Reeyansh Shah			**22B0412**	
Electrical Engineering			**Dual Degree (B.Tech. + M.Tech.)**	
Indian Institute of Technology Bombay			**Gender: Male**	
Specialization: Microelectronics and VLSI			**DOB: 31/05/2004**	

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2027	9.14
Intermediate	CBSE	Poddar Brio International School	2022	94.80%
Matriculation	ICSE	P.G Garodia (ICSE)	2020	97.80%

Pursuing a Minor degree in **Artificial Intelligence and Data Science**, CMInDS, IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Achieved Department Rank **9** out of **100+** students in the **Electrical Engineering** Dual Degree program *['23]*
- Secured a **Change of Branch** awarded to the top **9%** out of **1400+** students owing to academic prowess *['23]*
- Awarded an **AP (Advanced Performer)** grade **(top 1%)** in **2** courses for exceptional performance *['23]*
- Ranked in the **top 1** percentile out of **0.16 million+** applicants in JEE Advance Examination across India *['22]*
- Attained **99.74** percentile out of **1 million+** candidates in the nationwide JEE Mains Entrance Exam *['22]*
- Recipient of the prestigious **KVPY Scholarship** bestowed upon the **top 1%** by the Government of India. *['22]*
- Placed in the **top 1%** of candidates who appeared for **NSEJS** conducted by IAPT in conjunction with HBCSE *['18]*
- Secured **National Rank 2** & **International Rank 36** in **Singapore & Asian Science Maths** Olympiad *['17]*

PROFESSIONAL EXPERIENCE

Software Architect | Invenco AI   *[May '24 - Jul '24]*
India's first AI-driven company specializing in automated warehouse inventory tracking, pioneering supply chain solutions
- Developed real-time **image transfer protocol** for seamless drone-to-server communication using **Flask** package
- Designed and deployed a **Flutter** mobile application for remote drone control and **automated image uploads**
- Assembled **drones** and conducted **4+** hours of rigorous testing regimen, ensuring seamless communication

Data Analyst | NoQs   *[Dec '23 - Jan '24]*
Pan-Indian digital firm specializing in comprehensive commerce solutions | *Received **LoR** from the **Director***
- Implemented **SQL** for data retrieval and leveraged **PowerBI** to create comprehensive and interactive user interface
- Utilized advanced formulas and dynamic charts on data to generate business reports aiding in **15%** cost reduction
- Developed **dynamic dashboards**, integrating employee and attendance **case studies** for data-driven analytics

KEY PROJECTS

3D Data Collector for IPEC | Wadhwani Electronic Lab, IIT Bombay   *[May '24 - Jul '24]*
Guide: Prof. Siddhart Tallur, Department of Electrical Engineering, Indian Institute of Technology Bombay
- Enhanced setup to **Tri-Axis** by integrating **screw gauge** for Z-axis, installed limit switches for positional accuracy
- Designed a **PCB** in KiCad, connecting **MSP430**, limit switches, motors; thus performing soldering and crimping
- Developed and coded Arduino controller for motors, ensuring precise communication using **Serial Library** interface
- Designed **PyQt GUI** with manual and default scan modes integrating **automated scanning** for enhanced functionality, performed **error calibration** for accurate data reception, storing data points for future ML analysis

Reinforcement Learning for Stock Trading | Web and Coding Club, IIT Bombay   *[Jun '24 - Present]*
- Explored quantitative trading strategies, backtesting, execution systems and **Markov Decision Processes** for **RL**
- Implemented **Deep Q-Learning** using **TensorFlow** to train CliffWalking **Atari** environment over **1000** episodes
- Currently implementing a custom stock trading environment leveraging **OpenAI Gym** and **Stable Baselines3**

Supervised and Unsupervised Learning, Recommenders, Reinforcement Learning | Self Project   *['24]*
- Implemented **K-means clustering** for **image compression**, achieving a **6** fold reduction in memory usage
- Gained proficiency in **TensorFlow** for neural network, **multi-class classification** and implementing decision trees
- Built machine learning models for **regression** and **classification**, achieving **92%** and **90%** accuracy respectively.

ADDITIONAL PROJECTS

IITB RISC Pipeline Processor Design | Course project   *[Apr '24 - May '24]*
Guide: Prof. Virendra Singh, Department of Electrical Engineering, Indian Institute of Technology Bombay
- Developed a **6-stage pipeline** to enhance instruction processing, throughput and maximise cycle frequency
- Implemented advanced features, such as a 2-level **data forwarding** logic and a history bit-based **branch predictor,** to minimise data hazards and improve branch prediction accuracy, ensuring smooth operation without stalls
- **Integrated hazard** mitigation units to ensure smooth operation and optimise performance of the pipeline processor
- Utilised **VHDL** Modeling to implement the **datapath design** and **control unit**, and simulated on **Quartus**

Solar Lantern Project | Self project   *['22]*
- Designed a prism-shaped box to **strategically place** Solar Panels for versatile light absorption in **3+** orientations
- Analysed **technical viability** by calculating LED power consumption and estimated battery life of **28.57 hours**
- Conducted cost analysis comparing lanterns to incandescent lamps, revealing a **payback period** of **6500+** hours

