SHIVA SANKETH RAMAGIRI MATHAD

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SKILLS

- **Languages**: Python, SQL, C++, C, HTML, CSS, Javascript, Java
- **Discipline**: Machine Learning, Deep Learning, Data Science, Natural Language Processing, Artificial Intelligence, Computer Vision
- **Libraries**: Scikit-learn, NumPy, Pandas, TensorFlow, PyTorch, NLTK, Keras, OpenCV.
- **Platforms and Tools**: Linux, Windows, Jupyter Notebook.

PROFESSIONAL EXPERIENCE

Tata Elxsi Ltd - Design Engineer (Machine Learning) Nov 2016 - Dec 2018

Research and development in machine learning for Autonomous Vehicle Development and Driver Monitoring System

- **Autonomous Vehicle Development**
  - Achieved mAP of 76% on Object Detection for Pedestrian and Vehicle Tracking using SSD (Single Shot Multibox detector).
    - Takeaway: Understood the design of the complex architecture of SSD and the approach to formulate such complex systems to provide desired output. (Platform - Python, Keras, OpenCV, Deep Learning, Computer Vision, Linux)
  - Assisted in the implementation of Path and Motion Planning along with Optimization based on research papers.
  - Developed Stop-and-go feature and Intelligent Adaptive Cruise Control based on Real Time continuous data from varying sources as part of Trajectory Follower System for Traffic Jam Assist along with Lane detection.
    - Takeaway: Gained experience working on Real Time continuous data. (Python, Deep Learning, OpenCV, Tensorflow)
- **Driver Monitoring System**
  - Designed a pipeline for Machine Learning based Real Time Driving Monitoring System which was selected for implementation.
    - Takeaway: Gained broad understanding of high level end-to-end pipeline development.
  - Developed the following for the pipeline - Head pose detection (mAP: 87%), Eye gaze estimation and Tracking (acc: 72%), Eye Open percentage Estimation (acc: 92%) and Facial Emotion Recognition (mAP: 68%) achieving upto 20 FPS with an input of 30 FPS.
    - Takeaway: Gained extensive understanding of different machine learning models and their handling in multi-processing. Also understood the importance of hyper-parameter tuning, metrics and trade-off between model performance and speed. (Python, OpenCV, Keras, Machine Learning, Deep Learning, pandas)

EDUCATION

MS in Computer Engineering - New York University, Tandon School of Engineering Jan 2019 – Dec 2020

B.Engg in Electronics and Communication - BMS Institute of Technology Aug 2012 - June 2016

PROJECTS

- **Chatbot - "Alex":**
  Developed an interactive chatbot embedded robot that could provide visual response for queries sent over Bluetooth. An added feature of this robot was its ability for movement based on chatbot's interpreted messages.
  - Takeaway: Knowledge of NLP and Regular Expressions along with their application in Embedded Systems.
- **Data Analysis and Sentiment Analysis:**
  Developed a project to analyze and derive insights from Airbnb dataset of New York City. Developed Sentiment Analysis to derive user insights from user review data. (Link)
  - Takeaway: Understood the approach to derive suitable methods for Data Engineering and Data Analysis to discover patterns using statistical models and visualizing the results for better interpretation. Understood the working of rule-based Sentiment Analysis. (Machine Learning, Data Science, Python, matplotlib, NLTK, Data Analysis, pandas)
- **Text Prediction and Poem composer:**
  Developed Text Prediction algorithm without making use of any NLP specific libraries, capable of composing appreciably meaningful text paragraphs. Modified the same text predictor which allows users to compose Shakespeare like poem with the algorithm. (Link)
  - Takeaway: Gained broader perspective in the working of NLPs and understood the working of LSTM. (Natural Language Processing, Python, PyTorch, Data Science, RNN, LSTM)
- **SLAM using Deep Learning (**On-going**):**
  A research project for Simultaneous Localization and Mapping of an interior region using Deep Learning
  - Deep Learning, PyTorch, Open3d, Artificial Intelligence, Point Cloud
- **Electronic Music Synthesizer:**
  Developed an electronic music synthesizer using lasers and sensors that can produce music of varied frequency and tones. Provisional patent - India (5612/CHE/2014 dated: 07/11/2014) has been issued.

EXTRACURRICULAR ACTIVITIES

- Technical Lead at ***Opencube Labs,*** a startup incubated at BMSIT (Jan 2015 - June 2015): Designed and developed low orbit Cansats (Miniature satellites of the size of a can), mentored 3 students by training them on embedded systems and Image processing, organized workshops on Cansat development in different universities across India.