Maniyar Suyash

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ABOUT ME

Hi there, I am Maniyar Suyash, an AI Engineer by profession and also passion. Spoiler Alert: The entire CV is just me exploring applications of ML and AI in various fields in both academic and industrial settings, I am pretty sure this is what I want to do with my life as well. I loved doing research in my undergraduate and am doing it in my job as well, looking forward to propagating my career through further research in applications of AI and ML.

EDUCATION

B.TECH. IN ELECTRICAL ENGINEERING | Indian Institute of Technology, Jodhpur
CGPA: 8.22/10 — 2023 | Jodhpur, India

INTERMEDIATE | Guru Junior College
Percentage: 97.7%(agg.) (TSBIE) — 2019 | Hyderabad,India

MATRICULATION | Vasavi High School
CGPA: 10/10 (SSC) — 2017 | Bhainsa,India

EXPERIENCE

DECIMAL POINT ANALYTICS | Data Scientist
July 2023 - Present | Full-Time

- Mentoring two summer interns on the project **Knowledge Distillation of models for object detection, and Few-shot object detection.**
- Working on Employing **Retrieval-augmented generation (RAG)** to build software that can surf various documents like PDFs, and Excel Sheets and answer a user query based on the information present in the documents. Also working on **Graph** based RAG techniques.
- Built a chatbot for a client using both RAG and knowledge Graph, Knowledge Graph helped improve extractive question answering, which is a limitation in LLM+RAG-based methods due to limited context length.
- **Finetuned Large Language Models** like Llama 2 7B, 13B using **LORA** for specific business use cases like scrapping required information from given unstructured text.
- Baselined the results using GPT-4, GPT-3.5, also performed prompt engineering to improve results.
- Worked on the development of an end-to-end pipeline for car damage detection and segmentation in car images, Using **Vision Transformer, YOLO, MMDetection** frameworks

RAAPID AI X IIT JODHPUR | Research Intern
Supervisor: Dr. Anand Mishra | Aug 2022 - May 2023 | Part-Time

- Developed an end-to-end pipeline focused on extracting meaningful information from medical document images through table detection and extraction.
- Established baseline scores on the ICDAR2019, MediTables-IIITH and other table detection, and extraction datasets, also evaluated results on the private data provided by the company Raapid AI.
- Finetuned **DiT (Document Image Transformer), CascadeTabNet model** on the private medical images dataset to improve the performance of table detection and extraction specific to medical document images.

VL2G @ IIT JODHPUR | Student Researcher
Supervisor: Dr. Anand Mishra | Jan 2022 - May 2023 | Part-Time

- Joined Vision, Language and Learning group (VL2G) and contributed to the project **Scene-Text aware cross-modal retrieval in cross-lingual settings**.
- Curated the dataset required for multi lingual - multi modal settings. To establish baselines of scene text aware cross-modal retrieval models, set up the *Visual Semantic Reasoning for Image-Text Matching (VSRN)* repository.

DECIMAL POINT ANALYTICS | Data Scientist Intern
Summer Internship | May 2022 - July 2022 | Full-Time

- Worked with the Video Analytics team to create a robust pipeline dedicated to the detection of accidents in CCTV videos
- Conducted comprehensive experimentation and evaluation of diverse methodologies, including architectures such as **Vision Transformer, Inception Networks, and Convolutional LSTM models, YOLO, Autoencoder Architecture and prominent computer vision algorithms like Optical Flow, and DeepSORT.**
- Contributed to data acquisition by employing Selenium library for web-based data scraping activities

- Tech-stack, Libraries: **OpenCV, Selenium, MLflow, WandB**

PROJECTS

CHATBOT AND KNOWLEDGE GRAPH GENERATION | Natural Language Understanding | Guide : Dr. Lipika Dey | Jan 2023 - May 2023

