Uddhav Aggarwal			170070054	
Electrical Engineering			**B.Tech.**	
Indian Institute of Technology, Bombay			**Gender: Male**	
			DOB: 01-06-1999	

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	-
Intermediate	CBSE	SGGS Collegiate Public School	2017	93.00%
Matriculation	CBSE	St Kabir Public School	2015	10

Pursuing a **Minor** in Computer Science and Engineering, and **Honours** in Electrical Engineering

WORK EXPERIENCE

Deep Learning to Optimize Leaf Tobacco Procurement Costs [May-July'20]
*Internship at **ITC** - Awarded Letter of Recommendation* *Guntur*
- Achieved >**85% accuracy** by training and optimizing classifier **Neural Network** using **PyTorch**
- Suggested **prioritization** mechanisms by **analyzing past** buying and offering **patterns** in tobacco auctioning markets to **reduce** procurement **costs** and **increase** process **efficiency**
- Designed **efficient dashboard** with **competition** data analysis for assistance in **decision making**

Floorplan Segmentation for Infurnia - *Cloud native Architecture Design Software* [Dec'19-Apr'20]
*Technopreneurship at **Infurnia Technologies** - Awarded Letter of Recommendation* *Bangalore*
- Developed a **Computer Vision** based solution with >**80%** accuracy to **automatically** detect semantic features: walls, doors and windows from architectural floor plans in **Python**; integrated with Infurnia
- Designed a **website** with **file-handling** system using **NodeJS** in backend, **Javascript** in frontend
- Performed **Spectral Clustering** (with **SSIM** metric) to find **correlations** in extracted features

Streamlining Data Handling and Preventive Maintenance [May-July'19]
*Internship at **Aggrego (Joulon)** - Awarded Letter of Recommendation* *Dubai, UAE*
- Developed application to manage **Logistics** Data in **DelugeScript**; **company wide** use [**200+** people]
- Developed an **automated preventive maintenance** system application using MS **Powerapps**

PROJECTS IN COMPUTER VISION

Covid-19 Detection using Chest X-Ray [Ongoing]
Bachelor Thesis Project | Guide: Prof. Amit Sethi *Dept. of Electrical Engineering*
- Training and optimizing a **GAN** for **augmentation** of Covid X-Ray (IEEE-8023) dataset in **PyTorch**
- Exploring **Transfer Learning** to test accuracy of **GoogleNet, ResNet, AlexNet** on augmented dataset; **designing** and training own **CNN** classifier architecture based on insights to **increase** accuracy

Physiological Monitoring of Driver using Computer Vision [Dec'19-Jan'20]
Research Project *Mercedes Benz R&D India, Bangalore*
- Developed a **Python** program to measure **cardiac** rate **within 5%** relative error by extracting facial **skin colour variation** data; passing through **Butterworth** Filter and applying **FFT** to data buffer
- Used **Eulerian** Video Magnification to measure respiratory rate **within 1%** relative error in **MATLAB**

Prior Image Constrained Compressed Sensing (PICCS) with fMRI [Spring'20]
Course Project (Advanced Image Processing) | Guide: Prof. Ajit Rajwade *Dept. of Computer Science*
- **Reduced** acquisition time of fMRI by **100x** compared to TTV & k-t faster, **preserving** BOLD activation
- Employed the **Split-Bregman** Method to solve **L1 constrained optimization** problem for PICCS

Image Warping: Face Swapping [Autumn'19]
Course Project (Digital Image Processing) | Guide: Prof. Suyash Awate *Dept. of Computer Science*
- Performed **head pose estimation** using **Autoencoder model** architecture; facial **feature extraction**
- Seamlessly replaced faces using **LFW** dataset with **Poisson Blending** and **Relighting** adjustments

AWARDS AND RECOGNITIONS

HONDA Y-E-S (Young Engineer and Scientist) Scholarship and Award [2020]
Identified as future leader in Technology; amongst 14 selected from 500 applicants from IITs
- Showcased an **Ecotech Piezoelectricity**-based solution to automatically power streetlights to **reduce Global Carbon Footprint** - 'Generate Electricity While You Drive'
- Awarded fully funded **research internship** in **Japan** in Summers 2021 (10000 USD)

MERCEDES BENZ Digital Challenge [2020]

