Inderjeet Jayakumar Nair | **170020013**
Electrical Engineering | **B.Tech.**
Indian Institute of Technology, Bombay | **Gender: Male**
DOB: 12-11-1999

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	null
Intermediate	Maharashtra State Board	Bhavans College	2017	88.31%
Matriculation	Maharashtra State Board	St. Arnold's High School	2015	94.20%

Scholastic Achievements

- Pursuing a **Minor Degree** in **Computer Science and Engineering** *('18-Present)*
- Awarded **change of branch** based on excellence in academics in 1st year *('17-'18)*
- Secured **5**th rank in **MHT-CET**(annual entrance exam conducted by the Government of Maharashtra) among 3,89,520 participants *('17)*
- Offered fellowship under Kishore Vaigyanik Protsahan Yojana (KVYP), conducted by Department of Science and Technology, Government of India, with **All India Rank 249** *('17)*
- Secured **99.195** Percentile in JEE Advanced 2017 out of 1,59,540 candidates *('17)*
- Placed in **top 0.1%** of JEE Mains 2017 among 12,00,000 applicants *('17)*
- Ranked in **national top 1%** in National Standard Examination in Physics and placed in **statewise top 1%** in National Standard Examination in Chemistry *('16-'17)*

Internship

Research Intern at Adobe Research Labs | *Virtual Internship*

- Bagged **Pre-Placement Offer** for the role of **"Member of Technical Staff"**
- Collaborated with a team of 4 for establishing various semantic and lexical relations between documents
- Proposed a **topic-modeling** based solution for finding prerequisite relations by engineering novel features
- Integration of the document relations in a Flask-based server to give lexical-aware recommendations
- Engineered a novel metric to detect the updation of topic model when the corpus is mutated

Production Engineer at StampMyVisa | *Summer Internship*

- Contributed extensively in the development of **Cross-platform** compatible mobile application with integration of **Firebase messaging service**, **Razorpay** etc in react-native
- Implemented Nodejs, MongoDB and Express in the development of backend server and contributed in the development of Web application portal in React-Typescript
- Applied principles of automata theory in ideating various flows in web and mobile applications

Positions of Responsibility

Teaching Assistant

Course: Differential Equations(Autumn '19), Introduction to Electricity and Magnetism(Spring '19)

- Entrusted with the responsibility of conducting weekly problem-solving sessions and in-depth discussion of important concepts with about **50** students
- Assisted the professor in conducting the quizzes and evaluating the answer scripts

Coordinator | *Entrepreneurship Cell, IIT Bombay* *('18)*

Web development team

- Major contribution in the development of Android Application using react-native by defining the structure, designing various pages and adding some interactive features
- Contributed in revamp of the main website of **Entrepreneurship Cell** to enhance it's aesthetic value and ideated user-friendly designs
- Employed **HTML, CSS & Bootstrap** while working on the main website to ensure pleasant appearance and compatibility with all devices

Technical Skills

Programming	C++, Python, Matlab, HTML, Bootstrap, Javascript, Typescript, ReactJS, React-Native, Tensorflow, NodeJS, Express, MongoDB, Redux, VHDL, VerilogA, LaTeX
Software Tools	AutoCAD, SolidWorks, NGSPICE, ImageJ, XPP-AUT, Quartus Altera, LabVIEW

Technical Activities and Projects

AUTOMATED MEASUREMENT OF OP AMP PARAMETERS (Course Project)

Instructor : Prof Joseph John, Electrical Engineering Department, IIT Bombay *(Feb-Apr '19)*

- Integrated the measurement circuitry of 4 major parameters for 2 types of IC using relay switching circuitry
- Developed a **LabVIEW GUI** for the dispatch of commands through NI DAQ interfaced to measurement circuitry
- Ideated techniques for the measurement of parameters several orders of magnitude small using the limited resolution of NI DAQ 6008 USB Module.

ROBUST VIDEO DENOISING (Course Project)

Instructor : Prof Ajit Rajwade, Computer Science Department, IIT Bombay *(Mar-Apr '19)*

- Implemented a **low rank matrix completion** based method which involved minimal noise statistical assumptions
- Demonstrated the quality of our implementation when simultaneously disrupted with various noise distributions

DESIGN OF PIPELINED PROCESSOR (Course Project)

Instructor : Prof Virendra Singh, Electrical Engineering Department, IIT Bombay *(Sept-Oct '19)*

- Implemented our functional model of **6 stage pipelined processor** capable of executing over 15 instructions in VHDL with integration of generic testbench to provide custom inputs
- Developed a robust model to handle various hazards by integrating **data forwarding** and **stalling** units
- Demonstrated the functionality of our model in FPGA board against various test cases involving different hazards
- Multi-cycle variant of the processor was also formulated involving logic for the minimization of number of states

IRIS DETECTION (Course Project)

Instructor : Prof Ajit Rajwade, Computer Science Department, IIT Bombay *(Sept-Oct '19)*

- Implemented **morphological image processing** for removing oclussions to avoid degradation of iris recognition
- Applied PCA for reducing the feature dimensions to enable efficient application of Fisher LDA for classification

SIMULATION OF CHAIN REACTION GAME (Course Project)

Instructor : Prof Virendra Singh, Electrical Engineering Department, IIT Bombay *(April-May '19)*

- Developed a functional model involving **Breadth-First-Search** algorithm with VHDL
- Worked out a non-redundant state diagram and the structure of various memory elements required to memorize the grid state and address pointers for the execution of algorithm implemented
- Simulated it in VHDL using Quartus Altera and justified it's validity over various test cases

EFFECT OF P_{38} INHIBITION IN CELL CYCLE | *Summer Undergraduate Research Program*

Guide : Prof Sandip Kar, Chemistry Department, IIT Bombay *(May-June '18)*

- Implemented **Gillespie's Algorithm** to stochastically simulate the developed model
- Employed **ImageJ** software to generate experimental data from the image frames pertaining to cell-cycle phases obtained by time-lapse microscopy of a culture
- Applied **Bifurcation theory** to draw suitable conclusions from the developed model

Key Courses Undertaken

Electrical:	Analog Devices with lab, Digital Design with lab, Signal and Systems, Electric Machines and Power Electronics with lab, Nanoelectronics, Microprocessors with lab, Communication Systems with lab, Electronic Design Lab, Control Systems with Lab, Advanced Machine learning
Mathematics:	Differential Equations, Linear Algebra, Calculus, Data Analysis and Intepretation, Complex Analysis, Probability and Random Processes
CS:	Data Structures and Algorithms, Computer Networks, Introduction to Machine Learning, Computer and Networks Security, Fundamentals of Digital Image Processing, Advanced Image Processing, Foundations of Intelligent and Learning Agents*, Speech and NLP*

**Course to be completed by November '20*

Extracurriculars

Sports

- Appointed **Sport's Captain** of school in class IX
- Represented school in interschool **basketball** tournament conducted by District Sports Office
- Participated in Institute Cricket League and 4.5km Crossy General Championship

Cultural Miscellaneous

- Won **first** prize in Dance Mania 2017 and **third** prize in Gyrations 2018
- Volunteered for **Green Campus** program in National Service Scheme
- Devoted **80 hours** in implementing innovative ideas for extending the reach of greenery in the campus