Akshatha Mohan

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Education

Texas A&M University College Station, Texas August 2024
Master's of Science in Computer Engineering GPA: 3.67/4.00
Coursework: Machine Learning, Pattern Recognition, Computational Photography, Analysis of Algorithms, Digital Image Processing

Bangalore Institute of Technology, Bangalore August 2021
Bachelor of Engineering, Electronics and Communication CGPA: 9.15/10.00
Coursework: Signal and systems, Digital Signal Processing, Linear Algebra, Probability, Statistics

Skills

Programming languages : C, C++, Python, R
Frameworks/ Libraries : Tensorflow, Pytorch, Keras, Numpy, Matplotlib, Pandas, LibFuzzer
Software : OpenCV, MATLAB, Git, FFMPEG, syzkaller; OS: Linux
Certifications: Internet of Things: Multimedia Technologies (University of California San Diego) Coursera
Autonomous Cars: Deep Learning and Computer Vision in Python (Sundog Education) Udemy

Relevant Experience

Texas A&M University, College Station, Texas
Image Processing Laboratory, Student Technician January 2023 – Present

- Analyzing Explainable AI (XAI) techniques and metrics for interpreting model predictions in classifying remote sensing imagery
- Utilization of XAI techniques such as LIME, GradCAM, and SHAP and their metrics to aid in decision-making and understanding of model predictions.

Motor Neuroscience Laboratory, Research Assistant September 2022 - December 2022

- Conducted data acquisition and analysis for EEG-based data using the TMSi SAGA medical device.
- Analyzed EEG data by filtering and dividing it into 500ms segments (epochs) using the MNE Python library to extract features.

Ittiam Systems Private Limited, Bangalore
Engineer- Internet Media Technologies September 2021 - July 2022

- Developed fuzzer programs for vulnerability detection in both user and kernel spaces, with the implementation of it on the LLVM infrastructure and syzkaller, which contributed to the Android Open-Source Project (AOSP).
- Implemented the fuzzing techniques for various AOSP components, including media codecs, network stack, and system libraries. Discovered and reported potential issues such as buffer overflows, integer overflows, and memory corruption in the system.

Indian Institute of Science (IISc), Bangalore
Intern May 2021 - August 2021

- Implemented FFMPEG on Linux, and measured throughput of the transmitted/received packets of the live video over the LTE network to maintain a latency of less than 0.5ms.
- Comparing the encoding rate and throughput in relation to video complexity. Used the ABR-VBV algorithm with variable buffer sizes in the decoder to get the constant bit rate across the real-time video transfer.

Engine CAL, Bangalore
Intern June 2020 - August 2020

- Worked in the driver assistance team (CAI) a part of Efficient Drive Assessment System or EDAS
- Applied pedestrian detection using Histograms of Oriented Gradients and linear Support Vector Machines and performed real-time image processing techniques including edge detection using OpenCV on Raspberry Pi.

Academic Projects

Generating netlist from hand-drawn circuit using image processing and machine learning

- Transformed a circuit image into a binary image to distinguish capacitors, ground, and voltage sources, reducing simulation time on LTspice by 50%. Utilized a contour-finding algorithm in OpenCV to identify other elements such as resistors, inductors, and diodes.
- Published in IEEE AISP'22, International Conference on Recent Trends in AI and Signal Processing.

Real-time Object detection using OpenCV

- Employed the deep neural network module of OpenCV to perform real-time object detection on low-powered, resource constrained IoT/embedded devices using pre-trained MobileNet-SSD models, achieving an accuracy of 72.7% mean average precision (MAP).