- Conducted Named Entity Recognition (NER) followed by Relation Extraction on the Knowledge-Net dataset, and constructed a Knowledge Graph.
- Devised a conversational agent using the Chatterbot framework, enabling it to furnish context-based responses through integration with the associated Knowledge Graph.
- Tech-stack: **NLP, Spacy, NetworkX, ChatterBot, BERT**

SMART SCANNER APP | Mobile and Pervasive Computing | Jan 2023 - May 2023

- Created a mobile application that can extract text and tables from a document image.
- Worked on layout detection model, fine-tuned it on custom dataset and then deployed the model on Django server.
- Took the input of document image from the Mobile application then made an API call to the model and generated the required output of extracted text and table information.
- Tech-stack: **Pytorch, Tensorflow, Django, DART, Flutter**

DATA DRIVEN HAPTIC MODELLING | Supervisor : Dr Amit Bhardwaj | Aug 2021 - Dec 2022

- Developed a novel methodology for force modeling of inhomogeneous objects using machine learning algorithms like Random Forest and Support Vector Machines and interpolation techniques like Barycentric interpolation.
- Utilized *KMeans clustering algorithm and barycentric coordinates for interpolating to model inhomogeneity.*
- Poster titled **Barycentric Interpolation for Force Modelling on Visco-Elastic Inhomogeneous Objects** presented and awarded **first place** in **INAE-SERB Youth Conclave-2022**.
- Tech-stack: **MATLAB, Python, Pandas, NumPy, Matplotlib,Scipy**

BLOOD CELL CLASSIFICATION AND MALARIA DETECTION | Deep Learning | July 2022 - Dec 2022

- Applied techniques like Transfer Learning, Feature Extraction on pre-trained CNN architectures like Resnet, VGG to perform blood cell classification and detect and segment infected cells due to malaria.

AUDIO SPOOF DETECTION | Guide : Dr.Richa Singh | May 2021 - Aug 2021

- Worked on audio forgery detection using machine learning, studied various audio forgery techniques and reviewed existing technologies and deep learning models in the detection of audio forgeries.
- Implemented several Text-to-Speech repositories for generating deep fake audios that would be used as training datasets for the detection model. Worked with **Tacotron** a text-to-speech model to generate audio spoofs.

RELEVANT COURSEWORK

Relevant Course Work

- Natural Language Understanding
- Deep Learning
- Pattern Recognition & Machine Learning
- Data Structures and Algorithms
- Calculus
- Linear Algebra
- DLOps
- Computer Architecture
- Probability and Statistics
- Mobile and Pervasive Computing
- Introduction to Computer Science
- Computer Networks

ACHIEVEMENTS

2023 Secured **10/10** (SGPA)in 8th Semester along with A* (Extraordinary) Grade in NLU course.
2022 **INAE-SERB Youth Conclave:** 1st place in poster presentation in Technical Events (Experiential interface)
2022 **Inter-IIT Tech Meet 10.0 :** Co-Mentored the team on Model Extraction in grey box settings and won **Bronze**.
2021 Reached **Semifinals** in **Techgium hackathon** for prototype of "Smart Auto Sanitizing , Self Adjusting Table" using CV.
2021 Among **Top 5 teams** in **Computer Vision based hackathon** organised by Prithvi.AI.
2019 **Second Place** in Institute wide Ideation Contest organised by **Institution's Innovation Council of IIT Jodhpur.**
2019 **JEE ADV :** Among top 0.7% percentile of 1.3 million Applicants in Joint Entrance Examination(Adv.)

EXTRACURRICULAR

- Served as **Student Guide** in my sophomore year and then promoted to **Assistant Head** in my junior year of the **Student Wellbeing Committee, IIT Jodhpur**.
- Represented IITJ twice in Parliamentary **Debate competition** at Inter-IIT cult meet.
- **Hosted** several events including Nrityansh, Ignus IITJ's cultural fest.
- As a part of the **Social Service Club of IIT Jodhpur** I taught English to the students of a school in a remote village.