Placed 2nd amongst 350+ applicants, 190+ teams all over India   *Bangalore*

- Implemented a non-invasive **Computer Vision** based solution in **Python** to **reduce road accidents**, by monitoring driver's cardiac and respiratory rates; developed **GUI** for demonstration
- Awarded funded trip to **showcase** the solution at **4YFN Startup Conference** (MWC) in Spain

OTHER PROJECTS

Smart Water Heater (IOT) [Spring'20]

Course Project (Electronic Design Lab) | Guide: Prof. Promod Murali   Dept. of Electrical Engineering

- **Interfaced** DSB1820 temperature sensor with ESP-32 **Wifi-module** using **Arduino** IDE
- Designed a **rechargeable long-lasting** battery module using LT-5641 IC to power the system
- Seamlessly **transmitted** the temperature readings to a mobile application employing **MQTT protocol**

Pipelined RISC Processor Design [Autumn'19]

Course Project (Microprocessors) | Guide: Prof. Virendra Singh   Dept. of Electrical Engineering

- Developed a **16-bit, 6-stage** pipelined processor that processes **14** instructions; implemented data forwarding, branch control, stall minimization; wrote **2000+** lines of code in **VHDL**; simulated in ModelSim
- Verified the working of the processor on Altera Cyclone IV FPGA device with **100%** success rate

1+N Protection against Multiple Link Failures in Mesh Networks [Spring'19]

Course Project (Computer Networks) | Guide: Prof. Ashwin Gumaste   Dept. of Computer Science

- Outlined a strategy (**p-cycles**) to protect N links of a network using a single protection path
- Developed a **Python** program to demonstrate working of **p-cycles** concept; **protection** against failure
- Implemented protection strategy for **multicast bidirectional** networks, extendable to multiple failures

ACADEMIC ACHIEVEMENTS

- Secured **All India Rank 75** in **JEE (Main)** among 1.2 million candidates [2017]
- Secured **All India Rank 243** in **JEE (Advanced)** among 2.2 lakh candidates [2017]
- Qualified amongst the **top 34** in Indian National Astronomy Olympiad (**INAO**) [2016]
- Secured **All India Rank 282** in Kishore Vaigyanik Protsahan Yojana (**KVPY**) [2016]
- Recipient of the National Talent Search Examination (**NTSE**) Scholarship (**State Rank 4**) [2015]
- **Competitive Programming:** Solved **500+** algorithmic problems on **Online Judges**; highest rating of **1765 (Expert)** on CodeForces and **1952 (4-Star)** on CodeChef [Present]
- Secured **Global Rank 34** in **May Cook-Off (Div 2)** organized by CodeChef [2020]

TECHNICAL SKILLS

Programming	C/C++, Python, JavaScipt, HTML, CSS, Java, VHDL, MATLAB
Machine Learning	Pytorch, Tensorflow, Keras, Scikit-Learn, OpenCV
Key Courses	Design and Analysis of Algorithms, Data Structures, Advanced Machine Learning,
Undertaken	Advanced Image Processing, Cryptography, Game Theory, Reinforcement Learning

POSITIONS OF RESPONSIBILITY

Teaching Assistant: Quantum Physics and its Applications [July-Nov'18, July-Nov'19]

TA for Prof. Sudhasatta Mahapatra | Department of Physics   *IIT Bombay*

- Responsible for conducting weekly **tutorial sessions**; initiating **interactive two-way learning**
- Held a **TSC** (Tutorial Service Centre) session for **Quantum Physics** for over **150** students

Coordinator, Hospitality and Public Relations: Mood Indigo 2018 [July-Nov'18]

Asia's largest college cultural fest with 143,000+ footfall | 230+ events | 160+ international artists

- Ideated within a team of 30 members to manage the hospitality demands of **143,000+ visitors**
- Handled the **cross-publicity association** with PECFEST expected to increase reach by **5%**

EXTRA-CURRICULARS

Cricket: [2017]

- **Captained** the **winning** team comprising of **16** players in **Freshmen Cricket League**
- Participated in the Inter-Hostel **General Championship** and Institute Cricket League (**Cricmania**)

Others:

- **Leading** a team of **20+** students in the making of a **nationwide MOOC** on NPTEL [Ongoing]
- Participated in **Dance Mania**: An Inter-Hostel Dance **General Championship** [2017]
- **Spearheaded** a team of 5 in the **National Children Science Congress (NCSC)** and **represented Chandigarh** in the national level round held at Bangalore [2015]

Scholastic achievements and extracurricular activities are not verified by the Placement Cell