Dishank Jindal | **190070021**
Electrical Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Male**
DOB: 11-07-2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2023	
Intermediate	CBSE	Bhavan Vidyalaya, Chandigarh	2019	99.40%
Matriculation	CBSE	St. John's High School, Chandigarh	2017	10

Pursuing Double Minors in **Computer Science and Engineering** & **Machine Intelligence and Data Science**

Scholastic Achievements

- Ranked among the **Top 10** in a batch of **85** students pursuing BTech in Electrical Engineering *[Present]*
- Secured **AIR 1** in CBSE Class 12 boards in science stream and **AIR 3** overall among **1.3M** students, *honoured by **President Ram Nath Kovind** & **PM Narendra Modi** for academic excellence* on **15th Aug** *[2019]*
- Achieved **AIR 57** in JEE Main and was the **State Topper** in both phases of the examination *[2019]*
- Attained **AIR 267** in JEE Advanced examination out of more than **0.2** million candidates *[2019]*
- Among the **National Top 1%** in National Standard Examination qualified for **INChO**, **INPhO** & **INAO** *[2018]*
- Received the prestigious **KVPY** Scholarship with **AIR 87** and **NTSE** Scholarship given by NCERT *[2017]*

Internships

Quantum Machine Learning | *National University of Singapore (NUS)* *[May '21 - Present]*

Research in Quantum Computing under Professor Rahul Jain at the Centre for Quantum Technologies

- Reviewed literature on query, computational and time complexity of **Exact**, **PAC** and **Agnostic learning** models
- Analysed **interactive proof system** for PAC verification and a **Sauer's Lemma** based proof for sample complexity
- Compared classical and quantum algorithms using **information-theoretic** & **state-identification** proof arguments
- Formulating algorithms on **quantum learning of CPTP maps** after research on an analogous classical problem

AI Doctor | *Reliance Jio Platforms Limited* *[Dec '20 - Feb '21]*

Worked on improving specific NLP tasks to bring the AI Doctor platform into natural language domain

- Curated a dataset of **1500+** tokens from raw medical data & explored **5+** models for accurate **phrase identification**
- Implemented a **Bi LSTM-CRF** network achieving **92%** accuracy and used spaCy & NLTK libraries for custom NER
- Attained **81.7%** phrase similarity using **Sentence-BERT** and deployed the model with **gRPC** using protocol buffers

Key Technical Projects

Drone Images Based Crop Stress Estimation | *Undergraduate Research Project* *[Oct '20 - Jun '21]*

Part of Data Sciences for Farming Support System, an Indo-Japanese project in collaboration with University of Tokyo
Guide: Prof J. Adinarayana (Head of Department, CSRE, IIT Bombay)

- Conducted literature review on hyper-spectral indices, remote sensing, **fuzzy logic** and image matching techniques
- Performed **feature overlap** and **resolution correction** using geopandas, rasterio and a **self-devised algorithm**
- Built **5 synthetic data** generation methods after probabilistic analysis of APSIM model & sparse ground truth data
- Implemented Probabilistic Graphical Model on RFC and generated **farm feature-maps** predicting crop stress level

Asphyxiator: Automated Fire Extinguisher | *Technical Summer Project* *[Mar '20 - Jun '20]*

Institute Technical Council, IIT Bombay

- Researched phase change cooling and **flame temp correlations** and identified **7** safe material options for the robot
- Devised and implemented a custom **path planning algorithm** on a virtual TurtleBot3 by understanding **SLAM**
- Successfully managed to identify a fire threat by simulating the task on **Gazebo** and visualising in **RviZ** using **ROS**

Startup Funding Analytics | *Programming for Data Science Course Project* *[Nov '20 - Dec '20]*

Guides: Prof Sunita Sawaragi, Prof Amit Sethi

- Analysed massive startup **investment crunchbase data** of nearly 25 years with **10+ statistical tests** and plots
- Prepared a workable dataset on Indian & US Startups and compared **5+ regression models** for funding prediction
- Achieved an **R2-score** of **0.991** by using just the **external factors** of startup funding data into our consideration

Image Masking for Car Photo Studio | *Self Project* *[Jun '21 - Jul '21]*

Kaggle: Carvana Photo Studio Dataset

- Developed an image segmentation model for **car boundary detection** to be able to mask object from its background
- Explored **deep CNN** architectures, performed data augmentation and implemented **U-Net** architecture using Keras
- Trained a **MobileNetV2** model as a downsampler in U-Net and achieved a **binary accuracy** of **99.3%** on test data

Academic Projects

ATM Simulator on Pt-51 | *EE 337* | *Guide: Prof V Rajbabu* *[Mar '21 - Apr '21]*

