MADHAVA PALIYAM

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EDUCATION

University of Maryland GPA: 3.873

Bachelor of Science, Department of Computer Science Expected: May 2022

Advanced Coursework

- **Algorithms/Mathematics:** Databases, Graph Theory, Cryptography, Data Structures, Algorithms
- **Machine Learning/Computer Vision:** Visual Processing/Learning (Graduate), Computational Linguistics (Graduate), Machine Learning, Deep Learning, Data Science

Clearance: ***Top Secret***

Languages: Python, MATLAB, C, Java, C++, Ruby, Swift, Ocaml, C#

EXPERIENCE

John Hopkins University Applied Physics Lab May 2020 – Present

Flight Software Validation for NASA's Dragonfly Mission

- Designed a study to test for the effect of camera miscalibration on Terrain Relative Navigation. Worked with existing MATLAB flight software to modify the camera intrinsic matrix to simulate potential errors. Presented work to guide future iterations of the algorithm to be more robust.
- Implementing feature detection and matching techniques using OpenCV to compare the accuracy of flight algorithm to current state-of-the-art approaches. Documenting results to help fulfill NASA requirements for algorithm selection.

Bayesian Network Analysis

- Developed a model of variable dependencies to create a probabilistic approach for a decision-making process and started preliminary analysis using Python.

Other Projects

- Software Development: automatic hyperparameter optimization, data download functions, and plotting utilities.
- Computer Vision: segmentation using different color spaces, visualized domain shift using Variational Auto Encoders, and downloading and cropping satellite data.

University of Maryland/NASA Harvest February 2020 – Present

Street2Sat: Creating georeferenced datasets from street view images

- Created an image processing pipeline to address the scarcity of geo-referenced crop type data in low data regions such as Sub-Saharan Africa. Paper was accepted to the Climate Change in AI workshop at ICML 2021.
- Developed a website in Flask for users to interact with the pipeline and assisting with high volume processing on Google Cloud to create crop type datasets in 5 Sub-Saharan countries.

Cropland Classification/Segmentation

- Implemented deep network architectures in PyTorch for crop type classification and crop/non crop segmentation for small holder farms in Kenya and Uganda from high resolution satellite imagery.
- Labeled data to help with creating a cropland map for Togo to help aid their COVID – 19 response.

PROJECTS

Gemstone Honors Program: Mental Illness Recognition using MRI October 2019 – Present

RagaNet: Carnatic Raga Prediction using Deep Learning deployed on Flask/Heroku July 2020 – Present