Ayush Raj Mehrotra | **17D070034**
Electrical Engineering | **UG Second Year**
Indian Institute of Technology Bombay | **Male**
Specialization: Communication and Signal Processing | **DOB: 07/02/1999**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2019	0.00
Intermediate/+2	Council for the Indian School Certificate Examinations(CISCE),New Delhi	City Montessori Inter College, Lucknow	2016	98.25
Matriculation	Council for the Indian School Certificate Examinations(CISCE),New Delhi	City Montessori Inter College, Lucknow	2014	96.60

SCHOLASTIC ACHIEVEMENTS

- Achieved an **All India Rank of 510** among **1,60,000 candidates** in JEE Advanced 2017 *[2017]*
- Secured **99.75** percentile in JEE Main 2017 among **1.2 million candidates** *[2017]*
- Awarded the **Scholarship for Higher Education** under **INSPIRE** for being in **top 1%** of CISCE board *[2016]*
- Recipient of the prestigious **Kishore Vaigyanik Protsahan Yojana** (KVPY) **fellowship** (SA stream) conducted by the Indian Institute of Science(IISc) securing a 98.87% percentile *[2014]*
- Secured admission to the **Indian Statistical Institute** for B.Math after clearing two written tests and one interview round, admission was extended only to 35 students in the general category *[2016]* *[2016]*
- Attended the **Vijyoshi camp** at IISER Kolkata organized by IISc Bangalore *[2015]*
- Qualified stage 1 **National Talent Search Examination** conducted by the Government of India *[2012]*
- Attained **first** position out of **4000 students** in inter campus class tenth comparative examinations for ICSE boards conducted by the school and got felicitated for it *[2013]*
- Pursuing **Minor** degree in **Computer Science and Engineering** *[Present]*

KEY PROJECTS

EmoTV | INSTITUTE TECHNICAL SUMMER PROJECT *[Summer 2018]*

Project under Web and Coding Club

- Implemented **speech to text** operation on python using the **OpenCV** library and **Google API** with a regular mic as an input audio source for storing the speech as a string variable
- Executed **text to speech** operation on python by using the **OpenCV** library and **'gtts' API** to convert a string into a corresponding mp3 file and then playing it
- Developed a Visual Studio app for the Microsoft Kinect sensor to **track skeletal movements** and give a simple GUI response to certain joint movements. Integrated the app with kinect speech library to **record audio** as well
- Utilized **Keras API** to classify human expressions of the test dataset into 'happy' and 'sad', achieving a **60%** accuracy, and then playing music or printing a message using OpenCV and python libraries as a response

MACHINE LEARNING | SUMMER OF SCIENCE *[Summer 2018]*

Project under Maths and Physics club

- Explored the fundamentals of **supervised** and **unsupervised** Machine Learning along with certain related concepts on statistics (like **risk minimization** in Bias Variance tradeoff) and documented the progress in a report
- Studied the **feature extraction** technique 'Principal Component Analysis' (PCA) and **classification algorithms** like Adaboost, Perceptron and Decision Trees along with a summarized reading of **Markov models**

FAQ BOT | SUMMER OF CODE *[Summer 2018]*

Project under Web and Coding Club

- Compiled a vast list of **intents** and **entities** on IBM Watson Assistant to mimic the interface of the desired chatbot
- Implemented a chat interface and incorporated it with **Flask-WTF** extension to serve it and create a **frontend** that will take the user query from the webpage textbox and send it as a string to the NLU engine
- Performed **web scraping** using the library 'Beautiful Soup' to parse data from HTML, integrated the front end with the back end and incorporated the **NLU engine** to run the bot on localhost

DISPLAYING A SMILEY ON 8*8 LED MATRIX *[April 2018]*

Course project under Prof. Subhananda Chakrabarti

- Designed a **high frequency clock** using timer 555 IC in astable mode to feed a **modulo 8 counter**
- Devised a circuit using logic gates to power up specific row LEDs by evaluating corresponding boolean expressions
- Triggered each LED column successively at the high clock frequency through a **3 to 8 decoder** prompted by the counter output to create a smiley pattern on the matrix

PONG *[December 2017]*

Self Project

- Effected an interactive pong/air-hockey game in Python on CodeSkulptor using the **'simplegui'** library and **event handlers** for mouse clicks, key presses and keyboard inputs
- Developed code for modelling the ball's **collisions and reflections**, score keeping, **velocity control** for the ball and paddles, canvas (play area) construction and randomization of the ball's motion at the start of each round

OBSTACLE AVOIDER ROBOT *[April 2015]*

Personal Initiative

- Attached **IR** sensors sideways and a **UV** sensor on the front side of the robot chasis for **proximity and distance sensing** implemented on Arduino UNO microcontroller
- Programmed Arduino to control the DC motor rotation(for turning away) when an obstacle comes sufficiently close
- Implemented **remote control** for varying the motor speed or turning it off, using **IR Receiver and IR Receiver Module**

POSITION OF RESPONSIBILITY

Coordinator | Media and Public Relations | Student Alumni Relations Cell (SARC) *[Present]*

- Organized the telephonic marathon event **Phonathon**, that witnessed a 111% and 200% appreciation in volunteer and alumni participation respectively. Cordially interacted with over **600 alumni** and refined the database
- Accountable for co-authoring the institute monthly newsletter **'The Knowledge Tree'** published by the Dean-ACR office that has a readership reach of **over 50,000** alumni
- Responsible for web content ideation and increasing the media and publicity reach for the SARC flagship event **'Alumination'** that is attended by over 200 alumni and 1000 plus students
- Authored multiple articles for **'SARC Blog'** showcasing the inspirational accomplishments of various alumni
- Composed interview questionnaires for the initiative **'Know Your Alumni'** directed at revealing the viewpoints and motivational life experiences of the alumni

TECHNICAL SKILLS

- **Programming Languages/Libraries and IDEs**: C/C++, Java, Python, HTML, OpenCV, Arduino, Flask
- **Software**: AutoCAD, Solid Works, MATLAB/Octave, Latex, GNUPlot, XCircuit, NGSpice, Audacity, Visual Studio

INTERESTS

Machine Learning, Image Processing, Algorithms and Data Structures, Convex Optimization, Semiconductor Physics, Quantum Physics, Linear Algebra, Network Theory

KEY COURSES UNDERTAKEN

Electrical Engineering	Introduction to Electrical Systems, Introduction to Electronics, Electronic Devices and Circuits*, Network Theory*, Electronic Devices Lab*, A First Course in Optimization*
Computer Science Engineering	Computer Programming and Utilization, Data Structures and Algorithms*
Mathematics and Statistics	Calculus, Linear Algebra, Differential Equations-I, Differential Equations-II*, Complex Analysis, Data Analysis and Interpretation*

*To be completed by Dec '18

EXTRA-CURRICULAR ACTIVITIES

- Dedicated **over 80 hours** for community service under **National Service Scheme(NSS)** which involved recording audio-books and editing them using Audacity, hence providing access of literature to the blind and the illiterate
- Participated for **squash** in the in-semester camp **Prarambh** organized by the Sports Council of IIT Bombay.
- Bagged the **first** team position in **'Physics Bazinga'** competition organized by the Maths and Physics Club, IIT Bombay
- Interacted with retired law representatives from over 100 countries as a part of the **'15th International Conference of Chief Justices of the World'** organized by City Montessori School
- Participated and directed a short film for the event **'Freshiezza'** organized by the Silver Screen and IIT-BBC.
- Stood **first in Kanpur zone** in Techkriti Open School Championship (TOSC-round 1) organized by IIT Kanpur