

# Vedant Saraswat

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## EDUCATION

- University of California Irvine** Master of Science in Computer Science Sept 2023 - Apr 2025
- Fully funded Scholarship as **Graduate Teaching Assistant** for Big Data Management Course under Professor Vagelis Hristdis.
  - **Courses** - Advanced ML, Reinforcement Learning, Efficient ML, Information Retrieval, Computational Geometry, Networks
- Indian Institute of Technology Kharagpur** - Bachelor of Technology (Honors) July 2017 - Apr 2021
- Minor Curriculum in **CS** - Program. and D. Structures, Algorithms, Social Computing, Image Processing, Probability, ML, DL
  - Department Rank 4 and awarded **RK Bramha Cup** for the Best final year (Technology) and recognition letter from Director

## EXPERIENCE

- Machine Learning Intern** - (Quality of Engineering Team) - [Viasat](#) June 2024 - Present
- Estimating in-flight Wifi Active Speed using **Predictive ML** models and further performing Video quality Synchronisation.
- Data & Tech Fellow** - (Professor Tom Andriola) - [University of California Irvine](#) Sep 2023 - Mar 2024
- Developed a **Mixture of Experts LLM** chatbot from scratch to deliver student-oriented responses for diverse academic queries.
  - Building **RAG** platform to automate the creation of sustainability dashboards based on AASHE data, with web integration via Streamlit to facilitate efficient querying and drive informed decision-making to enhance sustainability initiatives.
- NLP Researcher** - (Dr Dan Roth) - [Cognitive Computation group](#) July 2023 - Present
- As part of Dr Dan Roth's Cognitive Computation group at the University of Pennsylvania, under the mentorship of Dr Vivek Gupta: Innovating Methods in **Tabular Natural Language Inference**. (Submitted in EMNLP 2024)
- Computer Vision Research Engineer** - (ZotBins) - [University of California Irvine](#) July 2023 - Present
- Developed a waste classification pipeline, employing a modified EfficientNet architecture, achieving 92.7% multi-label accuracy.
  - Deployed real-time waste classification using CLAHE, perception correction, and optimized YOLOv5 model with 87.2% mAP.
- Software Development Engineer** - (Web & Games Team) - [MX Player](#) Jun 2021 - Aug 2023
- Orchestrated end-to-end creation of a **HLS Streaming Player** for various web OS with inbuilt DRM protection and **dynamic ad insertion**, utilizing VideoJs, Widevine, and delivering seamless experiences for 175 million people.
  - Engineered complete user flows, covering **Authentication**, Subscriptions, **Push Notifications** and **Content Recommendation** from scratch utilizing TypeScript, React, Next.js, Spring, and an adaptive SageMaker-based recommender engine.
- Undergraduate Researcher** - (Professor Pawan Goyal - Thesis Project) - [CNERG Labs](#) Jun 2020 - Aug 2021
- Detected protein interaction in Medical texts based on shortest **dependency knowledge graphs** and common sense encoders.
  - Researched suicidal personality prediction on extracted multimodal Facebook data using **T-LSTM and Deep BOSE** network
- Software Development Intern** - (Transportation Tech team) - [Amazon](#) Apr 2020 - Jun 2020
- Enhanced client onboarding in fleets by creating a **Spring** backend module to rectify errors, utilizing Postgres Database to manage **data disparities** between container and their Sable Database API Calls on the frontend developed with JSP.
  - Formulated an algorithm to optimize **Transactions Per Second (TPS)** effectively reducing latency for the TCDA portal.
- Data Analytics Intern** - (IBUTUS team) - [Tech Mahindra](#) May 2019 - Jun 2019
- Optimized Model Performance on 30 million VOIP instances solving label imbalance and contributed to the sk-multilearn library.
  - Applied **cost-sensitive RL algorithms**, reducing SCUMBLE by 15% and enhancing macro-F1 score by 10.5% via ensemble.
- Machine Learning Intern** - (Professor Mrigank Sharad) - [AgNext Research Labs](#) Dec 2018 - Jan 2019
- Utilized OpenCV for noise reduction and enhancing contours in 4 categories of maize data via **Otsu thresholding** and **RCNN**.
  - Optimized **Mobilenet CNN** and **SSD** models using Transfer Learning, elevating recall and F-score from 60% to 86% with data augmentation, Blob detection etc, and deployed them in flagship product of **Spice Board of India** - Specx Vision Basic.

## PROJECTS

- Speculative Decoding** - Experimented optimization pipeline to accelerate language model inference, achieving 3x speedups.
- UCI Search** - Engineered IR Search Engine on CS Database with PageRank, n-gram indexing, RAG, and RLHF/PPO techniques.
- Smart Chat Assistant** - Designed an AB Inbev Business and Customer-centric proactive Chatbot with interactive AI webhooks
- Doctor's Prescription Scanner** - Developed a Tesseract OCR based interface for multilayer handwriting correction for patients
- Green Droid** - Created autonomous mower-seeder robot with DL grass detection, waste disposal, and Raspberry Pi localization

## SKILLS

Languages/Scripts	C, C++, Python, Go, Java, Javascript, Typescript, Octave, Matlab, HTML, Bash
Libraries	OpenCv, Numpy, Pandas, React, Next.js, Tkinter, Spacy, NLTK, Flask, Django, Beautiful soup, Spark
Frameworks/Databases	Tensorflow, PyTorch, ROS, Selenium, Spring, SageMaker, PostgreSQL, Cassandra, MongoDB, AWS S3