Akhilesh Adithya

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EDUCATION

Bachelor's of Engineering in Computer Science   Goa, India | Jun 2023
BITS Pilani
Current CGPA: 8.51
Coursework: Human Computer Interaction; Neural Networks and Fuzzy Logic; Artificial Intelligence; Data Structures and Algorithms; Object Oriented Programming; Design and Analysis of Algorithms; Computer Networks; Database Systems; Digital Design; Logic in Computer Science; Linguistics; Probability & Statistics
Teacher Assistant (TA): Deep Learning(CS-F245); Principles of Management(MGTS-F211)

PROJECTS

ADVERSARIAL ATTACKS ON ANDROID MALWARE DETECTORS | BITS, Pilani | May 2021 – Current

- Project under **Hemant Rathore**.
- Extracted android permissions and intents from the .apk files found in the drebin dataset and non malicious datatset using apktool.
- Created various Machine Learning models to detect whether the .apk file is malicious or not.
- Used Manhattan distance metric to check the similarity between a malicious sample and the "nearest" benign sample.
- Altered the malicious sample in the direction of the nearest benign sample to force the ML model to misclassify the malicious sample as a benign one.
- Ran adversarial retraining and hybrid distillation as defensive models against this attack to check performance.

BIOLOGICALLY INSPIRED VISION | BINN LABS   BITS, Pilani | May 2021 – Current

- Project under **Prof. Basabdatta Sen Bhattacharya**.
- Utilised techniques such as SVD, pseudo inverse and Look Up Tables[LUT] to maximise information retrieved from images. Quantitatively measured the information loss under varying levels of removal of singular values.
- Used Foveal pit inspired Difference of Gaussian filters to extract edges from images for improving object detection.
- Used the FoCal algorithm from Prof. Basabdatta's thesis to rank order encode images and extract perceptual information by removing residual filter overlap.
- Currently working on shifting from traditional models to spiking neurons based models based on temporal coding.

OCEAN | IMHI LAB   BITS, Pilani | August 2021 – May 2022

- Project under **Prof. Surjya Ghosh**.
- Current forms of continuous evaluation is cumbersome for both the managers as well as the participants. Hence we developed OCEAN.
- Created OCEAN - a framework for Opportunistic Continuous Emotion Annotation. Utilizing CASE dataset, computed the change point scores using RuLSIF algorithm for each of the physiological sensors.
- Applied K-means clustering to choose probe points based on the change point score. Probe points were then used to check the corresponding valence and arousal scores. This was then used to measure performance of OCEAN.
- Resulted in retaining most of the information with 87% of the probe points being reduced on average.
- Paper Accepted at **IEEE PerCom 2022**

PORTFOLIO WEBSITE + MISCELLANEOUS STUFF | | Jul 2020 – Jun 2021

- A portfolio website created using HTML, vanilla JS and CSS. Contains all the miscellaneous projects such as the discord bot, deep learning based flappy bird and other miscellaneous WebDev and ML projects.
- Old version of the website was made using Gatsby, Three.js and GraphQL.

WORK EXPERIENCE

SUMMER INTERN | IBM   Bangalore, India | May 2022 - Current

- Worked with a team of 3 interns in the extremeblue program to develop an intelligent solution to provision and monitor "green" data centers effectively.
- Proposed solution consists of a server side AI module to optimally rank and choose "green" data centers, and a client side plugin to facilitate the same.
- Created REST APIs to help communicate between the server side AI module and client side plugin
- Built a simulator to mock data centers and use conditions.
- Worked in an AGILE team and deployed the solution in a CI/CD environment

DATA SCIENCE INTERN | iNEURON.AI   Bangalore, India | Apr 2021 - August 2021

- Refactored legacy code in MATLAB to open source equivalent in python using **numpy, scipy**
- Created a unet model to detect the presence of Covid 19 infection and to create segmentation masks on CT scan data in the .nii file format.
- Hosted the model on a webpage using flask coupled with HTML and js.

PUBLICATIONS AND WORKSHOPS

IEEE PERCOM 2022 | WIP TRACK   Pisa, Italy | March 21-25, 2022

OCEAN: Towards Developing an Opportunistic Continuous Emotion Annotation Framework [Paper] [Video]

NVIDIA DLI WORKSHOP | NVIDIA   BITS, Pilani | July 2021

- Fundamentals of Deep Learning - Certificate
- Building Transformer-Based Natural Language Processing Applications - Certificate

SKILLS

Expert

Languages: Python, Javascript
Libraries: TensorFlow, Keras, Scikit, OpenCV, PIL
Web Development: React, JavaScript, HTML/CSS
Technology: Matlab, Git, LaTeX

Proficient

Languages: C++, Java(Android)
Libraries: Pytorch
Web Development: Vue, Django, Flask, MongoDB, Node
Technology: TypeScript, Electron

Novice

Languages: Java, C, R
Libraries: Theano
Technology: RavenDB