Nirzaree Vadgama

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Data scientist with 10 years of experience in architecting geospatial and machine learning algorithms for applications in agriculture, electric vehicles, and IoT. Proficient in developing appropriate solutions to inter-disciplinary problems as a strong team player in a highly dynamic environment. Passionate for the environment and working towards a sustainable future.

Technical Skills

Geospatial & Earth Observation: STAC (SpatioTemporal Asset Catalog), QGIS, GEE (Google Earth Engine), rasterio, geopandas, PostGIS
Machine Learning & Algorithms:Regression, Classification, Clustering, Data Modelling, Feature Engineering, Time Series Forecasting
Data Science & Analytics: Root Cause Analysis, Data Visualization (Matplotlib, Seaborn, ggplot), Data Cleansing & Standardization for large-scale datasets (3M+ records)
Languages & Frameworks: Python (pandas, numpy, matplotlib, scikit-learn, TensorFlow, PyTorch), R Programming(shiny), SQL (Postgres), FastAPI
DevOps & Infrastructure: Docker, Git, Google Cloud Platform (GCP), Amazon Web Services (AWS)

Experience

Technical Lead - Machine Learning and Product Development Feb 2025 - present
CoRE Stack *Bangalore, India*

- Architected and deployed Spatio Temporal Asset Catalog (STAC) specification for the entire CoRE Stack data ecosystem, enabling standardized discovery and interoperability of the datasets.
- Conducting research, mentoring student researchers (Soil Health mapping, Crop type mapping) and productionizing mature research on the stack.
- Developed and deployed algorithm for merging of waterbodies detected by Sentinel2 data (10m spatial resolution) with ponds detected through high resolution google satellite data.

Senior Scientist II Sept 2022 – Nov 2024
CropIn Technologies *Bangalore, India*

- Developed and deployed machine learning and deep learning algorithms using remote sensing data for crop type identification across multiple crops and geographies.
- Built a farm polygon processing pipeline for cleaning up (∼3 million client records) which led to filtering of 43% data.
- Co-developed end to end data processing pipeline in python for traceability of data from pixels on farm polygons to final train test splits.
- Leveraged newer architectures and methodologies (WorldCereal, PRESTO) to improve the crop type detection workflow (patch based models to pixel level models, improved input modality).
- Trained and tested the models through various grouping and sampling of data for understanding model generalization.

AI Fellow Mar 2022 – May 2022
Pi School *Rome, Italy*

- Built and pitched a solution for a telematics and IoT challenge proposed from an industry partner in an 8 weeks fellowship program.

Senior Data Analyst and Algorithms Engineer Sept 2021 – Dec 2021
Skylo Technologies *Bangalore, India*

- Architected algorithms for multimodal sensor data (GNSS, Inertial sensors) on Skylo's hub, a device that enables connectivity through Narrow Band-IoT protocol over geostationary satellites.

Senior Data Scientist Aug 2017 – Oct 2020
Ather Energy *Bangalore, India*

- Developed and deployed State of Health (SoH) estimation algorithm for India's first smart electric scooter.
- Developed and deployed computationally lean Snap to Road algorithm using GNSS and vehicle speed data for real time navigation.

Research & Development Engineer July 2015 – June 2017

Lumos Design Technologies *Bangalore, India*

- Developed and deployed safety algorithms for Aster, a backpack with integrated sensing and lights aimed to improve safety and visibility of bicyclists on the roads.
- Built contactless braking detection algorithm using Inertial Measurement Unit (IMU) sensor data which turns on integrated safety lighting. The algorithm achieved sub 300 milliseconds detection while being computationally lean to maximize battery life of the coin cell unit. The algorithm also generalized well across different other vehicles (scooters, cars) and was **granted an India patent (no. 300034)**.
- Built theft sensing and crash sensing algorithms using IMU data.

Projects

Sustainable Eateries | ***R, Shiny, FOSS, Sustainability*** | **Github** June 2020 – Present

- Developed an open source R Shiny webapp with integrated form with Google Places autocomplete API, ReCaptcha and leaflet based map visualization.
- Platform currently has about 200 crowdsourced data entries currently, depicting the state of sustainable practices in eateries across the globe.
- Users can either add data to the database, or explore the existing data to find a suitable eatery when they are in a new place.

Urban Natural Farms | ***R, Shiny, FOSS, Sustainability*** | **Github** Jan 2022 – Present

- Developed a platform to enable natural farming in vacant sites in urban areas with the intent of producing organic food, mitigating impacts of climate change and for community building.
- Users can either register their land for making it available for natural farming, or can register as volunteers willing to grow food on land near them.

Education

Technical University of Kaiserslautern Kaiserslautern, Germany

Master of Science (Embedded Systems), Electrical & Computer Engineering *Oct 2012 – Dec 2014*

National Institute of Technology Surat, India

Bachelor of Technology, Electronics & Communication Engineering *July 2007 – May 2011*

Publications & Patents

Flexy: Shape-Customizable, Single-Layer, Inkjet Printable Patterns for 1D and 2D Flex Sensing Mar 2017

Nirzaree Vadgama *and Jürgen Steimle. ACM TEI 2017 (link)*

System and method of contactless braking detection for a vehicle Aug 2018

Nirzaree Vadgama *and Rajashekhar Ankali, India patent no. 300034 (link)*

Scholarships

Deutschland Stipendium Oct 2013 – Sept 2014

J.N. Tata Endowment for Higher Education of Indians 2012

Talks, volunteering, outreach

Speaker, Workshop, FOSS4G Asia 2026, *Nashik, India* Jan 2026

Speaker, Managing Sustainable Transitions in Agriculture, *IRMA Anand* Nov 2023

Panelist, Sustainable Food Systems in Urban Spaces, *IISER Pune* Nov 2022

Volunteer, *NeurIPS 2021* Dec 2021

Volunteer, *ACM TEI 2017* Mar 2017

Online Courses

Climate Change AI Summer School June 2024 – Aug 2024

Applied Machine Learning in Python - Coursera Jan 2021

Other

Languages: English (fluent), Gujarati (native), Hindi (fluent), German (basic)