# Pranav Agarwal

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## EDUCATION:

**University of California - Irvine** | Irvine, California **Aug 2023 - Dec 2024**
Master of Science, Data Science

**VIT University** | Vellore, India **Jul 2017 - Jun 2021**
Bachelor of Technology, Computer Science

## WORK EXPERIENCE:

**Machine Learning Engineer Intern** | *Safran Aerospace* **Jul 2024 – Nov 2024**

- Saved $10,000 per aircraft per month by predicting equipment health using artificial neural networks trained on vibrational, temperature, pressure, and usage cycle data using Python and Pytorch.
- Increased model accuracy to 96% by developing an ensemble model combining LSTMs for temporal data and XGBoost for categorical features to improve bias and variance.

**Machine Learning Researcher** | *UCI AI Center* **Jun 2024 - Present**

- Improved cancer survival prediction accuracy to 89% for breast cancer using transfer learning on patch image and whole slide images with PyTorch. Worked in collaboration with Dr. Jana Lipkova.
- Achieved 81% base model accuracy by applying Principal Component Analysis (PCA) to reduce dimensionality of extracted features from deep learning architectures to train SVMs, Linear Regression and KNN models.

**Data Scientist** | *Airbus* **Jul 2021 - Aug 2023**

- Reduced monthly security alerts by 20% by employing analytical Bayesian methodologies using python to improve precision of alert systems by minimizing false positives and increasing precision.
- Achieved annual cost savings of $70,000 by integrating a recommendation engine built on python utilizing historical usage patterns to optimize cloud resource menu offerings.
- Engineered a comprehensive dashboard via Amazon QuickSight, synthesizing user data metrics to furnish actionable insights for informed decision-making, project management and strategic planning.

**Natural Language Developer Intern** | *Novartis* **Jan 2021 - Jun 2021**

- Cut yearly expenses by $1 million by engineering a chatbot on python via natural language processing and intent recognition replacing L1 customer support.
- Reduced customer service response time by 1.7 hours and achieved 33% surge in chatbot usage via a chatbot analyzer using python, NLP and pandas capable of identifying areas of low performance.
- Increased positive feedback by 23% by performing A/B testing on intents via feedback and incorporated them into language model and evaluated significance using t-tests.

## PROJECTS:

**Lane Detection for Autonomous Driving Using Attention on UNet Transformer** | github | medium

- Designed and implemented a lane detection model using PyTorch and OpenCV with UNet-based architecture, incorporating residual blocks and attention to enhance lane segmentation accuracy for autonomous vehicles.
- Developed image preprocessing and data augmentation pipelines, including edge detection, noise reduction, and morphological transformations, resulting in improved model performance on challenging lane detection scenarios.

**Duplicate Detection in Job Postings Using LLMs** | github

- Implemented Sentence Transformers to generate embeddings from job descriptions, enhancing duplicate detection by capturing semantic similarity, context-aware features. Fine-tuned large language models (LLMs) on job-specific data.
- Configured a Milvus instance, executed vector indexing, and developed a cosine similarity-based search method to identify duplicate job postings. Assessed effectiveness using precision, recall, and F1 score metrics using Python.

## SKILLS:

Python, C++, R, SQL, Pandas, Numpy; OpenCV, Matplotlib, Seaborn, Neo4J, spark, Hadoop, hive, mapreduce, predictive analytics, looker, RAGs, GANs, LLMs, AWS solutions architect, Open-source contributor - Mozilla - github.