

SRISHTI YADAV

I am an ELLIS PhD fellow at University of Copenhagen where I work at the intersection of computer vision and language. 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

Ph.D.(Computer Vision)

Advisor:

Dr. Serge Belongie (Primary) & Dr. Ekatarina Shutova (Secondary)

University of Copenhagen, Copenhagen

Master of Applied Science (Computer Vision)

Simon Fraser University, Canada, January

2021

Bachelor of Technology, Electronics and Communication

Uttar Pradesh Technical University, India,

2016

PROJECTS

RGB-Depth Based Occlusion Aware Target Re-detection [Video](#) :

- 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](#) :

- 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:

- 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](#) :

- 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

September 2021-November 2022

Cubic Farms, Canada

- Designed and build an end-to-end unit for plant science to replace their manual image capturing process.
 - Hardware: Built a hardware unit and used Raspberry Pi, Pi camera, weight scale
 - Software:
 - * Built a server to automatically take plant pictures and weights with a click of a button.

- * 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-September 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.

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. (2022). DATaR: depth augmented target redetection using kernelized correlation filter. *Multimedia Systems*, 1-20.

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)