



Devansh Chandak
Computer Science & Engineering
Indian Institute of Technology Bombay

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UG Second Year
Male
DOB: 20/11/1999

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2020	9.88
Intermediate/+2	CBSE	Birla High School, Kolkata	2018	99.00
Matriculation	ICSE	La Martiniere For Boys, Kolkata	2016	98.67

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 4**, State Rank 2 in the Grade 10 **ICSE** Examination out of **250,000** students (2016)
- Achieved **All India Rank 5** in the **CBSE** Board Examinations (Grade 12) out of **1.2 million** candidates (**Overall East Zone Topper** and **All India Rank 3** in the Science Stream) (2018)
- Only** student to be awarded the **Advanced Performance grade (AP)** for *extraordinary performance* in the **Computer Programming and Utilization** course out of 528 students (2019)
- Awarded **AP grade** in **Advanced Calculus** (given to the top 12 students out of 1032) and in the **Biology** course consisting of *Molecular, Physical and Biomedical modules* (top 3 students out of 502) (2018)
- Attained a Semester Performance Index (**SPI**) of **perfect 10** in the First Semester (2018)
- Among the **top 12** students to be granted **Change of Branch**/Major to Computer Science (2019)
- Offered **Computer Science** at the National University of Singapore (**NUS**) with **100 %** scholarship (2018)

SCHOLARSHIPS AND RECOGNITION

- Bagged the **Institute Academic Award**, given to the **Top 25** out of a batch of 1000+ students for *exceptional* academic performance in the first year of Undergraduate Study at IIT Bombay (2018-19)
- Bestowed with the **KVPY** (Kishore Vaigyanik Protsahan Yojna) Fellowship, given to the talented young minds in the field of Science and Technology, by Department of Science and Technology, Govt. of India (2018)
- Was felicitated by **His Excellency, The Governor of West Bengal**, with the *Mamraj Agarwal Rashtriya Puraskar* for exemplary performance in the ICSE Examinations (2016)
- Awarded the *Swami Vivekananda Scholarship* for *Undergraduate Study* by the Govt. of West Bengal (2018)
- Received a personal **Letter of Appreciation** and a cash award from Ms. Mamata Banerjee, The Chief Minister of West Bengal and **Times of India EduShine** for *exemplary* performance in the Grade 12 Board (2018)
- Recipient of the **Udbhav Poddar Memorial Prize** and the Dr. **RS Pandey Proficiency Silver Medal** for securing the **highest marks** in the country in Mathematics and Hindi respectively, in the ICSE Examinations (2016)

INTERNSHIP AND RESEARCH EXPERIENCE

Quantitative Research Analyst

(Dec '19 - Jan '20)

Guide(s): Prof. Prasanna Tantri, Prof. Nitin Kumar and Ravi Ranjan

Indian School of Business, Hyderabad

- Deep Learning** : *Applying NLP techniques to Time Series Analysis for Stock Futures* :
 - Designed and implemented an intuitive approach to storing the history of a stock in the form of a vector using a **Ticker Embedding Model**, similar to that in a Word Embedding model. Incorporated technical indicators such as Momentum, Trailing Volatility, Asset Class and average return per asset class along with the embeddings for time series analysis
 - Designed, trained and tested an **LSTM** classifier (built using **PyTorch**) on a time series of multiple stock tickers to predict the Expected Return and to study non linearity and inter asset class correlation
 - Expanded the base LSTM to incorporate **attention**, and *retrain* over the latest data *while testing*
 - Optimized the hyperparameters using libraries: Ray for **Grid Search** and Hyperopt for **Bayesian** optimization
- Trading Algorithms**: *Implementation in Python*:
 - Implemented the **PAIRS**, **Betting against Beta** and **Momentum** trading algorithms on the Indian Stock market
 - Beta was calculated by regression on the **CAPM** equation with a 6 month rolling window :
 - The strategy was implemented with daily, weekly and monthly *rebalancing* of the portfolio
 - Performed and analyzed the difference in output on equal weighted and value weighted portfolios
 - Modified the PAIRS strategy on a 1 year rolling window with 12 % CAGR and 0.71 overall Sharpe and researched the intricacies involved in the strategies: Pitroski's F-Score, Mohanram's G-Score, Accruals, PEAD and Momentum crashes

Machine Learning Research Intern

(April - May '19)

Guide: Dr. Vipul Arora

Indian Institute of Technology, Kanpur

- Analysis of ML Algorithms for Spam Email Classification in Python*

- Analyzed KNN, Naive Bayes, SVMs and Neural Networks and finally implemented **Naive Bayes** and **KNN** for the classification of various data sets into **spam** and **ham** using *Keras*, *Pandas*, *Numpy* and *Scikit-learn*
- Compared accuracies for various data sets and **categorised the best method** for each data set
- Awarded **Letter of Recommendation** for exceptional performance shown during the internship

Data Analytics Intern

(May - June '19)

Guide: Mr. Amit Ambekar (Vice President, Marketing)

Spencer's Retail Ltd.- RPSG group

- *Analysis of underperforming stores given all KPIs and SKU (Stock Keeping Units) level data*
 - **Statistical Analysis** of transactional & brick level data to understand and attribute reasons for de-growth
 - Given all the **KPIs** with respect to category, used **deep dive** into individual SKU level performance to come up with solutions to counter degrowth, in the *MGF Gurgaon Hyper* store and the *Vizag Hyper* store

Software Engineering Intern

(Nov - Dec '18)

Guide: Mr. Mohsin Ali (Project Manager)

Citytech Software Pvt. Ltd.

