# Aman Prashant Nagarkar

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## EDUCATION

**Santa Clara University - Santa Clara, CA** Sep 2021 – Jul 2023

Master of Science in Computer Science and Engineering

*Relevant Courses: Advanced Machine Learning, Deep Learning, Big Data, Artificial Intelligence, Reinforcement Learning, Pattern Recognition and Data Mining, Data Analysis, Distributed System.*

**Savitribai Phule Pune University - Pune, India** Aug 2015 – Jul 2019

Bachelor of Engineering in Computer Science

## EXPERIENCE

**Software Development Engineer at Frugal Innovation Hub - SCU** Jun 2023 – Present

- Researching the efficiency of transfer learning in transformer-based models for **multilingual sentiment analysis**, optimizing pre-training and fine-tuning processes across diverse languages to provide resource-efficient recommendations.

*Teaching Assistant at Santa Clara University* *Sep 2023 - Mar 2023*

- Teaching Assistant for COEN-210 (Computer Architecture) and COEN-289 (Design of Algorithms).

**Machine Learning Engineer Intern at KLA** Jun 2022 – Sep 2022

- Built content based recommendation engine by applying named entity recognition and topic modeling to company's data-lake leveraging DistilBERT, and Gensim. Fine tuned Distilbert for text classification for topic modelling.
- Consulted with managers to refine machine learning objectives and develop models on huge volumes of historical data.
- Architected vector space model using Word2Vec for sentence embeddings, with TF-IDF and cosine similarity for search query matching, reduced latency from 2.5 to 0.8 sec.
- Utilized Airflow to organise and store the vector embeddings saving over 200 hours of data tagging.
- Optimized real-time data processing pipelines, reduced data processing time by 30% and improved system resource utilization by 20%.

**Software Engineer at Vint Media** Feb 2019 – Jul 2021

- Leveraged customer transaction data to design and deploy **a product recommendation system**, utilizing collaborative filtering to identify correlations between purchased items increasing online sales by 30%.
- Designed lean proof of concepts using data-driven insights for business stakeholders, enabling accurate demand forecasting and inventory optimization, saving **$10,000** annually.
- Utilized **random forest for churn prediction** and used SHAP values to understand feature importance reducing user attrition by 5%.
- Collaborated with a 3 person team to migrate monolithic system to microservice architecture using **Docker and Kubernetes**, enabling independent scaling and reducing deployment times by 80%.

**Software Engineering Intern at Accurate Risk Managers** Jun 2018 – Sep 2018

- Collaborated with data scientists to develop a **logistic regression model** for risk analysis using Keras, with a F1 score of 0.82.
- Evaluated and fine-tuned model parameters, improving the accuracy from 0.53 to 0.81 resulting in refined risk mitigation and a **30% increase in fraud detection rate.**

## PROJECTS

**LLM using GPT Architecture** | Python, Pytorch, QLoRa, NLTK Aug 2023 – Sep 2023

- Implemented the paper "Attention is all you need" and "QLORA: Efficient Finetuning of Quantized LLMs" to train a Large Generative Transformer model on the OpenWebTextCorpus data using QLoRa to generate text responses on prompts.
- Implemented generation cropping techniques to control the length and context of the text generated by the LLM, making it suitable for specific applications, such as content summarization.

**Optimal Control with Linear Function Approximation** | Python, PyGame, Reinforcement Learning Mar 2022 – Apr 2022

- Implemented and compared three optimal control strategies using linear function approximation for the CartPole, MountainCar, and LunarLander environments. Each strategy utilized different methods for encoding states (x(s)) including state aggregation, radial basis functions (RBF), and polynomial or Fourier basis

**Bringing Old Photos Back to Life** | Python, CycleGAN, Variational Auto-Encoder, Scikit-Learn Feb 2022 – Mar 2022

- Executed the successful implementation of the research paper 'Bringing old photos back to life' by applying transfer learning techniques with CycleGAN and VAEs in Python. Achieved an impressive 90% accuracy compared to ground truth by learning latent space transformations and translations between clean and degraded domains on a custom dataset.

**Waiterless Restaurant System** | Java, Google Cloud Platform, SQLite, MongoDB Jan 2019 – Apr 2019

- Architected a full stack application and integrated conversational agent using REST APIs to build a virtual assistant with a speech to text and, name entity recognition ability accurate to 90% reducing local memory usage by 20Mb.
- Built the backend infrastructure, utilizing SQLite for structured data and MongoDB for efficient data storage and retrieval from Heroku, ensuring optimal performance and scalability.

## SKILLS

**Languages**: Python, C++, Javascript. **Database:** Postgres, MySQL, Redis, MongoDB.

**Core Competencies**: Machine Learning Algorithms, Natural Language Processing, Recommendation Systems, Model Development Deployment and Maintanance, Data Analysis, Statistical Inference, Reinforcement Learinig, Predictive Modelling.

**Technologies**: Git, PyTorch, Hugging Face, Hadoop, Docker, Kubernetes, Kafka, PySpark, Airflow, Flask, GCP, AWS.