

# MOHIT RAJPUT

ML | DL | AI | Data Collection | Data Engineering | ML Experiment Design  
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Full resume: <https://mr901.github.io/resume/>



## Areas of Professional Interest

- Data Product Management, Architect, Collection, Engineering, Research, Deployment, and Maintenance (E2E)
- MLOps with Central and decentralized Architecture
- EDGE devices based solutions
- Statistical, Machine and Deep Learning; Natural Language Processing (NLP), ChatBots & Computer Vision
- Reinforcement, Unsupervised Learning and Recommendation system

## Work Experience

### Analytics Technology and Engineering (ATE), Amazon Seller Services Pvt Ltd

Data Scientist II

Apr'22-Present

Day Ahead Capacity Planning (Supply Chain)

- Providing volume forecast for last mile, to delivery stations to decrease under and over booking of logistics

**Tags: Time Series, Curve Matching, ML, Sagemaker, EC2, Lambda, Event Bridge, S3, Dashboard**

Common Utilities Python Lib (V1)

- A small library for credentials accessing, SQL jobs creation and analysis, logger, s3 interaction, operations, clustering, data retrieval from quip documents, error calculations, data analysis and transformation utilities.

**Tags: AWS services, DB, SQL, Logging, Analysis, Sync Quip**

Capacity Planning Performance Evaluation, Analysis & Dashboard

- Evaluate performance and provide multiple insights related to BAU, peaks, plans for current state and area for improvement, possible areas having data drift

**Tags: Time Series, Data Drift, EC2, QuickSight, S3, Excel**

### Cargill Digital Labs, Cargill

Machine Learning Software Engineer

Jun'19-Apr'22

ML labs v2 setup

- Defining ways to Work with ML projects and other applications having ML related features
- Brining sustainable practices for accelerated development while maintaining the agility
- Planning phase of data governance, 3rd Party Data Annotators, Portal development for data tagging, selection and versioning, data collection experiment designs and pipelines.

Estimating Growth Indicator of Chicken (POC then MVP)

- Estimating the weight and age of the chicken based on video recording done using the mobile camera.

**Tags: Agile Experiment Setup & Design, Object Detection, Image Standardizer, Estimator, Ensembling**

Defective Nugget Detection and Accounting (POC then MVP)

- Defective Nugget Detection and Tracking on conveyor belt with output projected on display for manual removal.

**Tags: Jetson Nano, Raspberry Pi, Arduino Uno, Edge device, Object Detection, Tracking, on-premise, real-time**

HR Chatbot (Myco) (MVP)

- Initial product version was launched for Singapore and Australia with capability for form filling, ticket creation, ticket checking, easy data integration from excel sheet

**Tags: Rasa, Redis, NLU, NDM, NLG, NLP, Chatbot, MS Excel**

Financial Commentary Generation (POC)

- A utility for table-to-text based on template method was developed for the initial stage, b/c of the lack and too much fragmentation of data source this approach was deemed fit.

YOLO v5-v4 training and deployment integration on AWS suitable to multiple tailored needs.

**Tags: Computer Vision, Sagemaker, ECR, S3, Lambda Function, API Gateway, IAM, CloudWatch**

Information Extraction from Ship Invoices (POC)

- Extracting multiple information through the information that was shared in old and current emails.

**Tags: Text-to-Table, Analytics; Regex, Python Email to DB**

Other

- **Streamlit** based Computer Vision Utility for parsing, labelling, visualizing annotation, with support for Yolo threshold adjustment for object detector and evaluate performance.
- MiApp feature involving weather data visualization using the **GIS data**.

### ShieldSquare (Radware)

Data Scientist – R&D

Apr'18-May'19

Associate Research Engineer – R&D

Jun'17-Mar'18

Iterative Clustering and Learning based System to Separate traffic Apart (ICLSSTA )

- Solely developed a framework, which develop and evaluate unsupervised learning solution in much depth and this from a single config file.

**Tags: Framework, Clustering, Anomaly, Outlier, Conceptual Drift Detection, Ensembling, Support all Dimension reduction, Anomaly, and Clustering Algorithm from Sklearn, Add. Custom Algorithm.**

Adaptive Action Taking (AAT)

- Developed a generalized module named which makes use of reinforcement learning to automatically take action on incoming traffic on the web property.

**Tags: Reinforcement Learning, Multi-Armed Bandit, Smart handling of Business Limits, Self-Adjusting**

#### Deep Behaviour Analysis (IDBA)

- Partially developed a module named Intent based, which utilizes LSTM to yield encoded features and scores that are used with supervised, anomaly and clustering.

