Souvik Shee

Curriculum Vitae

souvikshee.ap@gmail.com
f20221552@goa.bits-pilani.ac.in
https://ssouvik03.github.io/homepage/
https://in.linkedin.com/in/ssouvik03
https://github.com/ssouvik03

Research/Experience

December 2024 – Present
Undergraduate Student 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.

June 2025 – August 2025
Summer 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
- Developed a pipeline 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.

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 Anomaly 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.

November 2025
SeTok: Semantic Tokenization,
Natural Language Processing, Deep Learning
- Developed a compact Vision-Language Model (VLM) that tokenizes images into discrete semantic tokens using a pre-trained visual tokenizer, enabling unified processing of interleaved text and image data.
- Fine-tuned a lightweight LLM for visually-grounded question answering by combining visual and textual tokens to generate answers from image–text pairs.

October 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: Stochastic Calculus and application to finance(MATH F244)*,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)

* Ongoing Course(s)

Technical Proficiency

Languages: Python, Java, C, SQL

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