Analog Circuit Design | Course project   *[Jan '24 - May '24]*
Guide: Prof. Sandip Mondal, Department of Electrical Engineering, Indian Institute of Technology Bombay
- Designed **Precision Rectifter**, **Wein Bridge Oscillator**, sallen key filters using TLO84 opamp and MOSFETs
- Simulated Complete Logarithmic Amplifier on **Ngspice** and virtually designed all the above circuits in **XCircuit**
- Developed **high-gain ECG amplifier** with robust noise filtering capabilities for accurate signal capture

Working with 8051 Microcontroller | Course Project   *[Jan '24 - May '24]*
Guide: Prof. Nikhil Karamchandani, Department of Electrical Engineering, Indian Institute of Technology Bombay
- Developed **assembly** and **C** programs on **Keil IDE** for ATM, musical notes, temperature reader, and stopwatch
- Implemented data transfer between peripherals and processor via **SPI** and **UART** communication protocols

16 Bit ALU Computer System | Course project   *[Oct '23 - Nov '23]*
Guide: Prof. Virendra Singh, Department of Electrical Engineering, Indian Institute of Technology Bombay
- Developed combinational logic to understand and execute **6 distinct instructions** of assembly language
- Engineered **8-register**, **16-bit system**, optimizing predicated execution, and streamlining **load-store efficiency**
- Developed VHDL code for the controller-FSM, integrated **datapath**, and executed concise **test bench simulations**

Route Tracing Payload Dispatch Vehicle | Course project   *[Nov '22 - Feb '23]*
Guide: Prof. Dinesh Sharma, Department of Electrical Engineering, Indian Institute of Technology Bombay
- Designed a **Line-Following Bot** with advanced drop-off capability, optimizing components for **20%** cost reduction
- Optimized design to achieve a **30% weight reduction** while enhancing load-bearing to **0.3 kg payload** capacity
- Leveraged **Fusion 360** for intricate 3D modeling and **LaserCAD** for precise laser cutting,optimizing the design

POSITION OF RESPONSIBILITY

Department Academic Mentor | Department of Electrical Engineering, IIT Bombay   *[Jun '23 - Present]*
*Selected among **34** mentors out of **175+** applicants, to assist sophomore undergraduates of the department*
- Guiding **12** students, organising departmental information sessions and contributing to academic counselling
- Working towards revamping the D-AMP blog and adding the academic **resources** for the reference of **200+** students

Institute Academic Coordinator | EnPoWER, Undergraduate Academic Council   *[May '23 - Apr '24]*
*Selected among **4** out of **200+** applicants to promote research and address academic queries of **5000+** students*
- Launched **ResCon**, a UG research conference, witnessing over **100** submissions & sponsorship of **INR 0.5 million**
- Ideated and executed flagship event **Enthuse** for **1400+** freshmen to foster research interest among them
- Led **Summer Undergraduate Research Program**, overseeing **80+** projects, **200+** students and **48+** professors

Teaching Assistant | Department of Computer Science, IIT Bombay   *[Jan '24 - May '23]*
- Guided **15** students in C/C++ by resolving programming doubts, fostering skills through exercises, aiding in coding
- Moderated **10+** laboratory sessions and assisted in evaluations of examinations of **500+** students in CS101 course

Summer of Science Mentor | Maths and Physics Club   *[May '23 - Present]*
- Mentored students to gain insights on Control Systems and perform simulations of Inverted Pendulum on **MATLAB**

TECHNICAL SKILLS

Languages   : C, C+, Python, VHDL, Arduino IDE, HTML, CSS, SQL, Latex
Python Libraries   : NumPy, Pandas, Tensorflow, OpenCV, Pytorch, Scipy
Tools and Software : kiCAD, Quartus, NGspice, Keil, Fusion 360, PyQt, Flutter, MATLAB, Git, AutoCAD

KEY COURSES

Data Science	Introduction to Machine Learning*, Programming for Data Science
Electrical Engineering	Probability and Random Processes, Communication*, Microprocessors, Control Systems, Electronic Devices and Circuits, Analog Circuits, Digital Systems, Power Engineering
Others	Markov Chains and Queuing Systems, Economics, Linear Algebra, Quantum Physics

*to be completed by Dec '24

EXTRACURRICULARS

- Ranked in top **5** percentile in ASSET talent search, invited to **Renzulli Programme** at **University of Connecticut**
- Achieved the prestigious International **Gold** Medal in **SpellBee** competition conducted by SpellBeeInternational
- Secured top honors in the Interschool **KenKen** Competition, surpassing **300+** students across Mumbai
- Successfully completed **3** levels of the **Akhil Bhartiya Gandharva** Mahavidyalaya certification in **Keyboard**
- Attained a top **20** ranking in the Mumbai Zonal Division of the esteemed Indian School **Scrabble** Championship
- Successfully completed over **80+** hours of rigorous **Yoga** training under NSO supervision at IIT Bombay