



**Parth Satish Laturia**  
**Computer Science & Engineering**  
**Indian Institute of Technology Bombay**

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**B.Tech.**  
**Gender: Male**  
**DOB: 14-05-2000**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2022	9.59
Intermediate	CBSE	Disha Delphi Public School	2018	95.20%
Matriculation	CBSE	Gyan Mata Vidya Vihar	2016	10

Pursuing Minors in **Artificial Intelligence** and **Data Science** and **Honors in Computer Science**

## ACHIEVEMENTS AND SCHOLARSHIPS

- Secured All India Rank **3** in **JEE Main Paper 1** out of **1.2 Million** candidates (2018)
- Achieved All India Rank **29** in **JEE Advanced** out of **163K** candidates (2018)
- Accomplished a perfect **10.0/10.0** performance index (SPI) in the **spring** semester of the **3rd** year (2021)
- Completed **ICHO** OCSC and was awarded a **Gold** Medal for standing in top **35** in INChO, HBCSE (2018)
- Recipient of the Kishore Vaigyanik Protsahan Yojana (**KVPY**) fellowship with All India Rank **103** (2017)
- Earned the National Talent Search Examination (**NTSE**) fellowship by NCERT, Government of India (2016)
- Completed the **20-day** Orientation-Cum-Selection Camp for **IAO**, HBCSE (amongst **top 35** in India) (2015)
- Secured **4th** Rank and a **Gold** Certificate in **Technothon** Championship, held by **IIT Guwahati** (2014)
- Obtained **International** Rank **3** in the International Mathematics Olympiad held by SOF (2013)

## INTERNSHIPS

**Doc2Video for Personalized Consumption** —*ML, Algorithms, CV* Summer 2021

Guide: *Balaji Vasan Srinivasan* Adobe Research Lab, Bangalore

- Co-Authoring a **patent-disclosure** and a paper for submission at Intelligent **User Interface** Conference, '22
- Automated conversion of instructional **document** to illustrative **video** tailored to user **expertise** and choices
- Embodied Clustering, Weak **Supervision** and Question Answering Modules to automate the **modality** selection
- Utilized GTTS to generate **voice over** and ffmpeg, moviepy to stitch the **coherent** clip pieces into final video

**Winning Notakto with Reinforcement Learning** —*RL, games* Summer 2020

Guides: *Prof. Saul Blanco, Prof. David Crandall* Indiana University, U.S.A

- Co-Authored a paper titled "How to play Notakto?" published in **AAAI-Reinforcement Learning & Games**, '21
- Trained **UCB** based RL model from scratch using **1 Million** games of self-play to maximize win in Notakto
- Incorporated Monte Carlo Policy using **Every Visit** Approach and NN binarization for **space-time** optimization

**ATM's Predictive Maintenance** —*Data Science, Process Development* Winter 2020

Guide: *Prof. Siuli Mukhopadhyay* Bank of Baroda

- Built a "**Smart ATM**" based on Regression model and cross-validation technique to warn for serious **faults**
- Reviewed Literature on Classification based **Failure Prediction** and extracted **2-sized** Pattern based Features

**Noise Filtering in Stethoscope** —*Machine Learning, Signal Processing* Winter 2019

*Ayudevices Private Limited* IIT Bombay

- Collectively implemented Deep Learning based **RNN** model to classify the **Heart beats** as Normal or Abnormal
- Executed **Recursive** Least Square and Least Mean Square Algorithms to filter out **noises** from **Heart** sounds

## KEY PROJECTS

**Semi Supervised Data Programming (SPEAR)** —*ML, Deep Learning* Jan 2021 - Jul 2021

Guide: *Prof. Ganesh Ramakrishnan* RnD Project

- Co-Authoring a paper available at arXiv for submission at Journal of Machine Learning Research (**JMLR**), '21
- Developed a **Labeling** Function based module to reduce Annotation efforts and improve the correctness metrics
- Trained a High level Supervision encompassing **4** algorithms to learn from Rules generalizing Labeled **Exemplars**
- Implemented a **rule denoising** algorithm based on **Implication loss** to achieve high **F1-Score** & Accuracy

**Developing Adversarially Robust Attacks** —*ML, Deep Learning, Security* Spring 2021

Guide: *Prof. Sunita Sarawagi | Course Project* Advanced Machine Learning

- Analyzed FGSM and PGD based **Attacks** by pruning and varying **models** and norms to discern their severity
- Modified **TRADES** defense by changing the perturbation algorithm to secure **98.1%** accuracy on MNIST

**SCLP Based Compiler**—*Programming Languages, Algorithms* Spring 2021

Guide: *Prof. Uday Khedker | Course Project* Implementation of Programming Languages Lab

- Implemented scanning, **parsing**, AST, TAC and RTL stages with visibility of output at each intermediate stage
- Ensured that illegal tokens, syntax errors and semantic **errors** in the C-like compiler are robustly **flagged**

