Saiteja Talluri
Computer Science & Engineering
Indian Institute of Technology Bombay

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B.Tech.
Male
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Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2020	8.53
Intermediate/+2	BIE Telangana	Sri Chaitanya Narayana Jr. College	2016	98.60
Matriculation	BSE Andhra Pradesh	Sri Chaitanya Techno School	2014	9.80

Pursuing — Minor in **Electrical Engineering** | Honors in **Computer Science and Engineering**

ACADEMIC ACHIEVEMENTS

- Secured **All India Rank 5** in **JEE Advanced** among over 150 thousand candidates *(2016)*
- Achieved **All India Rank 6** in **JEE Main Paper-I** among over 1.2 million candidates *(2016)*
- Achieved **All India Rank 23** in **JEE Main Paper-II** among over 150 thousand candidates *(2016)*
- Secured **State Rank 1** in TS-EAMCET organized under Ministry of HRD, **Govt. of Telangana** *(2016)*
- Secured **State Rank 7** in AP-EAMCET organized under Ministry of HRD, **Govt. of Andhra Pradesh** *(2016)*
- Achieved **KVPY** Fellowship with **All India Rank 43** organized under DST, Government of India *(2014)*
- Recipient of **NTSE** Scholarship awarded by NCERT under Ministry of HRD, **Government of India** *(2012)*

OLYMPIADS

- **Gold Medalist** for being in top 35 candidates at the **Physics** Olympiad Camp conducted by HBCSE *(2016)*
- **Gold Medalist** at 11^{th} **International Olympiad in Junior Science** held in Mendoza, Argentina *(2014)*
- Received **Infosys Award** for exceptional performance in the International Olympiads *(2014)*
- Secured **All India Rank 6** in the 43^{rd} National Mathematics Olympiad conducted by **AMTI** *(2012)*

INTERNSHIPS

Google Summer of Code - OpenCV
June '19 - Present
Guide : Satya Mallick, Interim CEO, OpenCV — *Worked Remotely*

- Implemented the **python bindings** for the facial landmark API in OpenCV comprising of models based on Active Appearance Model (AAM), Local Binary Features (LBF) and Ensemble of Regression Trees implemented in C++.
- Explored the possibilty of adding a **3D facial alignment** model based on a research paper to OpenCV Model Zoo.
- Working on making a smaller landmark detection model with 5 points instead of 68 and adding **face stabilization**.

End to End pipeline for Digital Signage Analytics
Summer 2019
Panasonic India Innovation Center — *Bangalore, India*

- Analysed the digital signage video to give insights regarding the **gender**, **age** and **emotion** of the audience.
- Integrated **facial recognition** (based on the **FaceNet** paper) to identify face id and performed **facial clustering** using **DBScan** to add new face ids and used this information to estimate the reach of the advertisements.
- Implemented **gaze tracking** to estimate the average attention time of audience on the digital signage board.

Game Play Programmer
Summer 2018
Ubisoft Entertainment Ltd. — *Pune, India*

- Developed a **messenger game** in **Typescript** using **Pixi JS** engine and **Phaser** framework.
- Created a **messenger bot** for the game using **webhooks** and **Graph API** and deployed it on **Heroku** server.
- Implemented **trackers** in game for data analysis and created **UI**, **triggers** and **score manager** for leaderboard.

Image segmentation of gold jewels
Winter 2017
Rupeek Fintech Pvt. Ltd — *Bangalore, India*

- Developed a prototype to calculate stone deduction of jewels' using computer vision and image processing.
- Used background subtraction algorithms like the **Rolling Ball Algorithm** for efficient detection of background, employed clustering algorithms like **K-mean** and **DBScan** for noise removal in the result.
- Used **AWS S3** for raw image storage and deployed it as web API using **Node.JS** framework on **AWS EC2** instance.

COURSE PROJECTS

Context-aware Captions from Context-agnostic Supervision *(in Pytorch)* | *Computer Vision*
Spring 2019

- Scaling of context-sensitive behavior to real-world vision tasks like **justification** (context is another class) and **discriminative** (context is a semantically similar image) image captioning requiring pragmatic reasoning.
- Modified the LSTM recurrence & added class information to output layer of "**Show, Attend & Tell**" architecture.
- Implemented **Emitter-Suppressor** (ES) beam search for inference on the modified model with **soft attention**.

Fake News Detection by Crowdsourcing *(using SQL, Java, JS, Ajax)* | *Database Lab*
Autumn 2018

- Developed a Web and Android App for crowdsourcing the verification of spurious news articles.
- Designed database and interfaces for volunteers and admins providing tools to review, appoint and approve.
- Implemented **task routing** algorithms to distribute tasks among volunteers with domain specific knowledge.

Compiler for C-like language *(using Lex, Yacc, C) | Implementation of Programming Languages* *Spring 2019*
- Developed a compiler and evaluator for subset of C supporting functions, scope levels and control sequences.
- Used Lex for **tokenizing**, Yacc for **parsing** and constructed **AST** to generate **MIPS** assembly code.

