

Shivprasad Kathane

Fourth Year Undergraduate
Centre for Machine Intelligence & Data Science
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Education

- 2018–2023 **Indian Institute of Technology Bombay, Mumbai, India**
Inter-Disciplinary Dual Degree Programme (IDDDP) CPI: 9.19/10.00
Master of Technology in Artificial Intelligence and Data Science
Bachelor of Technology in Metallurgical Engineering and Materials Science
- 2010–2018 **Delhi Public School Vadodara, Vadodara, India**
Subjects: Physics, Chemistry, Mathematics, English, Informatics Practices
All India Senior School Certificate Examination (CBSE XII 2018) 96.80%
All India Secondary School Examination (CBSE X 2016) CGPA: 10/10

Scholastic Achievements

- 2021 Among the **top-20** applicants from the institute across all departments selected for IDDDP at C-MInDS
- 2021 Bestowed with the **Prof. AK Mallik Award** for consistent academic excellence over the three years
- 19-21 Previously the **Department Rank 2** out of **100+** MEMS undergraduates for **4** consecutive semesters
- 19-21 Nominated **thrice** for the prestigious O P Jindal Engineering and Management Scholarship (OPJEMS)
- 2019 Awarded the highest grade **10/10** in **Data Analysis & Interpretation** course with practical experience in **R**
- 2018 Scored a perfect **100/100** in **Informatics Practices** course covering **SQL, Java & HTML** in AISSCE
- 2016 **NTSE SCHOLAR**: Recipient of scholarship awarded by NCERT to **top 1000** meritorious students
- 15-16 Secured **AIR 35** in SOF's National Cyber Olympiad and **AIR 41** in UC's Unified Cyber Olympiad
- 2015 Secured **International Rank 1** in SOF's International Mathematics Olympiad Level 1
- 2015 Secured **State Rank 1** (Gujarat) in National Talent Search Examination (NTSE) Stage 1
- 2015 Honoured with a Silver Medal and a Champion's Trophy in Allen Champ for exemplary academic profile
- 2014 Received Certificate of Merit in the national level of Inter-DPS Science and Maths Talent Examination

Professional Experience

- July'20– **Machine Learning Intern** **Coulomb AI**
August'20 (9 weeks) Guide: Khushboo Shrivastava (Founder & CEO, Coulomb AI - Startup in Battery Data Intelligence)
• Reviewed literature on ML techniques for battery SOC & SOH estimation and documented the study
• Performed exploratory analysis, feature engineering & visualisation to sense patterns in battery data
• Performed data transformation to build & evaluate Regression (Sklearn) & CNN (TF Keras) models
• Implemented 4 approaches for cycle life prediction, compared them and suggested improvements
- June'21– **Summer Research Intern** **University of Tokyo**
July'21 (6 weeks) Guide: Prof. Jun Takahashi (Automotive Composites Lab, Department of Systems Innovation)
• Among the cohort of 20 students selected globally in the Engineering Summer Education Program
• Predicted the annual production of automobiles, aircrafts & wind turbines upto 2050 from historic data using techniques like auto-regression, curve-fitting extrapolation, growth rate analysis etc. and presented the results
• Estimated the corresponding carbon fibre demand & waste using domain insights & assumptions
- July'20– **Technology Scouting Intern** **AIRBUS India**
August'20 (3 weeks) Guide: Mr. J. Stuhlberger (Vice President, Airbus Technology Scouting Network, Germany)
• Reviewed literature on various hydrogen storage materials & technologies for aerospace applications
• Presented a comparative analysis based on figures of merit and practical scientific understanding

Key Projects

- May'19– **Seasons of Code: Tabbing Web App Development** (Team of 3) **Web & Coding Club IITB**
July'19
• Developed a platform for easier & accurate tabulation of scores in debate tournaments using Django framework
• Automated the creation of team-matchups based on ranking and allocation of rooms & judges for each round
• Designed web pages, built code & logic, developed authentication interface and linked them appropriately

- December'20– **Terrorism: Data Analysis & Predictive Modelling** (Team of 2) **C-MInDS IITB**
 February'21
- Analysed Global Terrorism Database with effective visualisations to assess historical trends and reveal insights
 - Innovation: Used political, social & economic indicators data from various sources to predict terrorism in a country by implementing different machine learning models and achieved as low as 0.28% test set error wrt maximum value
 - Developed an official report and delivered a presentation at the UGAC's Virtual Research Symposium by Students

