

VIBHHU SHARMA

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EDUCATION

Indian Institute of Technology (IIT), Madras , Chennai, India <i>Bachelor of Technology in Electrical Engineering; CGPA: 9.48/10</i>	Aug 2019 - Jun 2023
Army Public School Kirkee, Pune, India <i>Higher Secondary School, Central Board of Secondary Education(CBSE); Percentage: 97.6</i>	Jun 2017 - May 2019
The Bishop's Co-Ed School, Kalyaninagar Pune, India <i>Secondary School, Indian Certificate of Secondary Education(ICSE); Percentage: 97.8</i>	Jun 2015 - May 2017

SCHOLASTIC ACHIEVEMENTS

• Ranked 6 out of 121 students in the Electrical Engineering Department.	2022
• Secured All India Rank 539 in JEE (Advanced) out of 200,000+ candidates	2019
• Secured All India Rank 421 in JEE (Mains) out of 1.5 million+ candidates	2019
• Recipient of the prestigious KVPY (Kishore Vaigyanik Protasahan Yojana) scholarship in the SX stream with an All India Rank 421 out of 50,000+ students	2019
• Among the top 30 students from Maharashtra to clear the NSEC , hence qualifying for INChO , as a part of the International Olympiads selection procedure	2019
• Among the top 30 students from Maharashtra to clear the NSEP , hence qualifying for INPhO , as a part of the International Olympiads selection procedure	2019

RESEARCH EXPERIENCE

Natural Language Counterfactual Generation for Indic Languages Bachelor Thesis, IIT Madras <i>Guide: Prof. Mitesh Khapra</i> <ul style="list-style-type: none">Developed a general-purpose counterfactual generator for Indic Languages that allows for control over both perturbation types and locations.Created a dataset of diverse counterfactuals for 11 Indian Languages.	Aug 2022- Present Chennai, India
Counterfactual Explanations for Multi-Modal Recommender Systems Adobe Research <i>Guide: Dr. Gaurav Sinha Under Review at a top Information Retrieval Conference Paper</i> <ul style="list-style-type: none">Devised a method to generate counterfactual explanations for recommendations generated by a visualblackbox recommender system that utilizes both image data for its decision.Computed the minimal meaningful perturbation to an item's image-embedding that would remove it from a user's recommended list. Used CLIP to connect these perturbed image features to textual features in order to lend meaning to the perturbations.Model outperformed the existing state of the art on metrics like Fidelity and Explanation Complexity.	May 2022-Jul 2022 Bangalore, India
Deep Learning for Extreme Multilabel Classification (XMC) Aalto University <i>Guide: Prof. Rohit Babbar</i> <ul style="list-style-type: none">Explored and reviewed multiple papers on short-text Extreme Classification where the input text is limited to only around 15 words on average.Devised a model that made use of a deep Probabilistic Label Tree for label clustering and a Graph Convolutional Network based on document-document similarity for label ranking.	Jun 2021-Nov 2021 Espoo, Finland

KEY COURSES

- **Artificial Intelligence/Machine Learning:** Introduction to Machine Learning | Deep Learning for Imaging | Reinforcement Learning | Multi-Arm Bandits | Information Theory
- **Mathematics:** Probability, Statistics and Stochastic Processes | Linear Algebra | Functions of Several Variables | Series and Matrices | Differential Equations
- **Programming:** Numerical Methods | Design and Analysis of Algorithms | Applied Programming Lab
- **Electrical Engineering** Control Engineering | Microprocessors | Communication Systems | Signals and Systems | Digital Systems | Analog Systems | Sensing Techniques and Sensor Systems,
- **Miscellaneous:** Introduction to Game Theory | French | Principles of Economics

KEY TECHNICAL PROJECTS

Tabular Data: Deep Learning is not all you need

Mar 2022- Apr 2022

Course Project under Prof. Sheetal Kalyani

- Replicated results from the paper "Tabular Data: Deep Learning is not all you need" by Shwartz-Ziv and Armon .
- Implemented XGBoost and deep learning models like TabNet, DNF-Net, NODE and 1D-CNN from scratch on 11 different tabular datasets and compared the results to show the efficacy of tree-based ensemble models on tabular data.

Multi-Armed Bandit in a game of Cricket

Mar 2022- Apr 2022

Course Project under Prof. Chandrashekar Lakshmi Narayanan

- Used the Upper-Confidence Bound(UCB) algorithm to decide effective batting and bowling strategies in a game of cricket.

Reinforcement Learning Agent

Apr 2021-May 2021

Course Project under Prof. LA Prashanth

- Designed a RL Agent in Python using conventional RL algorithms, primarily Q-learning with exploration.
- **Tested** out the agent successfully in 3 different environments and their noisy counterparts from BSuite in all the environments.

Analysis of Recommendation System

May 2020- Jul 2020

vRhythms Software Pvt Ltd [\[Code\]](#) [\[Report\]](#)

- Worked in a team of four to analyze recommendation algorithms' performance on ranking metrics.
- Optimized collaborative filtering & matrix factorization performance on ranking metrics by 22%
- Analyzed models performance against popularity bias & cold start issue using novelty/coverage metrics.

Software Engineer, Team Anveshak

Apr 2020- Aug 2021

Mars Rover Team, IIT Madras

- Implemented algorithms for autonomous navigation and path planning (Bug2, Vector Field Histogram, Dynamic Window Approach), and object detection (spiral searching manoeuvre, YOLOv3) on a ROS Based Framework for a rover capable of withstanding Mars-like conditions and carrying out scientific tasks effectively.
- Tested approaches to the above tasks extensively using Gazebo and RViz.

SKILLS

- **Languages:** Python, Java, Bash, C++, MATLAB, C, Octave
- **Web Development:** HTML5, CSS3, Javascript
- **Data Analysis:** MATLAB, Octave, NumPy, Pandas, Matplotlib, Keras, TensorFlow, PyTorch
- **Other Libraries and Tools:** ROS, Eagle, Arduino, \LaTeX

POSITIONS OF RESPONSIBILITY

Executive Editor | The Fifth Estate, IIT Madras

May 2022- Present

- **Oversaw and led a team of 50** correspondents, editors, designers, analysts and coordinators at the official student news media body of IIT Madras
- Supervised the regular rollout of quality written articles, podcasts, research surveys and videos covering campus life at IIT-Madras.

Coordinator and Contingent Member | Quiz Club, IIT Madras

Apr 2020- Present

- Regularly **participate in and conduct** quizzes both inside and outside the institute as a part of one of the most successful teams in the college quizzing circuit.

EXTRA CURRICULAR ACTIVITIES

- Conducted a public workshop on "**Python Algorithms for Robotics**" as a part of Shaastra 2020. 2021
- Provided quality **mentorship** as a part of Avanti Fellows to **underprivileged students** in JNV Puducherry with regard to their academics and entrance exam preparation.Both have cleared JEE Main-2020 with **>99 percentile**. 2019-20
- Wrote articles as a **press correspondent** for The Fifth Estate, the official campus publication of IIT Madras. 2020-22
- Organised a campaign for **Digital Wellness** that included surveying SMEs on their use of digital technology and the assistance they needed as part of the PR team of the Entrepreneurship Cell at IIT Madras. 2020
- Elected as **House Captain** by teachers on the basis of overall academic and extracurricular performance. Led the House in sports and cultural events throughout the year. 2016-17
- Shortlisted among the top 20 students in the country for Indian contingent selection for **World Schools Debating Championship** 2016