

# Vishanth Hari Raj Balasubramanian

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## MACHINE LEARNING ENGINEER

Visionary MLE/SDE with 2+ years' experience at Fortune 500, proven track record of innovations impacting \$500k+ in business value, expertise in ML/Deep Learning, Computer Vision, NLP/LLMs, Time series models. Holding MS in BA/DS & BS in CSE/Industrial Eng.

## TECHNICAL SKILLS

**Programming:** R, Python (TensorFlow, OpenCV, Pytorch, Sklearn, Numpy), C/C++, JavaScript, TypeScript, Java, Node.js, SQL, NoSQL.

**Tools:** R Studio, Git, GitHub, Jira, [Tableau](#), Excel, Spark, Splunk, MATLAB, Spark, PowerBI, Docker, Snowflake, AWS (EC2), Jenkins

**Certification:** Lean Six Sigma Green Belt, Azure Certification, Machine Learning using AWS, Apache Spark, DevOps Leadership.

**ML Model:** Regression, Clustering, CNN, Random forest, Image Recognition, PCA, SVM, NLP, LLM, A/B Testing, Computer Vision.

## PROFESSIONAL EXPERIENCE

### CITIGROUP (Citi Global Wealth)

Chennai, India

#### Software Development Engineer 2 – Artificial Intelligence & Operations Lab

July 2022 - Sept 2023

- Created user stories/lead development of innovation projects: integration of **Natural Language Processing (NLP) & Large Language Models (LLMs)** in chatbot, text mining & sentimental analysis dashboard of client feedback on app, and Selenium-bots (RPA) automating manual activities for PSM Team, saved ~\$250k annually.
- Developed full stack app (front-end/back-end) for automation/dashboards equipped with ML models (decision tree, Logistic Regression, CNN) for monitoring, incidents-forecasting, SRE & SLA, impact analysis dashboards; reduced incidents by 13%.
- Awarded [Citi – Gratitude Golden Award](#), [Citi – Copper Award](#), Bronze Award, Bravo Award and Citi-Client Obsession Award, and 10+ Applause award for best automation, Innovation project across CGW, Finalists in Citi – Hackathon 2022.

#### Software Development Engineer 1

July 2021 - July 2022

- Configured Servers and CI/CD Jenkins Pipeline** for new tech stack Angular, NodeJS, python(flask) to host the internal app
- Implemented new SDLC process (Scrum & Agile) CI/CD pipeline for internal applications, saved around **100+ person-hours**.
- Implemented an **ETL framework** to extract/integrated data from IBM Cognos, Splunk, Evolgen & ServiceNow through REST APIs into a central data pipeline for MLOps achieving \$100K in cost savings and reducing over 300+ man-hours.

### UNIVERSITY OF CALIFORNIA, LOS ANGELES

Los Angeles, CA

#### Graduate Research and Teaching Assistant – Software Development

January 2024- Present

- Creating open source Python Libraries ([click here](#)) for performing resampling techniques, Chi-Test, Relative risk, Hypothesis Testing, bootstrapping, bagging, power analysis for students, professor and research scientist in Bioscience field

### JOHN MOLSON SCHOOL OF BUSINESS, CONCORDIA UNIVERSITY

Montreal, Canada

#### MITACS Globalink Research Intern'20 – Software Development

April 2020 - July 2020

- Developed [non-linear programming model](#) using greedy & heuristics (Simulated Annealing/Tabu Search) algorithm in C++ to predict market demand & optimize the assortment in retail store, maximize **profit by 6%** for Walmart Canada.

### VEVOLVE (STARTUP)

Bengaluru, India

#### Machine Learning Engineer Intern

May 2020 - Aug 2020

- Worked on R&D initiative to create an AI-based Cyber Security Validation prototype, integrating web scraping, text mining, and used ML algorithms (SVM, PCA) to assess and address vulnerabilities in web app, generating **~\$30K** in revenue.

## PROJECTS/PUBLICATIONS

**LLM Recommender search engine** ([click here](#)): Collected data using REST APIs (Hugging face), created text embedding using *ada* (OpenAI) for vector search to fetch ranked result, AWS Lambda via Docker, with data storage in S3 & processing via EC2 instances.

**Image recognition-based (Computer Vision) Deep learning model for automated defect detection** ([click here](#)): Develop Image classification model – CNN, SVMs (OpenCV, TensorFlow) achieving 90% accuracy elimination manual inspection.

**ML Framework for Identify Misfire/Knocking in IC Engine** ([click here](#)): Designed/Developed ML optimal algorithms, to identify misfire, knocking in IC engine using the parameters from observed P-V data performed Data cleaning, processing and extraction

## EDUCATION

### UNIVERSITY OF CALIFORNIA, LOS ANGELES

Los Angeles, CA

#### Master of Science in Business Analytics- Data Science/Machine Learning

September 2023- December 2024

- Courses:** Machine Learning, Python, Statistics, Optimization, SQL, Data Management, Customer Analytics, A/B Testing,
- Leadership:** Vice President, Social Network and Marketing – Student Government Body

### NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPALLI

Trichy, India

#### Bachelor of Technology in Industrial Engineering /Minor in Computer Science (CGPA: 9.1/10)

July 2017 - June 2021

- Awards:** Awarded Institute Merit Rank Award for securing the **Top 3 ranks** in the Department
- Leadership:** Co-founder of Ignite Club, Student Council Member, Class Rep, Head of Events Team
- Courses:** Data Structures & Algorithms, Big Data Analytics, Database Management, Operating System, Computer Networks