

# NAVEEN RAJU S G

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Github - <https://github.com/naveenrajusg?tab=repositories> | Recommendations - <http://bit.ly/3QkDqD6>

Portfolio - <https://naveenrajusg.github.io/Portfolio/>

## SUMMARY

I am a seasoned professional with **4 years of experience in the field of Artificial Intelligence**. Proven track record in working on Machine Learning, MLOps, and Deep Learning/Computer Vision projects. I have also excelled in project leadership, Agile methodology, and technical instruction. I am seeking a full time, Co-Op or internship in the fields of Machine Learning, MLOPS, Deep Learning, Computer Vision, Data Science.

## TECHNICAL SKILLS

**Cloud** : AWS (Amazon Web Services)

**Deep learning framework**: Keras, TensorFlow

**Other libraries**: Numpy, Pandas, Matplotlib, scikit-learn

**Generative AI** : Large language models (LLM)

**Other relevant skills** : MLOPS, Machine Learning, Deep Learning/Computer Vision, Convolutional Neural Network(CNN), Recurrent Neural Network(RNN), Long Short Term Memory(LSTM), Vision Transformer's, Object - Detection, Segmentation, Classification, image processing

**Programming languages**: Python, R, C++, SQL

**Image processing libraries**: Open CV, scikit-image

**Version Control** : Git and GitHub

## EDUCATION

**Illinois Institute of Technology**

**Master of Science Artificial Intelligence - GPA : 3.833 / 4**

**May 2024**

**Courses** : Machine Learning, Data Mining, Applied Statistics, Big Data Technologies, Data Preparation and Analysis, Computer Vision, Natural Language Processing, Deep Learning

**Visvesvaraya Technological University, India**

**Bachelor of Engineering, Information Science and Engineering**

**July 2018**

## WORK EXPERIENCE

**Graduate Teaching Assistance - Data Mining course (Computer Science Department)**

**September 2023 - Present**

**Engineer CL2-I ( Samsung Electro-Mechanics Software India Bangalore Private Limited )**

**May 2021 – June 2022**

- Worked on a deep learning based number plate detection and character recognition algorithm with overall accuracy of 90%.
- Improved the accuracy of crowd detection and human trespass detection algorithms by 25%.

**AI Engineer ( Telerad Tech Pvt Ltd., India)**

**August 2018 – May 2021**

- Led a team of 4+ using the Agile software development method, including project planning, road map creation, release planning, sprint planning, and constant client interaction; assisted in developing proof-of-concept prototypes; removed project development bottlenecks; and instructed team members on technical topics such as deep learning and computer vision.
- Engineered a tailored U-Net architecture to achieve a remarkable 90% sensitivity and specificity in lymph node segmentation from mammograms.
- Devised a cutting-edge deep learning model and image processing logic, delivering an impressive 95% F1 score for detecting mammography asymmetry.
- Created a robust image processing algorithm and CNN classifier to effectively reduce false positives in mammograms' calcification detection, achieving an impressive 92% recall and 90% precision.
- Designed custom CNN architectures for precise segmentation and detection of various lung conditions, incorporating advanced image processing techniques for accurate localization and quantification. Achieved outstanding results with a 95% dice score, 90% MAP score, and an overall accuracy of 93%.

## INTERNSHIP

**AI-Intern ( Telerad Tech Pvt Ltd, India)**

**July 2018**

- Tailored a deep learning architecture for precise mammogram lesion segmentation, augmented by advanced image processing techniques to enhance both specificity and sensitivity. Achieved exceptional results with an impressive 94% IOU score and an outstanding F1 score of 92.5%.

## ACADEMIC PROJECT

- **End-to-end automated AWS ML workflow for auto insurance fraud detection** : Developed on AWS, integrating data processing, model training, evaluation, bias check, explainability, registration, and deployment using AWS cloud services.
- **Fine-Tuning the FLAN T5 LLM Model for Enhanced Dialogue Summarization** : A Comprehensive Approach with Full Fine- Tuning and PEFT, Evaluated Using ROGUE Metrics.
- **Image classification using hierarchical based shifted window Vision Transformers** : Trained with various hyperparameter fine-tuning strategies for both the Hierarchical-Based Shifted Window Vision Transformer and standard Vision Transformers on the Food-101 dataset. Achieved competitive performance compared to the standard Vision Transformers, with reduced computational complexity.
- **Seismic image salt region segmentation** : Attained good seismic image salt region segmentation using a custom deep learning UNet backbone, surpassing ResNet 50, ResNet 101, and VGG16 with significantly fewer parameters (7.86x, 12.45x, and 5.73x reduction, respectively). Achieved IOU of 84.168 and F1 score of 81%.
- **Enhance Positive Summary Generation by Fine-Tuning FLAN-T5 through Reinforcement Learning** : Used a reward model that predicts either "not hate" or "hate" for the given text and also used Proximal Policy Optimization (PPO) to fine-tune and detoxify the model.

- **Real-time machine learning prediction system for taxi ride fares** : Built and deployed the project using AWS SageMaker, Kinesis Data stream, Lambda functions, and S3, utilizing the New York taxi dataset and Linear Learner algorithm, with predictions stored in an S3 bucket.
- **Unpaired image-to-image translation using Cycle GAN** : Pioneered Cycle GAN, eliminating the need for paired data, thus enabling real-world applications with unaligned and unpaired training data. Achieved impressive results, including absolute mean square errors of 68.22 (Domain A to Domain B) and 91.73 (B to A), as well as SSIM scores of 87.86 (A to B) and 49.08 (B to A).
- **Online shoppers' purchasing intentions** : Project focused on analyzing data, leveraging exploratory data analysis and implementing machine learning models (classification and clustering) to comprehend purchasing behavior and predict future purchases, enabling the development of targeted marketing strategies.
- **Real estate price prediction** : Led a Comprehensive statistical analysis, applying various regression techniques to enhance prediction. This involved addressing data challenges and significantly improving the effectiveness of the regression model through thorough evaluation.
- **TF-IDF algorithm on Wikipedia data using Apache PySpark** : Developed a custom search engine utilizing Apache PySpark and AWS EMR Studio, enabling efficient analysis and ranking of relevant documents at scale.
- **Streamlined Real-time Data Streaming and Analytics Pipeline** : Implemented with AWS Kinesis, Firehose, Data Streams, AWS Kinesis Analytics Application, Glue Crawler, Glue ETL, and Athena for Querying S3-backed Databases.
- **Forex data pipeline using Apache Airflow** : Pipeline included tasks for API validation, data retrieval, storage, Spark processing, and timely notifications via Email and Slack. Established task dependencies and enabled convenient DAG triggering through the Airflow UI

## CERTIFICATIONS

**AWS Certified Machine learning Speciality 2023 - Hands On!** | **Generative AI with Large Language Models** | Neural Networks and Deep Learning | Improving Deep Neural Networks: Hyper parameter tuning, Regularization and Optimization | Convolutional Neural Network | Introduction to TensorFlow for Artificial Intelligence, Machine Learning and Deep Learning | Convolutional Neural Networks in TensorFlow | Sequence Models | Apache Airflow | Apache Spark

## PUBLICATIONS

- Pneumothorax Detection and Classification on Chest Radiographs using Artificial Intelligence - Lattice the Machine Learning Journal Volume-2 Issue-1, ISSN 2582-8312 **January - March 2021**
- Pneumonia Detection and Classification on Chest Radiographs using Deep Learning - Lattice the Machine Learning Journal Volume-2 Issue-2, ISSN 2582-8312 **April - June 2021**