Key Practical Courses

CS50's Intro to AI with Python

Harvard University

- Search: Implemented AIs to connect actors using breadth-first search & play Tic-Tac-Toe optimally using Minimax
- Knowledge: Learnt Knowledge Representation & implemented an AI to play Minesweeper using Propositional Logic
- Uncertainty: Developed an AI to rank web pages using an iterative algorithm based on Random Surfer Model
- Developed an AI to determine likelihood of a person having a particular genetic trait using Bayesian Network Model
- Optimisation: Developed an AI that can generate crossword puzzles using backtrack search with AC3 algorithm
- Learning: Developed an AI that can teach itself to play the game of Nim using reinforcement Q-learning
- Developed an AI to predict whether a customer completes an online purchase using knn with 89.90% specificity
- Neural Networks: Developed a CNN model for traffic sign recognition from image with 98.32% accuracy
- Language: Parsed sentences & extracted noun phrases using nltk and developed an AI for Q&A using tf-idf

Programming for Data Science

C-MInDS IITB

- Developed fundamental understanding of probability and statistics concepts helpful in modelling and prediction
- Learnt to perform Exploratory Data Analysis, Data Visualisation & Basic Statistics as initial analysis on datasets
- Machine Learning: Explored implementing algorithms for regression, classification, clustering & dimension reduction
- Deep Learning: Implemented Neural Networks (PyTorch) with varying hyper-parameters on XOR & MNIST data

Technical Skills

- Other Courses Calculus, Linear Algebra, Differential Equations, Numerical Analysis, Computer Programming & Utilisation (C++), Computation Lab, Problem Solving Using Computational Thinking (Coursera), Python & OOP Concepts (10xIIT), Intro to Machine Learning, Quantum Information & Computing, Robotics, Mathematical Optimisation Techniques
- Softwares MS Office, Matlab, Scilab, Jupyter, Colab, VS Code, PyCharm, R Studio, Netbeans, MySQL, Octave
- Libraries Numpy, Pandas, TensorFlow, Scikit-Learn, Scipy, Keras, PyTorch, Matplotlib, Seaborn, OpenCV, NLTK

Organisational Experience

- January'21– **IITB Editorial Head** **IIT Tech Ambit**
 Present
- Leading the institute panel of 8 editors on this Pan-IIT magazine sharing research, tech & startup stories
 - Published 3 self articles with well researched or interviewed content among the total 17 from IITB
- December'18– **Coordinator (Events)** **Entrepreneurship-Cell IITB**
 February'20
- Ideated, coordinated & executed events (26000+ attendees, 700+ startups) to promote entrepreneurship
 - Successfully managed our new initiative R&D Conclave at E-Summit 2020 and led the organisers team
 - Mentored 3 teams of 3 entrepreneurs each in aspects of pitching and BMC for their startup in EnB Buzz
 - As an Organiser in Media division, invited journalists and formulated press releases for E-Summit 2019
- July'18– **Volunteer (Sustainable Social Development)** **National Service Scheme IITB**
 May'19
- Devoted 80+ hours towards community service including teaching and social campaigns executed in teams

Extracurriculars

- 2021 Developed the non-cognitive skills of Conscientiousness, Innovativeness, Taking Initiative, Perseverance and Problem Solving under the Finding the Leader in You (FLY) Scholar Program by Competitiveness Mindset Institute USA
- 2021 Awarded the highest grade **10/10** in the **Project Management** course undertaken at SJMSOM IITB
- 2021 Secured **3rd position** as part of hostel team in Product Management General Championship to improve InstiApp
- 2020 Among the **3** students selected from IITB for ILDP Start+ course by Hiroshima University: attended **13** special lectures on advanced technologies and presented solutions to existing problems as part of the India-Japan team
- 2019 Attended **Deep Learning Workshop** by Mathworks: Object classification, IoT data aggregation & visualisation
- 2019 Secured **1st position** in Spices of Nature Online Photography Contest by NSS (Nature) IITB
- 2017 Attended Indian National Mathematics Olympiad Training Camp for **top-30** rankers in RMO
- 2014 Secured **2nd position** position in Inter-School Sports Quiz organized by Association of British Scholars
- 2013 Conferred with a Certificate of Merit in **Financial Literacy** under FLAME by India Infoline (IIFL)
- 2010 **Gold Medallist** at UCMAS Academy and completed all **8 levels** of Abacus with **99.16%**