**Tags: RNN, Auto-Encoder, Semi-Supervised Learning, Sequence Based Detection, Deep Learning**

#### Threshold Online Reinforcement (ThOR)

- Helped developed a module named, which makes utilizes online learning to develop a probability score distribution over of isotonic regression for action taking.

**Tags: Isotonic Regression, Online Learning, Self-Adjusting, Smart handling of Business Limits**

#### Second Level Module Integration

- Developed and implemented end to end machine and reinforce learning based solutions using ICLSSTA-AAT, IDBA-ICLSSTA-AAT, & IDBA-ThOR

**Tags: Semi-Supervised, Supervised, unsupervised, reinforcement learning, behaviour analysis.**

#### Titan Batch Analyser

- Developed and Implemented, which utilizes multiple browser signatures, behaviour based rules, regular expressions and databases to generate a suspiciousness score to take action on traffic.

**Tags: SQL & Python Implementation, ETL, Advance SQL operations, Handling Multiple Datasets**

#### Rule Scripts

- Developed and Implemented multiple rules which were based on network, device and browser fingerprint, and behaviour of the visitors. These were adequately balanced between causal and correlated, yielding negligible FP.

**Tags: Domain knowledge, Behaviour Analysis, Rules development**

#### Rule Mining

- Created a Recommendation System for the highlighting possible bad signature coming in the traffic.

**Tags: Associate Rule Mining, Text Data Pre-processing**

#### Other

- Developed Dashboard, Visualization and Analysis, spreadsheet to understand the whole behaviour of the traffic. Partially interactive visualization sheets were also developed in python.

**Tags: SQL and Spreadsheet/Python Implementation, Visualization, Result Sharing**

- Developing Dynamic Moving **Collective Intelligence** which can evolve while working across multiple sid.

## Python Package Developed

### Algorithmic Machine Learning Exploration & Exploitation Tool (AMLEET)

- A python package for multiple purpose code for **logger wrapper, configuration, notification, cloud storage integration, local database, Redis Big query integration**
- Other application involve numerous **computer vision functionalities** ranging from video stream creation to prediction wrapper for face detection, recognition, pose estimation and such.
- Functionalities for **NLP related functions** for data cleaning pipeline, supervised and unsupervised ML integration.

### COCO Transformation Utility (CTU) [pypi link]

- A python package to perform the same **transformation to coco-annotation** as performed on the image.
- Provides the capability to create augmented images and annotations.
- Capability of visualizing multiple kinds of annotations on images.

## Patent & Research Paper

- First Author.** "System and method for detecting bots based on iterative clustering and feedback-driven adaptive learning techniques"; us US20200099713A1.
- Second Author.** "System and method for detecting bots using semi-supervised deep learning techniques"; us US20200099714A1.
- First Author.** "Electric field and current assisted alignment of CNT inside polymer matrix and its effect on electrical and mechanical properties", in International Journal for the Science and Technology of Polymers 2016.

## Education

### Indian Institute of Technology, Roorkee

Jul'12-Jul'17

B.Tech. + M.Tech. (Dual Degree Course) in Metallurgy and Material Engineering, CGPA: 7.152/10

Ministry of Human Resource Development (MHRD) Scholarship for M.Tech. as for qualifying GATE.

### Udacity Nano Degrees

- Data Product Manager, 2021
- Computer Vision, 2020
- Artificial Intelligence, 2018

### Certified Courses from Coursera, Edx, Udemy

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## Skills and Tools

**ML Languages/Framework** : Python, scikit-learn, TensorFlow, PyTorch

**Other Language:** R, SAS, JAVA, C++

**Other:** Google Big Query, Elasticsearch, Docker, Selenium, Redis, Grafana, Kibana, HTML, CSS

**Databases:** SQL, No-SQL

**Software:** Tableau, Excel, XLMiner, Spyder, Jupyter Notebook, RStudio, Gimp, SolidWorks

**Cloud Computing Services:** Google Cloud Platform, Amazon Web Services

	<b>Cloud Data lakes:</b> S3, Cloud Storage, Drive, pcloud <b>Hardware:</b> Jetson Nano, Raspberry Pi, Arduino Uno, IP Cameras, Sensors, basic electrical devices and circuits <b>Languages:</b> English(SRW), Hindi(SRW)
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Projects	
	IP camera (RTSP protocol) to consistent <b>HTML Live Stream</b> with offline Data Sync
	<b>Edge Device</b> based CV application for counting of sheets processed in a workshop
	Face Detection, Face Landmark Detection and Face Recognition Wrappers
	Human Pose Estimation and Activity Recognition
	WhatsApp based <b>Chatbot</b> (Hack around way)
	<b>Selenium</b> based web scrapping and Web Application Control of Tinder & WhatsApp

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