Shravan Ambudkar

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RESEARCH EXPERIENCE

PIXXEL SPACE **Bengaluru, India**
Research Analyst *August 2021–Present*

- Developed an Artificial Neural Network based biophysical and biochemical properties estimation model for crops using multi-spectral and hyperspectral reflectance data.
- Created a Forest Tree classification Deep Learning model for the complete Europe region for 20 different tree species using multi-spectral and Hyperspectral reflectance and radiance data.
- Developed and maintained satellite data correction pipeline for Pixxel's Hyperspectral Imagery satellite using both Physics based and Machine Learning based models.
- Collected UAV based Hyperspectral data and developed a pipeline for processing and gps based stitching of the data. Trained machine learning models to derive agricultural insights from the dataset.

EKKLAVYA INFOSYS **Pune, India**
Research Intern *August 2020–January 2021*

- This was a joint internship under Ekklavya Infosys and ThoughtWorks Technologies.
- Developed and worked on few-shot Meta-Learning algorithms for RGB images, Hyperspectral images and text sentence classification which showed significant accuracy of 93% for classification by training on a very limited training data-set consisting of 25 images and 25 text sentences.

Indian Institute of Technology, Mumbai **Mumbai, India**
Summer Research Intern *May 2020–July 2020*

- This internship was a part of Indo-Japan Project "Data Science-based farming support system (DSFS)" undertaken in the Agro-Informatics Lab, CSRE, IIT-Bombay along with Monash University, Australia.
- Worked on different Deep Learning models for counting of maize tassels from drone-based RGB images and achieved an robust F1-score of 85.9% for accurate maize tassel counts.

EDUCATION

SYMBIOSIS SKILLS and PROFESSIONAL UNIVERSITY **Pune, India**
Bachelor of Technology in Mechatronics Engineering, *May 2021*
Honors: Distinction (CGPA: 8.6/10.0)

PUBLICATIONS

1. S. Surana, **S. Ambudkar**, P. Bihani. "A Comparative Study on Metric Based Meta Learning Approaches for Few-shot Image and Text Classification". *(The 13th International Conference on Communications, Computing and Data Security, AIP Conf. Proc. 2842, 020012 (2023))*

2. **S. Ambudkar**, R. Raj, K. Billa and R. Hukumchand, "Super-Resolution for Cross-Sensor Optical Remote Sensing Images," *IGARSS 2022 - 2022 IEEE International Geoscience and Remote Sensing Symposium*, 2022, pp. 1880-1883.
3. **S. Ambudkar**, R. Joshi, A. Kadam, K. Jadhav, Dr. S. Sonawane, " Autonomous Drone for Emergency Supplies Delivery during Disasters", *International Journal of All Research Education & Scientific Methods*, Issue 6 (June 2021)

SELECTED PROJECTS

Land Use Land Classification of Hyperspectral Data

- Developed a Deep Learning model that takes Hyperspectral Satellite Imagery as inputs and generates a Land Use Land Classification map based on the imagery (mapping each pixel into classes and subclasses).
- Major classes such as Agriculture, Urban, Water bodies. Subclasses such as crop types, urbanisation level, type of water body, type of forest, crop species in agriculture land.
- Obtained a robust map-classification accuracy of 91%.

Demand Driven Forecasting for Walmart

- Developed a dashboard to forecast future demands of products in Walmart stores based on past 3 years data.
- This program was implemented using XGBooster prediction and SARIMAX time series forecasting algorithm in python 3.

Autonomous Drone for Disaster Management

- This Project was a part of the Final year thesis of my undergraduate studies and was also awarded as the best thesis for the year 2021.
- The objective of the drone is to autonomously search a disaster-stricken area and to report the location of victims that are affected to the operator.
- This was a multi-disciplinary project which used various navigation technologies such as SLAM along with Computer vision implementation using DL models such as YOLO for object detection and U-Net for segmentation.

ACHIEVEMENTS

- Appointed as a core committee member of the Robotics Club at the University.
- Lead a team of 6 members in National level Smart India Hackathon 2020 and 2021.
- Finalist for consecutive 3 years at IIT Bombay Techfest's International Robotics Challenge.
- Anti Ragging committee member in the University.
- Finalist - AtmaNirbhar Bharat TOYCATHON 2021, Organised by Ministry of Education, India.

SKILLS

Languages : Python, C/C++
ML Tools and Frameworks : TensorFlow, PyTorch, Numpy, Matplotlib, Sklearn, Plotly.
Deployment Tools : TFX, Kubernetes, GCP.
GIS Tools/Frameworks : QGIS, ENVI, GDAL, Rasterio, Geopandas.