Suman Swaroop
Computer Science & Engineering
Indian Institute of Technology Bombay
Specialization: Computer Science Honors

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Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2018	8.72
Intermediate/+2	CBSE	Chinmaya Vidyalaya	2014	93.00
Matriculation	CBSE	Chinmaya Vidyalaya	2012	10.00

ACADEMIC ACHIEVEMENTS AND SCHOLARSHIPS

- Secured **98.98** percentile in **JEE Advanced** (IIT-JEE) out of **200,000** candidates *(2016)*
- Secured **Rank 226** in **MHT-CET** (Maharashtra Common Entrance Test) out of **400,000** candidates *(2016)*
- Recipient of the **NTSE** (National Talent Search Examination) Scholarship by N.C.E.R.T New Delhi *(2014)*
- Secured **All India Rank 40** in **International Olympiad of Mathematics** *(2012)*
- Secured **District Rank 1** in Maharashtra Talent Search Examination *(2012)*

INTERNSHIPS

Software Intern, MAQ Software *(May-July'19)*
MAQ Software delivers innovative software solutions for Fortune 500 companies
- Worked on the localization of **Pehla Class** which is based on Onecourse, an award-winning educational **Android** application
- Developed Python scripts to automate application localization for supporting Hindi language
- Worked on the UI of the **CCI**, a learning Android application for children

Software Development Intern, GreatFour Systems *(December'18)*
GreatFour Systems is an innovative product development company specializing in automation solutions
- Tested limitations of tools **PDFlib**, **Tabula** and **Camelot** for detection of tables in PDF file
- Designed an **OpenCV** algorithm for detection of tables in **Medical Leaflets**

Machine Learning Intern, SmartMedics *(May-July'18)*
SmartMedics is a technology driven healthcare platform integrating offline and online access to healthcare
- Worked on developing a health assistant that uses real data, **Machine learning** and **Neural Networks** to predict the specialist a patient must consult based on the data entered by him
- Used **Python NLTK** library for **Natural Language Processing** to process the problem description entered by patient and extract important details from text
- Developed a **Django** based Web application for doctors

Product Development Intern, Toppr *(December'17)*
Toppr is an online learning platform, personalizing K-12 education
- Helped building high-quality learning content like **questions** and **concepts**
- Improved the quality of content by analysing and making them **error-free**
- Helped team in building various **tests** by analysing current **curriculum** and previous year **question papers**

COURSE PROJECTS

Online Evaluation Web Application
Database and Information Systems
Guide: Prof. S.Sudarshan *(Autumn'18)*
- Developed a **ReactJS** based web app providing features like viewing answer sheets and marks of exam to students and features like scanning and grading answer sheets to instructors and teaching assistants
- Integrated **SSO Login** of IIT Bombay in the app
- **Java Servlets** ran backend application logic on **Apache Tomcat** Server and **PostgreSQL** served as DBMS

Neural Networks Library
Artificial Intelligence and Machine Learning
Guide: Prof. Ganesh Ramakrishnan *(Autumn'19)*
- Developed a deep-learning library from scratch, having modules of **Fully Connected Layer**, **Convolution Layer**, **Pooling layer** along with an appropriate loss function for backward propagation
- Used the built library to design a neural network architecture and tested it on **MNIST** and **CIFAR-10** datasets

Python based Electrical Circuit Simulator
Software Systems Lab
Guide: Prof. Kavi Arya *(Autumn'17)*
- Developed a compact electrical circuit simulator using **Python** and **Jython** for creating a Java-based GUI
- Used functions from **SymPy** and **SciPy** to solve the differential equations
- Generated a graph between various parameters based on the input signals using **Matplotlib**

Compiler for a pointer language with C like semantics *Compilers*
Guide: Prof. Uday Khedkar *(Spring'19)*
- Implemented **lexical analyser**, **abstract syntax tree** and **symbol table** for effective translation to **assembly code**
- Provided support for boolean and arithmetic operators, nested conditional statements and function calls