- Programmed the **Atmel AT89C1** micro-controller to simulate an ATM-like functionality with an interfaced LCD display
- Established serial communication with **USB-UART module** and used **RealTerm** to register keyboard inputs from user
- Successfully executed the **ATM query algorithm** in Embedded C & optimised the code incorporating exceptional cases

FSM Application: Digital Logic Design | *EE 214* | *Guide: Prof Maryam Baghini* *[Jan '21 - Apr '21]*

- Designed an FSM using **behavioural modelling** in VHDL to emulate the blinking tail lights of Ford Thunderbird
- Programmed a **music synthesizer** and interfaced **Krypton** board with a speaker to play custom note sequence on loop
- Successfully carried out **simulations** on all possible inputs and verified the designs using scan chains on **TIVA-C** board

Multi-functional ALU | *EE 224* | *Guide: Prof Virendra Singh* *[Nov '20 - Dec '20]*

- Designed a **signed 16-bit** Arithmetic Logic Unit **(ALU)** using 3-tier **Structural VHDL** in Quartus Prime software
- Understood the working of fast adders, implemented **Kogge Stone** and **Brent Kung** adders and verified using Modelsim

Leadership and Mentorship Roles

Manager, Analytics Club | *Undergraduate Academic Council (UGAC)* *[Apr '21 - Present]*

Head of a 2-tier team, responsible for catering to the interests of 5k+ students in the field of Data Science & Analytics

- Revamped **Learners' Space** program & moderated courses on **Excel** & **SQL** with more than **5100** student registrations
- Conceptualized **Winter Hands-on Analytics** and collaborated with IGTS to conduct a **Game Theory** bootcamp
- Executed a full-fledged **Internship Preparation Program** across 3 different Analytics profiles with a reach of **400+**

Convenor, Consult Club | *Undergraduate Academic Council (UGAC)* *[Jun '20 - Apr '21]*

- Initiated the launch of first ever **Consulting Core Group** after surveying **10+** models of 180DC and ShARE chapters
- Pioneered a case group-mapping platform & a 9-day long **Product Management Consilium** followed by Product GC
- Collaborated with the institute film making club to organise **marketing** competition & mentored **20+** first year students

Department Academic Mentor | *DAMP, Electrical Engineering* *[Apr '21 - Present]*

- Part of a **35** member team selected from **85+** applicants based on a **stringent interview** and **peer review** system
- Mentoring **8** sophomores with their academic issues & co-curricular pursuits, providing credible counsel for personal issues
- Among the 4 students from the department recommended for **Institute Student Mentorship** for excellent candidature

Technical Skills

Programming	Embedded C, C++, Python, Julia, MATLAB, VHDL, SQL, Assembly
Software & Tools	ROS, Gazebo, RviZ, AutoCAD, SolidWorks, ArduinoIDE, Numpy, geopandas, Gdal, rasterio, Keras, Tensorflow, PyTorch, spaCy, NLTK, Quartus Prime, Excel, Git, LaTeX

Key Courses Undertaken

Computer Science	**Programming for Data Science**, Programming in C++, Data Structures and Algorithms, Design & Analysis of Algorithms*, **Foundations of Intelligent & Learning Agents***,
Mathematics	Linear Algebra, Complex Analysis, Calculus, Differential Equations I & II
Electrical	**Probability & Random Processes**, Analog Devices (Theory and Lab), Control Systems, Digital Systems (Theory and Lab), **Image Processing***, Microprocessors (Theory and Lab), Signal Processing, Communication Systems*, **A First Course in Optimisation***

**Courses to be completed by Nov '21*

Extracurriculars

Leadership	• Elected by **145+** students in EE Department to serve as the **Class Representative**	*[2020]*
	• Elected by students and staff to the 6 member council in school leading **2000+** students	*[2016]*
	• Attended a **7 day Leadership Camp** at Mount Abu as a part of a 12 member group	*[2016]*
Sports	• Completed a year long training in **Cricket** under National Sports Organization (NSO)	*[2020]*
	• **Winner** of the Intra Hostel (H-2) **Carrom League** organised for **500+** students	*[2019]*
	• Bagged **3rd** position in **Basketball** in Freshiesta, the annual freshmen sports weekend	*[2019]*
	• Declared as the **Best Athlete** for 2 consecutive years in U-12 and U-14 categories	*[2014]*
Cultural	• Performed **Bhangra** at AIDS, Insync Dance Club's flagship event with footfall of **1500+**	*[2020]*
	• Studied **French** for 4 years in school, received **perfect 10** grade point	*[2015]*
Misc.	• Pursued a self-paced summer project on **Financial Markets and Mathematics**	*[2020]*
	• Mentored 4 freshmen students for a reading project in the field of **Economics**	*[2021]*
	• Winner of the Intra School Debate and declared as the **best debater** of the batch	*[2016]*