Akshatha Mohan

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Education

Texas A&M University College Station, Texas August 2024
Master's of Science in Computer Engineering GPA: 3.8/4.00
Coursework: Machine Learning, 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

Relevant Experience

Texas A&M University, College Station, Texas
Peeples Lab, Graduate Student Technician January 2023 – Present

- Working on the project "Multi-modal, Multi-task Data Analysis for Automated Plant Phenotyping"
  - Correlated plant image height with actual height and improved the image processing pipeline through image segmentation and registration techniques for precise alignment of multispectral band images.
- Analyzed Explainable AI (XAI) techniques and metrics for interpreting model predictions in classifying remote sensing imagery
  - Utilized XAI techniques including LIME, GradCAM, and SHAP to enhance transparency and interpretability in Human-Computer Interactions.

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

- Developed fuzzers in both user space and kernel space for the Android Open Source Project (AOSP), utilizing the LLVM infrastructure and syzkaller to actively contribute to proactive vulnerability detection, including bug identification, memory crash detection, and implementation of static analysis rules for potential malware detection.

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

- Conducted experiments on H.264 rate control methods, implementing FFMPEG on Linux to measure packet throughput and comparing encoding rates with video complexity. Achieved a reduction in latency of 0.5 seconds by implementing a constant bit rate (CBR) approach.

Engine CAL, Bangalore
Intern June 2020 - August 2020

- Worked in the driver assistance team (CAI) a part of Efficient Drive Assessment System or EDAS
- Developed a real-time object detection system on Raspberry Pi using OpenCV and MobileNet-SSD v2 algorithm trained on COCO dataset.

Academic Projects and Publications

Quantitative Analysis of Primary Attribution Explainable Artificial Intelligence Methods for Remote Sensing Image Classification

- Comprehensive analysis of quantitatively evaluating explainable artificial intelligence (XAI) techniques for remote sensing image classification, enabling informed selection of optimal XAI methods.

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).