

# KASHYAP BALAKAVI

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## PROFESSIONAL EXPERIENCE

**NASA Marshall Space Flight Center (MSFC)** — AI and ML/DL Engineer May 2023 – Dec 2025 (2 yrs 8 mos)  
*Sub-contracts to Virginia Tech, UAH, USRA*

*Virginia Tech — Drought-Fire Analysis using Remote Sensing Data* Aug 2025 – Dec 2025 (5 mos)

- Developed ML pipelines (Python, scikit-learn) to map burned area using PlanetScope and Landsat data.
- Modeled drought-fire interactions using XGBoost, NDVI/SPEI, and climate data (1980–2023).
- Automated climate-fire data pipelines, cutting manual processing by 40% and enabling scalable model updates.

*University of Alabama in Huntsville (UAH) — Wildfire Mapping* Jul 2024 – Aug 2025 (1 yr 2 mos)

- Applied deep learning (TensorFlow, U-Net, U-Net-GRU) on satellite imagery, improving wildfire mapping accuracy.
- Built a GAN-based pipeline (PyTorch) to downscale 30m to 3m imagery, enabling fine-grained burnt-area analysis.
- Engineered hybrid CNN-RNN models that outperformed baselines, strengthening monitoring workflows.

*Universities Space Research Association (USRA) — Burnt-Area Modeling* May 2023 – Jul 2024 (1 yr 3 mos)

- Deployed deep learning models (CNNs, RNNs), boosting detection accuracy for wildfire events.
- Enhanced burnt-area pipelines, improving scalability and disaster response readiness.

**University of Alabama at Birmingham (UAB)** — Graduate Assistant May 2022 – Apr 2023 (1 yr)

- Built the *ICTV Visual Taxonomy Browser* with D3.js, JavaScript, and AWS, preserving 50+ years of taxonomy data.
- Designed drill-downs and lineage auto-expansion with virology experts, improving usability and adoption.
- Achieved 63% views-to-user conversion and 3 min avg. session engagement across the research community.

**Office of Annual Giving (UAB)** — Data Analyst Intern Feb 2022 – Apr 2022 (3 mos)

- Built donor churn models using scikit-learn, reducing attrition by 19% and improving retention by 14%.
- Designed Power BI dashboards for segmentation and A/B testing, increasing campaign ROI by 10%.

**Tata Consultancy Services (TCS)** — Assistant Systems Engineer Jan 2021 – Dec 2021 (1 yr)

- Designed an enterprise inventory system using React, Fluent UI, and SharePoint to streamline tool tracking and approvals.
- Automated multi-level approval workflows and custom forms in Power Automate, improving efficiency and transparency.
- Reduced operational inefficiencies by more than 15% by delivering inventory analytics and actionable reports.

## TECHNICAL SKILLS

Programming: Python, R, SQL, JavaScript, C++

Machine Learning: Supervised/Unsupervised Learning, Statistical Modeling, Feature Engineering, NumPy, Pandas, scikit-learn

Deep Learning: PyTorch, TensorFlow, Keras, CNNs, RNNs, Transformers, NLP, Computer Vision

Data Engineering: ETL Pipelines, Data Cleaning, Data Validation, Spark, Snowflake, BigQuery

MLOps/Cloud: FastAPI, MLflow, Airflow, Docker, AWS, Azure, Google Earth Engine, Git/GitHub

Analytics & Visualization: Power BI, Tableau, Excel, Dashboards, Reporting, D3.js, ArcGIS, QGIS

## EDUCATION

M.S. in Data Science, Computer Science Department, UAB — GPA: 3.9/4.0 Jan 2022 – Dec 2023

B.Tech in Mechanical Engineering, Vellore Institute of Technology — GPA: 8.53/10 Jul 2016 – May 2020

## PUBLICATIONS

Balakavi, S. et al. Cross-resolution burnt area mapping, *Sensors*, 2025

Balakavi, S. et al. Burnt area mapping – Bandipur case study, *PLOS One*, 2025

Balakavi, S. Super-resolution enhancement of Landsat data using GANs and U-Net, Book Chapter, CRC Press, 2025

Balakavi, K. et al. Scalable visualization of virus taxonomy data, *IEEE VIS*, VAHC 2023

## REFERENCES

Dr. Krishna Vadrevu - Deputy Program Manager, NASA MSFC

krishna.p.vadrevu@nasa.gov

Dr. Kristofer Lasko - Lead Remote Sensing Data Scientist, U.S Army Corps

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