- Configured and enhanced a **chatbot** for Paylite Leave Application using the **Microsoft LUIS** platform
- Helped in introducing VOICE to TEXT feature (using Bing API) from Microsoft Azure
- Research on **Human Resource Automation** and **comparative study** between *LUIS*, *Google Dialog Flow* and other developments in *Google Assistant*, *IBM Watson*, *Alexa* and *Cortana*

KEY TECHNICAL PROJECTS

Google Forms and Survey Management

(Sept - Nov '19)

Guide: Prof. Amitabha Sanyal — Software Systems

IIT Bombay

- Designed own Form and Survey Management system like the Google Forms with own *user authentication*
- Allowed for *modular* design of questions (paragraph, file upload, drop down, checkbox, radio button) and form validation (constraints on answers such as alphanumeric, range, email-ID, .pdf only), and adding **collaborators** to your form
- Developed shareable forms, useable as surveys and quizzes. Data acquired is analyzed by plotting of numerics (using **Matplotlib**), learning dependencies among responses and summarized presentation of subjective answers
- Used **Django** for backend, **Sqlite3** for the database structure, **Bootstrap** for responsiveness

Efficient Memory Allocator

(Aug - Sept '19)

Guide: Prof. Ajit Diwan — Data Structures & Algorithms

IIT Bombay

- Designed a simulator in **C++** for the efficient dynamic allocation of memory to a large number of processes
- Utilized the **first-fit strategy** to decide the locations at which memory should be allocated
- Handled allocation, deallocation and termination requests for upto 10^6 requests simultaneously

Fruit Image Generation & PCA

(Oct - Nov '19)

Guide: Prof. Suyash Awate — Data Analysis

IIT Bombay

- Performed *Principal Component Analysis* on RGB fruit images, and plotted the closest representations (using the four most significant eigenvectors of the covariance matrix) by fitting a *MultiVariate Gaussian*
- New Fruit images were generated by random sampling, using the closest representations, which were distinct from any fruit in the dataset, but representative of the dataset in **MATLAB**

Non Parametric Estimation & Cross Validation

(Sept - Oct '19)

Guide: Prof. Ajit Rajwade — Data Analysis

IIT Bombay

- Compared various non parametric estimation techniques like histogramming and Kernel Density Estimation and analyzed the *rate of convergence* and their optimum value
- Implemented the Cross-Validation procedure in **MATLAB** by finding out the bandwidth parameter which gives the maximum joint likelihood and a minimum deviation between the empirical and the actual PDF

Image Reconstruction & Compression

(Aug '19)

Guide: Prof. Amitabha Sanyal — Software Systems

IIT Bombay

- Transformed **distorted** images by cleaning out noises such as *salt and pepper* noise using Numpy and Scipy
- Used *KMeans++* algorithm to flatten out coloured images across several K values to get the **Enhanced** Image

POSITIONS OF RESPONSIBILITY

Teaching Assistant

(July '19 - Nov '19)

CS 101 - Computer Programming and Utilization under Prof. Purushottam Kulkarni

IIT Bombay

- **Only sophomore** to be selected for the TA-Ship on the basis of **academic prowess** in the subject
- Involved in teaching and assisting students within and outside lab hours, with problems, conceptual doubts and other clarifications on a **one-to-one basis**

Interact Coordinator — Community Service

(2017-18)

Rotary Club of Calcutta Visionaries

Rotary International

- Coordinated **blood camps**, **health camps**, eye camps, newspaper collection drives
- **Organised sports** for *village children* in Lakshya Bagan, Sunderban, West Bengal
- Conducted free **computer classes** for *underprivileged* children of Sambhu Sadan Vidayala, Kolkata

TECHNICAL SKILLS

Languages

C++, Python, Java, Bash, MATLAB, Racket(Scheme), Prolog

ML Libraries

Pytorch, Keras, TensorFlow, Ray, Hyperopt, Scikit-Learn

Web Tools

HTML5, CSS3, Javascript, Bootstrap, Django, Sqlite3, Markdown

Software Tools

Git, L^AT_EX, MySQL, AutoCAD, Microsoft Excel, Sed, Awk, Makefiles, CMake, Scipy, Yaml, Toml