Microarchitectural attacks *(in C) | Computer Architecture* *Autumn 2018*
- Implemented **FLUSH+RELOAD Attack** to extract private key from the **GnuPG** implementation of **RSA**.
- Implemented **Cache Template attack** to profile and exploit cache-based information leakage of programs.
- Proposed automated DRAMA Template attack by reverse engineering **DRAM addressing** and template attack.

Vector-Valued Image Regularization with PDEs *(in MATLAB) | Digital Image Processing* *Autumn 2018*
- Built an image regularization tool using techniques based on solutions to **Oriented Laplacian PDEs**.
- Used a generic **anisotropic diffusion equation** based on regularization in terms of local filtering with spatially adaptive Gaussian kernels & applied the solution for image **smoothing**, **inpainting** and **flow visualization**.

3D Modelling and Animation *(in OpenGL) | Computer Graphics* *Autumn 2018*
- Designed 3D graphical models through **hierarchical** modelling in OpenGL with textures, shading and lighting.
- Implemented framework to create dynamic **Bezier** curves through clicked control points for camera motion in the animation.

Railway Signal Controller *(in VHDL and C) | Digital Logic Design* *Spring 2018*
- Developed a PC (backend) in C to synchronize between multiple **FPGAs** (Railway Signal Controllers) via. **UART** securely using encryption and programmed the FPGA in VHDL to show signals accordingly.

The Book Store *(using Django) | Software Systems Lab* *Autumn 2017*
- Developed a **Django** based web application which serves as a bookstore for reading and lending books.
- Implemented features like **Social Authentication**, **Elastic Search** and **Uploading** using **Django** libraries.

Tower of Hanoi Solver *(using Racket) | Abstractions and Paradigms in Programming* *Spring 2017*
- Implemented a hint option to find the best move from a given state of a Tower of Hanoi by converting its state diagram into a graph using **Graph library** and applying **Breadth First Search** Algorithm on it.

Course Work

- **Image Stitching and Video Stabilisation** *(using Python) | Computer Vision* *Spring 2019*
  · Stitched images by computing homograpy matrix after applying **RANSAC** on key points extracted using **SIFT**.
  · Implemented **KLT Feature tracker** using motion models & Video Stabilisation by smoothing params of motion
- **CryptoSuite Application** *(in C++) | Computer Programming* *Autumn 2016*
  · Implemented RSA Key generation using Miller-Rabin Test for large primes, RSA encryption and decryption techniques.
- **TeleCommunication System Design** *(in C++) | Computer Networks* *Spring 2018*
  · Designed a prototype of communication system implementing a set of basic functionalities of the Physical layer and Link layer of Internet protocol stack, from scratch using Arduinos.
- **Features of XV6** *(in C) | Operating Systems* *Autumn 2018*
  · Examined xv6 source code and implemented process scheduling algorithms like round robin and priority based.
  · Implemented Memory management techniques like **lazy page allocation** and applications of **pthreads**.

Positions of Responsibility

- **Department Academic Mentorship Program Coordinator** | *Head of CSE DAMP Team* *April '19 - Present*
- **Department Academic Mentor** | *CSE Department – IIT Bombay* *June '18 - April '19*
- **Batch Representative** | *CSE Department – IIT Bombay* *April '17 - April '19*
- **Institute Data Analytics Team Member** | *Analytics Club – IIT Bombay* *June '18 - April '19*
- **Teaching Assistant**
  · Software Systems Lab (CS 251) – Prof. Amitabha Sanyal *Ongoing*
  · Software Systems Lab (CS 251) (**TA of the month**) – Prof. Soumen Chakrabarti *Autumn 2018*

Technical Skills

Deep Learning	PyTorch, Tensorflow [Basics], Keras [Basics]
Programming	C/C++, Python, Java, Racket(Scheme), SWI-Prolog, Bash, VHDL
Software Skills	Git, MATLAB, OpenCV, GNU Make, Android Studio
Web development	HTML, CSS, Javascript (+ Typescript), NodeJS, Django, PostgreSQL

Key Courses Undertaken

AI & ML	Speech Recognition*, Foundations of Intelligent and Learning Agents*, Web Mining*, Advanced Machine Learning, Graphics, Computer Vision, Digital Image Processing
Computer Science	Data Structures & Algorithms, Computer Networks, Blockchain Technology*, Compilers, Operating Systems, Database and Information Systems, Architecture, Automata Theory

Extracurricular Activities

** to be completed in Fall 2019*

- Exhibitions **Coordinator** at 21st Edition of **TechFest**, Asia's largest Technological festival. *(2017)*
- Volunteered with **National Service Scheme**, IIT Bombay under Vikas program. *(2016)*
- Attended **Vijyoshi Science Camp** organized by Indian Institute of Science (IISc), Bengaluru, India *(2015)*