KALPAN MUKHERJEE

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EDUCATION

New York University, Courant Institue of Mathematical Sciences *Expected May, 2025*
Master's in Computer Science — Focus: Computer Vision, Representation Learning
GPA: 3.90
Relevant Courses *- Computer Vision, Fundamental Algorithms, Programming Languages*

Nitte Meenakshi Institute of Technology *August, 2021*
Bachelor of Technology in Information Science — Focus: Efficient Algorithms
GPA: 3.81 - *First Class with Distinction*
Relevant Courses *- Data Structures & Algorithms, Distributed Systems, Database Systems, SDLC*

SKILLS

Research Interests - Computer Vision: World Models, Representation Learning & Deep Reinforcement Learning
Technical - Python, C++, Git (Version Control), Databases (MongoDB, SQL, Postgres), Full Stack (MERN)
Frameworks - OpenCV, TensorFlow, PyTorch, Keras, Scikit Learn, Numpy, Pandas, Matplotlib, NTLK

EXPERIENCE

Software Development Engineer @ *HashedIn (acquired by Deloitte)* *March, 2021 - July, 2023 (2.4 years)*
Worked for over 2 years on projects including code generation with the GPT-3 beta, and building data processing pipelines, before transitioning into an ML tech lead role working on Computer Vision and Natural Language Processing.
SDE-II
- Developed frontend and backend for an automatic camera-angle switching software using signals like **voice levels, expression detection, natural language processing** for live broadcasting, eliminating the need for a production crew.
- Led a team of 15 engineers, for development of a scalable Sports as a Service platform, enabling customers to setup broadcasting capabilities with the click of a button.
- Implemented and fine tuned multiple instances of **YOLOv5-8** for enhanced real time object detection and classification, improving sports scene recognition for better broadcast context and viewer experience.
SDE-I
- Worked extensively with OpenAI to contribute to **GPT-3** API by flagging multiple corner cases in springboot microservices and angular code generation capabilities leading to the development of Codex.
- Developed APIs using **Python, FastAPI and SQL** for a legal document data ingestion pipeline for Federal Trade Commission.

APPLIED RESEARCH

Research Assistant @ *Centre for Robotics Research, NMIT* *October, 2018 - May, 2020 (1.6 years)*
- Developed **activity detection** models for intruder alerts in **C++** using auto-thresholding algorithms by comparing effectiveness of Video Shot Detection in bright v/s poorly lit environments using image texture features like **LAWs, GLCM and TS**.
- Used **clustering techniques** to produce summaries of long border surveillance videos, extending the same to implement efficient activity detection on **lower end hardware** combating processing power constraints.

PROJECTS

Image Generation & Reconstruction via traditional and variational autoencoders - *under Rob Fergus*
PyTorch — Github — Paper *2023*
Tested multiple architectures for both traditional and variational autoencoders for the tasks for image reconstruction from a lower dimensional latent representation and image generation from randomly generation latent vectors.

ShowMeDaWae - Adding road condition data (potholes etc.) to Google Maps - *Hackathon Winners*
TensorFlow with Keras, Google Maps API, React-Native — Github — Youtube *March, 2020*
Assisted drivers to navigate bad road conditions (potholes) while driving on Indian roads, by training a model classifying roads using Google Maps API to detect road conditions through **accelerometer & gyroscope** sensor data from a user's phone.

AI in HR - Shortlist applicants for a job posting with Similarity matching - *Undergrad Capstone Project*
NLP, Word-Embeddings, Vectorisation, Cosine-Similarity, React-Native *2019*
Created a privacy preserving text-comparision model for shortlisting from 1000s of applications. After identifying bias in the initial model, it was rectified by re-weighting and re-sampling techniques.

TEACHING EXPERIENCE

Published freely available Medium articles and Youtube videos ranging from **data science to competitive coding**.