Railway Signal Controller *Digital Logic Design*
Guide: Prof. Supratik Chakraborty *(Spring'18)*
- Implemented and simulated the model using **VHDL** with backend implemented on **C**
- Used **FPGALink** library for transfer of data via a USB cable between the host and the FPGA board
- Implemented **TEA encryption** to secure the messages sent over channel

Tetris Game *Programming Paradigms*
Guide: Prof. Amitabha Sanyal *(Spring'17)*
- Built a graphical game of **tetris** using the **Racket** programming language
- Implemented **heuristic algorithm** to hint the player which move should be played at each turn to reduce number of empty spaces in accumulated blocks
- Used teachpack **universe.rkt** to provide functionality for creating interactive and graphical programs

OTHER PROJECTS

Dogs vs. Cats Image Classification *Artificial Intelligence and Machine Learning*
Guide: Prof. Ganesh Ramakrishnan *(Autumn'19)*
- Implemented a **Multi-Layered perceptron** model and **VGG16** model in **TensorFlow** for classification of image as dog or cat
- Achieved accuracy of around **97%** for **VGG16** model and around **75%** for **Multi-Layered perceptron** model

Gravity Simulator *Programming Paradigms*
Prof. Amitabha Sanyal *(Spring'17)*
- Developed N-Body simulation of particles due to mutual gravitational force acting on them using **Racket** Programming language
- Implemented **Barnes-Hut** algorithm using list comprehension and trees to reduce the complexity of problem

KEY COURSES UNDERTAKEN

- **Machine Learning:** Artificial Intelligence & Machine Learning, Foundation of Intelligent & Learning Agent*, Natural Langugage Processing*
- **Computer Science:** Data Structure and Algorithms, Computer Networks, Database and Information Systems, Operating Systems, Implementation of Programming Languages, Digital Logic Design, Computer Architecture, Computer Graphics, Logic for Computer Science, Automata Theory, Abstractions and Paradigms for Programming, Wireless Networks
- **Mathematics:** Discrete Structures, Numerical Analysis, Linear Algebra, Differential Equations, Data Analysis & Interpretation

[* - to be completed by Dec 2020]

TECHNICAL PROFICIENCY

- **Data Analysis and ML:** Tensorflow, NumPy, SciPy, Pandas, MATLAB, Octave
- **Programming Languages:** C++, C, Python, Racket, Java, Bash, Prolog, SQL, VHDL
- **Web and App Development:** Android Studio, React, Django, HTML, CSS, Javascript, Java Servlets/JSP, XML
- **Softwares/Others:** Wireshark, ISE Design, AutoCAD, Git, LaTeX

POSITIONS OF RESPONSIBILITY

Mess Secretary | Hostel - 8, IIT Bombay *(August'17 - April'18)*
- Elected by an electorate of about **400 hostel inmates** to mandate and maintain mess
- Responsibly optimized mess budget of **INR 8 million**

Operations Coordinator | Entrepreneurship Cell, IIT Bombay *(June'17 - February'18)*
- Managed infrastructure in events of **E-Summit** and induced publicity for the same
- Spearheaded a team of **10 organizers** for the logistics and administration to execute events

Services Coordinator | Mood Indigo, IIT Bombay *(May'17 - January'18)*
- Executed **infrastructure** and **goods** need to make Mood Indigo a successful event
- Mobilized with **4+** event management companies and **15+** top decorators to bring best deal out of them

EXTRACURRICULARS

- Participated in **Kavyasandhya** General Championship (Inter Hostel poetry recitation competition) *(2017)*
- Completed an intermediate level **Bootcamp on Entrepreneurship** *(2017)*
- Successfully completed one year as a **Badminton** Player under National Sports Organization *(2016-17)*
- **Runner-up** in music video competition of Freshmen Cultural festival, IIT Bombay *(2016)*
- Volunteered in **Techfest CURED** campaign to increase awareness about Diabetes pan Mumbai *(2016)*