

SRISHTI YADAV

I am a machine learning engineer with primary experience in computer vision based applications. In past I was a graduate research (Masters) at Simon Fraser University, Canada. I have worked with semi-supervised learning and class-imbalance problems. I have experience in implementing machine learning algorithms at scale.

SKILLSET	Software: MATLAB, Octave Languages and Tools: PyTorch, Python, Numpy, Scipy, OpenCV, Matplotlib, Docker, AWS cloud services like S3, EC2 and Amazon Sagemaker as well as Azure services like Data warehouse, AML and Azure functions.	
EDUCATION	Master of Applied Science (Computer Vision) <i>Simon Fraser University, Canada, January 2021</i> Bachelor of Technology , Electronics and Communication <i>Uttar Pradesh Technical University, India, June 2016</i>	CGPA: 3.92/4.33
PROJECTS	Predictive Domain Analysis using CLIP <ul style="list-style-type: none">• Used CLIP model and its text embeddings to find similar images.• Used zero shot learning on DomainNet dataset with CLIP to find closest domain for unseen samples. RGB-Depth Based Occlusion Aware Target Re-detection Video : <ul style="list-style-type: none">• Implemented target re-detection long term tracker using Kinect RGB-D camera.• Tracker was able to infer & track target with information provided only in first frame.• Improved average precision by almost 50% as compared to baseline KCF tracker Deep Attention Models for Human Tracking Using RGBD Paper : <ul style="list-style-type: none">• Worked in a team of 4 to develop an adaptive appearance model to accurately detect color camouflage, even in the presence of complex natural objects.• Improved the accuracy by approximately 50% and reduced the type I error by 23% and type II error by 5%. Celestini Project India: <ul style="list-style-type: none">• At Samsung IoT Lab, developed a prototype video analytic algorithm using Caltech pedestrian dataset to run on Raspberry Pi 3 Model B.• Worked in a team of 2 where I was responsible for porting the code from MATLAB to Octave. Also, worked on pre-processing the data to clean images, remove noise to infer position, lane and density of vehicles in front of the camera. Prototype Landslide Risk Communication System Paper : <ul style="list-style-type: none">• Developed a system which forecasts and communicates occurrence of landslides.• Conducted field survey and implemented a system for sensor deployment (sensors, microcontroller boards, GSM module and other electrical components).	
EXPERIENCE	Machine Learning Engineer <i>Cubic Farms, Canada</i> <ul style="list-style-type: none">• Designed and build an end-to-end unit for plant science to replace their manual image capturing process.<ul style="list-style-type: none">– <u>Hardware</u>: Built a hardware unit and used Raspberry Pi, Pi camera, weight scale– <u>Software</u>:<ul style="list-style-type: none">* Built a server to automatically take plant pictures and weights with a click of a button.	(currently working)

- * Data was stored to azure blob hence automating, standardizing and simplifying the image data collection. Enhanced data collection speed by 2x.
- * Designed, built and deployed a webapp to automate plant metadata collection process for teams spread across two regions (Alberta and BC, used for generating reports on PowerBI dashboards.
- * Provided software support to teams across two regions.
- Built and deployed a machine learning pipeline to predict lettuce size. This pipeline involved image calibration, pre-processing and using an object detection model to separate lettuce specimens in trays, predict and compute the real-world size of the specimen. The pipeline was deployed as an Azure functions. Inference results were stored in data warehouse and reflected on the webapp in realtime for sanity check.
- Built an in-camera image processing pipeline using MAPIR camera to estimate plant health by calculating the NDVI of RGN images.

Machine Learning Consultant

July 2021-August 2021

Coastal Resource Mapping, Canada

- Computed and analyzed vegetation index for plant health from aerial raster data.
- Worked on a data pipeline leveraging Deep Convolutional Neural Network (CNN) to segment individual plants in orthomosaic raster imagery.
- Worked on plan detection for high-value crops that need to be monitored at the resolution of individual plants

Machine Learning Researcher

February 2021-June 2021

MILA, Montreal, Canada

- Worked on large scale time-series dataset in the order of millions of data.
- Implemented and scaled data pre-processing to run on cloud; cleaned data into standardized format.
- Tested data for ordinal classification problem for data modelling and processing geospatial (satellite) data.
- Continued as a contractor later

Machine Learning Intern

February 2020-August 2020

UrtheCast, Vancouver, Canada

- Individually implemented machine learning system for satellite data (Landsat8, SPARCS, Sentinel 2 dataset) for multi-class prediction of cloud, shadow, and haze.
- Implemented data ingestion pipeline which takes in raw geospatial multi-dimensional data as input and converts it into standardized format.
- Scaled the algorithm using AWS cloud based services, example, EC2 for deployment server, S3 for data storage and docker for creating virtual environment and parallel deployment of multiple training jobs.
- Investigated and implemented optimization methods to improve cloud mask generation from S2 data using the Green, Red Edge, and Water Vapor band.

Graduate Research Assistant

January 2018-February 2021

Networked Robotics and Sensing Laboratory

School of Applied Science, Simon Fraser University, Canada

Project Associate

August 2017-October 2017

Helicopter and VTOL Laboratory

Indian Institute of Technology Kanpur, India

Computer Vision & IoT Developer

June 2016-July 2017

Samsung IoT Innovation Lab, Delhi, India

& *Applied Cognitive Science Lab, India*

PUBLICATIONS **Book Chapter**

Chaturvedi, P., Thakur, K., Mali, N., Kala, V. U., Kumar, **S.**, **Yadav**, S. & Dutt, V. (2017). A Low-Cost IoT Framework for Landslide Prediction and Risk Communication. In CRC Press: Internet of Things Concepts, Technologies, Applications, and Implementations (2017)

Journals

Yadav, S., & Payandeh, S. (2021). Critical Overview of Visual Tracking with Kernel Correlation Filter. *Technologies*, 9(4), 93.

Rasoulidanesh, M., **Yadav, S.**, Herath, S., Vaghei, Y., & Payandeh, S. (2019). Deep Attention Models for Human Tracking Using RGBD. *Sensors*, 19, 750. (Poster at WiML Workshop, **NeurIPS 2019**)

[**Thesis**] **Yadav, S.** (2021). Occlusion Aware Kernel Correlation Filter Tracker using RGB-D. arXiv preprint arXiv:2105.12161.

OUTREACH

- Vancouver Datajam (2020-2022) Founding Member + Chair'22
- Computer Vision Interest Group@ML Collective Founder+Organizer
- Women in Computer Vision (WiCV) @CVPR 2021 (Virtual) Advisor
- Women in Computer Vision (WiCV) @CVPR 2020 (Virtual) Organizer
- Women in Machine Learning @NeurIPS 2019 (Vancouver, Canada) Organizer
- Invent the Future, AI4ALL@SFU (Vancouver, Canada) Mentor(Robotics)