## Restaurant Management System —DBMS, Development

Spring 2021

Guide: Prof. Umesh Bellur | Course Project

Database and Information Systems Lab

- Established a Robust System populated by Owner, Employees and Customers performing essential **user actions**
- Employed PostgreSQL with PgAdmin4 to maintain **Dynamic** Database and NodeJS to link it with the frontend
- Supported Time Series Analytics, Automated Dish **Recommender** and Atomicity to enhance the user experience

## Buffer Overflow Attacks and Defenses—Computer Security, Architecture

Autumn 2020

Guide: Prof. Bernard Menezes | Course Project

Computer Architecture

- Demonstrated the Stack and Heap based **buffer overflow** exploits along with **defenses** against them
- Performed a case study on the **Code Red Worm** exploit paired with the ways of **protection** against it

## Low-Dose Tomographic Reconstruction—Statistics, Image Processing

Spring 2020

Guide: Prof. Ajit Rajwade | Course Project

Advanced Image Processing

- Reconstructed test images from **low dose** projections and **Re-irradiation** in regions of significant changes
- Formulated **Weights** map using FBP and Z-test to quantify influence of **prior** templates on the reconstruction
- Implemented the modified FISTA package; tuned regularization parameters to achieve **RMSE** as low as **0.0749**

## OTHER PROJECTS

- ◇ **Causal Intervention on Time Series** (Prof. Sunita Sarawagi | BTech Project) - Predicting **anomalies** and their confounders based on **multivariate time series** data using counterfactual explanations
- ◇ **Mastermind Solver\*** (Prof. Amitabha Sanyal | Algorithms) - Remodelled the **Mastermind** Game employing Racket GUI and 5-Guess, Minimax Algorithms with Functional Programming to identify the user's secret code

## LEADERSHIP POSITIONS

\*Course Projects

### Department General Secretary—Computer Science and Engineering

April 2021 - Present

- Spearheading a council of **15** members, committed to serve socio-academic and sportive interests of the students
- Appointed **6** Placement Coordinators and a CyberSecurity Club Manager for the execution of student activities
- An active member of the Department **Policy** Formation Committee to ensure student participation in the same

### Teaching Assistant

- Statistical Inference (Minor) under Prof. Siuli Mukhopadhyay Aug 2021 - Present
- Logic for Computer Science under Prof. Krishna. S Mar 2021 - May 2021
- Computer Programming and Utilization under Prof. Kameswari and Prof. Bhaskaran Nov 2020 - Feb 2021

### Department Academic Mentor—Department Academic Mentorship Programme

May 2021 - Present

- Selected in a team of **34** mentors from **70+** applicants after interviews and peer reviews to mentor sophomores

### Interview Co-ordinator—Institute Placement Cell

Dec 2020

- Coordinated with a team of **250+** members for interviews of **1700+** students and tests of **15+** firms

### Class Representative—Computer Science and Engineering Association

July 2020 - May 2021

- Represent the batch of **125+** students in Dept. Council and promoted **progress** by solving the academic issues

### Social Secretary—Computer Science and Engineering Association

April 2019 - March 2020

- Responsible for **planning** and organizing all social and cultural events for **1000+** students of CSE department

## TECHNICAL STRENGTHS

<b>Programming</b>	Matlab, RStudio, SQLite, Spark, Java, Prolog, Python, Cypher, Racket, VHDL, C++
<b>Data Science</b>	Tensorflow, Pytorch, Jupyter, GoogleColab, Scikit, Panda, StatsModels, PuLP
<b>Software Skills</b>	Wireshark, Gnuplot, Make, CMake, Git, Auto-CAD, SolidWorks, OpenCV, L <sup>A</sup> T <sub>E</sub> X
<b>Development</b>	HTML, CSS, JavaScript, Django, AngularJS, Bootstrap, NodeJS, Beamer

## KEY COURSES UNDERTAKEN

### Data Structures & Algorithms

Automata Theory

### Numerical Analysis

Database Systems + Lab

### Statistical Inference

### Data Analysis & Interpretation

Digital Logic Design

### Advanced Machine Learning

Compilers + Lab

### AI & Machine Learning + Lab

### Advanced Image Processing

Logic for Computer Science

### Regression Analysis

Intro to Probability Theory

### Intelligent & Learning Agents\*

\*to be completed by December 2021

## EXTRACURRICULAR

- Member of the Winning team of the **Hult Prize** OnCampus Round: A Social Entrepreneurship Event (2020)
- Represented **India** in Asian Universities Alliance Chulalongkorn Program on "Humanizing **Digital** 2021" (2021)
- Served as a **Volunteer** at Lions **Eye** Hospital to help poor and needy patients in the **COVID** Pandemic (2021)
- Engaged in the AUA **Nazarbayev** University Overseas Study Program on "**Data Science and AI**" (2021)
- One of the **12 Editors** of Bitstream, **CSE Department Newsletter**; Contributed to **2** of its articles (2021)
- Volunteered **80+** hours in National Service Scheme to maintain **Greenery** at IIT Bombay Nursery (2018)
- Elected as the **Senior Head Boy** at Gyan Mata Vidya Vihar; Involved in Student **Leadership** Squad (2014)