

# Divya Prakash Manivannan

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## TECHNICAL SKILLS

**Languages:** *Python*, *SQL*, PL/SQL, NoSQL, R, C/C++, Java, JavaScript,HTML5

**Tools & Technologies:** OracleDB, Linux, Git, CSS3, React, Node, Django, RESTful APIs, JSON/XML, FastAPI, Gradio

**Python Libraries:** Pytorch, TensorFlow, Numpy, Pandas, Matplotlib, Scikit-Learn, PySpark, Scipy, ggplot2

**Deep Learning Expertise:** Computer Vision (CV), Natural Language Processing (NLP), Large Language Models (LLMs), GenAI

**Industry Skills:** Agile Practices, Test Driven Development, Design Thinking & Analysis, Cloud Computing

## EXPERIENCE

### Data Scientist

Oct 2023 - Present

*Civic Tech Structure*

*Los Angeles, CA*

- Conducting analysis to evaluate affordable housing accessibility for food assistance programs in LA County using **Pandas**.
- Successfully extracted geographical coordinates for over 1000 locations, from web, to facilitate comprehensive analysis.

### Machine Learning Scientist

Jul 2023 - Sep 2023

*EnSuRe Research Group (New York University)*

*Brooklyn, New York*

- Enhanced Deep Learning models' Out-Of-Distribution detection for backdoor sample identification, achieving **95% accuracy**.
- Executed established methodologies and managed the **data pipeline**, using **Pytorch** to generate results for 5000 configurations.
- Achieved a 50% reduction in run times by optimizing GPU cluster usage, implemented on NYU's Greene HPC cluster.

### Software Developer & Researcher

Jan 2022 - Dec 2022

*New York University, Tandon School of Engineering*

*Brooklyn, New York*

- Revamped the Augmented Library APP by developing a new backend system for reserving 40 study spaces.
- Proposed a cost-effective **AWS Cloud Hosting** solution for migrating the backend **PostgreSQL** database, for scalability.

### Software Engineer

Sept 2018 - Jul 2021

*IBM Pvt. Ltd.,*

*Bengaluru, India*

- Developed high-performance **PL/SQL** APIs using **TDD**, managing 400K daily transactions of **AT&T Enterprise** accounts.
- Led the implementation of an automated mailing system using **Shell Scripting** and **Dynamic SQL**, enhancing database insights and averting outages, reducing manual workload from 2 hours/week to zero.
- Utilized **SQL** for data analysis and managed over **50** critical APIs, reflecting proficiency in **EDA** tasks and **ETL** processes.
- Optimized** PL/SQL APIs, using finetuning and **EXPLAIN PLAN**, cutting Production Database execution time by 10%.
- Achieved a significant reduction in production tickets to **zero** for the sub-application through effective troubleshooting.
- Worked on designing and developing maintenance of **Java Microservices** and hosting them on AWS.
- Attained **Certified SAFe 5 Practitioner** certification to implement Agile methodologies in delivery of projects.

## EDUCATION

### New York University, Tandon School of Engineering

Brooklyn, New York

*Master of Science, Computer Engineering*

*Sept 2021 - May 2023*

### PDPM Indian Institute of Information Technology, Design & Manufacturing

Jabalpur, India

*Bachelor of Technology, Electronics and Communication Engineering*

*Aug. 2014 - May 2018*

## PROJECTS

### Summariser Web-APP: LLM powered Call Log Summarization with Time Navigation [\[Link\]](#) Apr 2024 - Apr 2024

- Developed NLP-powered Summariser Web-APP using **Mistral Instruct LLM** for call log summarization and question answering, taking input dates, integrating FastAPI and Gradio UI for seamless functionality.
- Utilized SQLite for efficient data storage and retrieval, implemented Test Driven Development for robust error handling.

### Stealthy Syntactical Backdoor Attack on Language Models [\[Link\]](#)

Sep 2022 - Dec 2022

- Proposed a novel backdoor attack on Language Models, extending the Hidden Killer attack by integrating poison data generation with the Pre-trained T5 model, resulting in a maximum **ASR** increase of 23%.
- Implemented a robust backdoor defense using GPT3, reducing ASR by 50% in most tested model and data set configurations.

### Deep Dive into Google Play Store Apps & Reviews

Sep 2022 - Dec 2022

- Performed comprehensive analysis on a Google Play Store dataset comprising 2.3 million entries using **Python** and **PySpark**, uncovering insights into app popularity, advertising efficacy, and user engagement dynamics.
- Executed extensive **data pre-processing, statistical analysis, causal inference, and classification tasks**, achieving a 80% **test accuracy** for predicting 'Maximum Installs' and uncovering key factors influencing app ratings and installs.

### Cross-Architectural Self-Supervision for Multi-Modal Learning [\[Link\]](#)

Sep 2022 - Dec 2022

- Explored Unimodal and Multi-modal Self-supervised approaches for classifying memes in Facebook AI's hateful meme dataset, evaluating performance with AUROCs and accuracies.
- Introduced **CASS-MM (CASS-Multi-modal)**, a novel technique, outperforming CLIP-trained models in accuracy by 10%.

## PUBLICATIONS

**NeurIPS 2023 Workshop BUGS:** On the Limitation of Backdoor Detection Methods [\[Link\]](#)

**AISTATS 2024:** On the (In)feasibility of ML Backdoor Detection