engineer   Esri [Aug 2016 – 2018]

Founding member for ArcGIS API for Python product. Laid the groundwork, analyzed product-market-fit and successfully executed go-to-market for v1.0.0.

Responsibilities:
- Authored foundational classes and modules of ArcGIS for spatial analysis and data management.
- Developed CICD pipeline for testing, building Conda packages, publishing API docs.

Key accomplishments:
- Raised the product popularity based on downloads and page visits from **7th to 2nd position** over 5 years.
- Built interoperability tools with open-source geo libraries to allow users to easily move data.

Product Engineer, GIS web services   Esri [Dec 2012 – Aug 2016]

Built tools and algorithms to publish local spatial data on the web as web maps and web layers.

Test Architect: Built '**DeepCompare**' – an intelligent JSON validator in C# for validating web maps and web assets

Graduate research assistant, GeoTREE center   Univ. of Northern Iowa [Aug 2010 – May 2012]

Research - Building **heat loss identification** using aerial **thermal** images. Covered by [newspaper](#) and [TV interviews](#).
- **Analysis** –Built empirical and numerical radiative transfer models to perform **atmospheric** and **emissivity** corrections on **aerial thermal infrared** images. Built statistical models to identify top houses with poor attic insulation.
- **Outreach** – created a web mapping app for residents of Cedar Falls to view their attic insulation efficiency.

Scientist, Remote Sensing   Indian Space Research Organization [June 08 – Aug 10]

Key Projects
- **Bhuvan** (India's geo-information portal): Developed **statistical filters** to screen out outliers in automated weather station data. Used **MATLAB** and **PostgreSQL**.
- **Research: Climate change** impact on **agricultural water footprint** in a hydrological basin: Presented at *ISPRS WG VIII/6 International Workshop on "Impact of Climate Change on Agriculture" (2009)*

KEY SKILLS

Data Engineering: Argo Workflows, Prefect, Kubernetes, Snowflake, PostgreSQL, Alembic, Sqlalchemy
Cloud: GCP, AWS, Heroku, Docker
Python: Data stack: NumPy, Pandas, Scikit-Learn, SciPy, plotting libs, Statsmodels, SQL. **Familiar with:** Fastai
Python: Big Data: DuckDB, Dask, Xarray, Zarr, Parquet. **Familiar with**: PySpark, Snowpark
Python: **Web:** REST, GRPC, API design, Flask, FastAPI, Python packaging
Programming: Familiar with: C# .NET, MATLAB / Octave, R/S+, JavaScript

Geospatial: FOSS: GDAL, Rasterio, QGIS, Geopandas, Shapely, Leaflet, PostGIS, STAC, Pygeoapi
Project Management: Product Owner, CSM, Jira, Confluence, GitHub ecosystem
Soft skills: Team lead, technical writer, book reviewer, technical presenter in conferences and webinars.

EDUCATION

MA in Geography, 4.0 GPA   University of Northern Iowa [December 2012]
BE in GeoInformatics,   College of Engineering, Anna University, Chennai, India [May 2007]