KAMALESH PALANISAMY

Undergraduate Student

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Personal Website
Github Scholar

Research Interests

Machine Learning, Computer Vision, Audio Signal Processing, Federated Learning

Education

Jul 2017- **BTech,Instrumentation & Control Engineering**, *National Institute of Technology, Trichy*.
CGPA: 8.11/10

Publications

Preprint **Rethinking CNN Models for Audio Classification**
Kamalesh Palanisamy, Dipika Singhania, and Angela Yao. (Arxiv link)(Code Link).

HotMobile'21 **SplitEasy: A Practical Approach for Training ML models on Mobile Devices**
Kamalesh Palanisamy, Vivek Khimani, Moin Moti, and Dimitris Chatzopoulos. (Arxiv link)(Code Link).

Research Experience

Jan 2021- **Remote Research Intern**, *MILA Quebec*
Advisors: **Dr.Samira E Kahou** and **Dr.Eugene Belilovsky**
- Working on improving deep reinforcement learning algorithms.

March 2020- **Remote Research Intern**, *National University of Singapore, Singapore*
Advisor: **Dr.Angela Yao**
- Proposed a new approach to audio classification in which a model pretrained on ImageNet is fine-tuned for audio classification.
- Provided analysis using various methods to understand how the model adapted to learning the spectrograms.
- Currently working on developing new algorithms for activity detection in videos.

Aug 2020- Jan 2021 **Remote Research Intern**, *University of California, San Francisco*
Advisor: **Dr.Jean Feng**
- Worked on using different statistical methods to understand the impact of dataset shift in machine learning models for Electronic Health Records(EHR).

Jan-Nov 2020 **Remote Research Intern**, *The Hong Kong University of Science and Technology, Hong Kong*
Advisor: **Dr.Dimitris Chatzopoulos**
- Created a framework for split learning, a modification to federated learning in which a model is split between the mobile device and the server.
- Re-designed the executiong of the back-propagation algorithm for this framework such that it can be executed on real mobile devices.

May-Dec 2019 **Research Intern**, *International Institute of Information Technology, Hyderabad*
Advisors: **Dr.Vinoo Alluri** and **Dr.Petri Toiviainen**
- Worked on a project to understand how people from different regions understand Western and Indian Music.
- Collected a new dataset for Indian songs and built the autoencoders whose internal representations is compared with that of the brain using the fMRI data.

Awards

Sep 2019 Awarded an encouragement prize of 4000SGD during the **Singapore-India Hackathon** jointly organized by the Government of India and Singapore.

March 2019 Awarded a prize of 1,00,000Rs for winning the first place in our problem statement during the **Smart India Hackathon**.

Technical Skills

Languages Python, C++, Javascript, Typescript, Go, R, Matlab

Libraries Pytorch, Tensorflow, React, Angular, Django

Projects

Sep 2019 **Epidemiology Website**, *for Singapore-India Hackathon*, *Languages used: Solidity, Python*.

Built a system that provided a database to store all the patient data in a country using blockchain. The system uses this database to track the trajectory of the spread of a disease for government officials and suggests them decisions that can be taken. I focused on designing the blockchain network and the backend of the application.

March 2019 **Smart Server Website**, *for Smart India Hackathon*, *Languages used: Javascript, Python*.

Built a system that analyzes server logs automatically and whenever it detects an error, it parses it and searches on stack overflow or other forums for the solution, which is then displayed to the developer. I focused on integrating the frontend with the backend of the website and developing the models to parse the text data.

Jan 2019 **Public Distribution System**, *for Pragyan Hackathon*, *Languages Used: Solidity, Python*.

Code Link Built a Public Distribution System using blockchain to ensure that the produce from the farmer reaches the consumer without any tampering by the middlemen. I focused on designing the frontend for the application.

Dec 2018 **On-Duty Website**, *Languages Used: Javascript, Python*.

Built a website to issue On-Duty certificates that involves approval by the faculty and the head of the department. The website is currently being used by 5000 students in my university.

Miscellaneous Projects

Code Link Face Recognition App built as a project for Medical Instrumentation(ICPE11)

Code Link Orientation website to provide a virtual guide for the freshers in our university

Code Link Face generation using GANs built as a project for the Udacity Deep Learning Nanodegree

Code Link SwiftGrad: A package for finding the gradients of any function in Swift

Code Link Processing Examples: A repository containing examples of animations using Processing

Positions of Responsibility

Aug 2018- **Head of Exhibitions,Sangam&Ingenium**, *Pragyan*.

Prgayan is a student-run organization that has an ISO 2001 certification. We conduct the annual technical fest of NIT,Trichy. As the head of the Exhibitions team, I manage a group of over 30 students whose work is to contact the best exhibitors around the world to showcase their products at Pragyan and to conduct Sangam, which is the inter-college hardware hackathon.

Jul 2018- **Web Developer**, *Spider R&D Club*.

Spider is the R&D club of NIT Trichy, which has multiple profiles ranging from Web Development to Tronix, where we focus on research projects and occasional development projects for our university. As a web developer at Spider, I worked on building websites for various projects, conducting web development workshops for juniors and participating in hackathons.