Souvik Shee

Curriculum Vitae

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Research/Experience

May 2025 – Present **Research Intern**, *Norwegian University of Science and Technology*, Trondheim, Norway
Advisors: Prof. James D.M. Speed, Dr. David R. Williamson
Research Areas: Machine Learning, Computer Vision, Generative AI, Ecology
- Developing a model to analyze historical herbivory patterns using computer vision and machine learning on herbarium sheets with aim to provide valuable insights into historical insect populations and ecological research.

November 2024 – Present **Undergraduate Researcher**, *APP Center for AI Research (APPCAIR)*, Goa, India
Advisors: Prof. Snehanshu Saha (Head: APPCAIR), Prof. Santonu Sarkar (HOD: CSIS)
Research Areas: Machine Learning, Deep Learning, Generative AI, Computer Vision
- Working on a novel driver behavior modeling problem to quantify behavioral realism in traffic scenarios, with plans to adapt the model for complex traffic conditions in countries like India.

May 2024 – July 2024 **Software Development Intern**, *Indian Red Cross Society West Bengal*, Kolkata, India
XCode, Android Studio, Flutter, Firebase
- Developed a Blood Bank application from scratch for the NGO to facilitate the process of blood donation and acceptance.

Projects

December 2024 - Present **ADAPT: Adaptive Driver Behavior Modelling Perception Technology**,
Deep Learning, Generative AI, Machine Learning
- Developing ADAPT, a framework for quantifying erratic driver behavior, by leveraging a transformer-based model with a hierarchical weighted bottleneck fusion mechanism for multi-modal data.
- The aim is to output an interpretable and actionable 'Unruliness Score' that improves traffic safety and efficiency.

August 2025 - Present **Adapt2Drive: Naturalistic Human Driving Anomalies for Closed-Loop Evaluation**,
- Developing the first closed-loop benchmark and dataset for evaluating human driving anomaly detection models

August 2024 - November 2024 **Design Project**, *Extended from CHEM F266*,
Machine Learning, Thermophysical Chemistry
- Predicted viscocities of different binary liquid mixtures using multiple predictive and corelative models.
- Developed a Machine Learning Model using SVMs to predict viscocity values with more accuracy than the co-relative models.

Jan 2024 – May 2024 **CHEM F266**, *Study Project associated with BITS Pilani*, Git
Advisor: Prof. Ranjan Dey(Fellow Royal Society of Chemistry, U.K.)
- Predicted ultrasonic velocities of different binary liquid mixtures using multiple predictive models.
- Compared values from different predictive models to verify and predict which fits the best and to what conditions.

Education

2022–Present **Dual Major in B.E. Mechanical Engineering and M.Sc. Chemistry**, *Birla Institute of Technology and Science Pilani*, Goa.

Relevant Coursework

Mathematics: Probability and Statistics(MATH F111), Linear Algebra(MATH F112)

Computer Science: Natural Language Processing(CS F429)*, DeepMind x UCL — Deep Learning Lectures(YouTube)*, CS229 Stanford's Machine Learning(YouTube), CS50's Introduction to Artificial Intelligence with Python(edx), CS50's Introduction to Programming with Python(edx)

Chemistry: Thermodynamics(CHEM F211), Quantum Chemistry(CHEM F213), Computational Chemistry(CHEM F244), Bio and Chemical Sensors(CHEM F414)

Environment: Environment Development and Climate Change(GS F212)*, Environmental Studies(BITS F225)

* Ongoing Course(s)

Technical Proficiency

Languages: Python, Java, C

Software/Tools: PyTorch, TensorFlow, Keras, Anaconda, Git