

## ACADEMIC ACHIEVEMENTS

Pursuing **Honors** in Computer Science and Engineering

- Secured All India Rank 304 in IIT JEE Mains 2018 2018
- Secured All India Rank 665 in IIT JEE Advanced 2018 2018
- Awarded the esteemed Kishore Vaigyanik Protsahan Yojana (KVPY) fellowship (twice) 2016 & 2017
- Recipient of the prestigious National Talent Search Examination (NTSE) scholarship 2016

## INTERNSHIPS

**Bing Ads classification using Multimodal Learning** | Microsoft India R&D Data Science Intern | Summer 2021

- Worked with **vision-language** models, looking for gains on Microsoft's Bing ads classification module
- Experimented with recent multimodal models, **Oscar** and **VinVL**, which work on the principle of generating **regions of interest** from images which are fed, along with text, to a **transformer** network
- Compared with a **baseline** involving a modified **XLM-R** as the text model and **BiT** as the image model

**Analysis of Vector Addition Systems** | Prof. Alain Finkel, ENS Paris-Saclay Research Intern | Summer 2020

- Worked on the non-trivial problem of devising an algorithm to construct the **semi-linear bases** for projections of reachability sets of Vector Addition Systems, elucidating definitions and **formal proofs**

## KEY PROJECTS

**Self-supervised Multimodal Learning** | Prof. Preethi Jyothi, Prof. Ganesh Ramakrishnan B.Tech Project, Ongoing

- Exploring novel **intermediate pretraining** strategies to learn joint **audio-video-text** embeddings
- Experimenting with cross-modal **contrastive** losses, extending them to three modalities using **mixup**

**Microarchitectural Enhancements** | Prof. Mythili Vutukuru, Prof. Biswabandan Panda R&D Project, Ongoing

- Augmenting an existing microarchitecture simulator, Qsim, with I/O tracing functionality
- Exploring microarchitectural optimizations to improve latency under the regime of high speed I/O

**Foreshadow (L1TF) Attack** | Computer Architecture Course Project, Autumn 2020

- Explored and imitated Foreshadow, a Meltdown-style **speculative execution** attack on Intel's processors which allows attackers to steal sensitive information from personal computers or third-party clouds
- Presented a proof-of-concept by simulating SGX's **abort page semantics** to showcase an attack

**Hospital Management System** | Database and Information Systems Course Project, Spring 2021

- Developed a patient-centric hospital management system as a **Flask** web app providing functionalities such as book/cancel appointments and tests, buy medicines, pay bills, add prescription, etc.
- Added **secure** access to patients' details and history as well as an interface to view disease **analytics**

**Image Segmentation using R2U-Net** | Medical Image Computing Course Project, Spring 2020

- Performed segmentation on **medical images** using a deep neural network developed by augmenting a U-Net with **residual** connections and recurrence, achieving fine results on the **dice coefficient** metric

**A Simple Container From Scratch** | Virtualization and Cloud Computing Course Project, Spring 2021

- Understood and built a simple container from scratch using **Linux namespaces** and **cgroups**

**FMX Modeling and Animation** | Computer Graphics Course Project, Autumn 2020

- Modeled a bike, a rider, and a track; added shading and texturing; animated the scene to create a **short movie**

## TECHNICAL SKILLS

**Programming** C/C++, Python, MATLAB, HTML/CSS, Javascript, Java, MIPS, Racket, VHDL, Bash  
**Tools & Libraries** PyTorch, Tensorflow, Pandas, OpenGL, Django, PostgreSQL, Flask, NodeJS, QEMU/KVM

## POSITIONS OF RESPONSIBILITY

- **Teaching Assistant** | Operating Systems (CS333, CS347) | Prof. Mythili Vutukuru Ongoing
- **Teaching Assistant** | Calculus (MA109) | Prof. Ravi Raghunathan, Prof. Manoj Keshari Winter 2020
- **Teaching Assistant** | Logic for CS (CS228M) | Prof. S Krishna Autumn 2020
- **Editorial Team Head** | CSE Research Website Ongoing

## EXTRACURRICULAR ACTIVITIES

- Represented IIT Bombay at the 34th **Inter IIT Aquatics Meet**, held at IIT Guwahati 2018
- Swam continuously for **12 hours** covering **17 kms** at **Swimathon**, IITB's swim marathon 2019
- Bagged trophies in **mridangam** competitions at various fine arts societies in Mumbai 2016-2018
- Represented Mumbai Region at KVS **National Swim Meets** for 3 consecutive years 2013-2015