

ARAVIND S KUMAR

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EDUCATION

JOHNS HOPKINS UNIVERSITY | Baltimore, MD May 2023
Master of Science in Engineering in Robotics | Specialization: Perception and Cognition | GPA: 3.9/4
Teaching Assistant for Computational Finance, Teaching Assistant for Non-Linear Econometrics for Finance
Coursework: Statistical Learning, Computer Integrated Surgery, Object Oriented Software Engineering

INDIAN INSTITUTE OF TECHNOLOGY, MADRAS | Chennai, India Jun 2020
Bachelor of Technology, Major: Mechanical Engineering | GPA: 3.7/4
Coursework: Optimization Methods, Deep Learning, ML, Inverse Numerical Methods, Probability, Linear Algebra, Principles of Economics, Operations Research, Accounting and Finance MOOC: Operating Systems, DBMS

SKILLS

Languages: Python, C++, SQL, Javascript, Matlab, HTML/CSS, Java

Tools and Frameworks: Spark, Databricks, Node, React, Postman, Git, HDInsight, Azure Data Factory and Studio, Google Cloud Platform, BigQuery, Tableau | **Certified Scrum Master/Agile Practitioner**

Data and ML: PyTorch, Keras, FastAI, Tensorflow (Basic), Sklearn, Imblearn, XGBoost, Pandas, Numpy

Other Libraries: Vision (OpenCV, PIL), Web Scraping (Selenium, BeautifulSoup – bs4), Requests

PROFESSIONAL EXPERIENCE

Data Scientist, AB InBev | Bangalore, India Aug 2020 – Aug 2021

- Improved BrewRight, ABI's legal analytics platform for **detecting fraudulent transactions** for financial compliance
- Developed machine learning models and **implemented hypotheses** to flag anomalous and risky transactions
- Set-up **CICD** for DevOps pipelines, optimized API data extraction scripts and achieved E2E Automation
- Migrated existing codebase to run in **PySpark** using **Databricks**; reducing runtime by **70%**, saving **USD 100,000**

PROJECTS AND COMPETITIONS

Non-Contact Vibration Analysis through video | Machine Design Section, IIT Madras Dec 2019 – Jun 2020

- Investigated video cameras as an inexpensive way for remote vibration analysis; built in **Python** using **OpenCV**
- Utilized **scale-invariant** features and **object tracking** algorithms to extract the **motion signal from video frames**
- Peaks obtained from Fourier transform of the motion signal were found to be in **8%** of actual vibration frequency

Runner-Up AstraZeneca AI Challenge | India Dec 2019 -Jan 2020

- Collaborated in a team of two to implement a **deep learning model** to diagnose pneumonia in lung x-rays
- Employed **Yolo-V3** from Darknet to tackle it as an object detection problem with only one type of image to detect
- Achieved an **IoU of 46.97%** and **MAP value of 35.44%**; The difficulty arises as opacities did not have fixed shapes

Indian Summer Rainfall Prediction | Heat Transfer Lab, IIT Madras Jul 2019 – Nov 2019

- Developed a machine learning model in Python for prediction of Indian rainfall on monthly and seasonal time scales
- Built an **ensemble of RNNs, RFCs and XGBoost** to forecast monsoon using data on rainfall and sea surface temps
- The model achieved an RMS Error of **24 cm**, predicting the behavior more accurately than previous research

Quality Prediction in Iron Ore Mining using Machine Learning | IIT Madras Jan 2019 – May 2019

- Created an ML model to predict purity of ore prior to froth floatation, enabling engineers to take corrective actions
- Employed **random forest classifiers, neural networks** and **XGBoost in an ensemble** to predict output Si concentrate
- The predicted purity in the ore was found have an R2 score of **0.941** in the testing set; ore quality maintained high

Moodle Crawler for Offline Back-ups Jun 2019 – Jul 2019

- Developed a web crawler using **selenium & bs4** for maintaining offline copy of course documents from Moodle
- Maintained a daemon to refresh the offline version daily; File system updated to match changes in course structure