Saumya Vilas Roy

+91 8826433226 — saumyaroy@tutanota.com — New Delhi, India
https://www.github.com/CaffineAddic

SUMMARY

- ML/DL enthusiast with 2.5 years of data analysis experience
- Skilled in ML, DL and biomedical data analysis with a strong ECE background
- Proven track record of developing innovative solutions in interdisciplinary projects
- Seeking ML research opportunities in health and biomedical applications

EDUCATION

- Bachelor of Technology in Electronics and Communication Engineering, Nov 2020 - May 2024
  Indian Institute of Space Science and Technology, Kerala CG-PA: 7.28/10
  - Developed a novel method for estimating non-uniform temperature profiles in combustion systems using Laser Absorption Spectroscopy (LAS) and Multi-Output Gaussian Process Regression with average RMSE of 19.9165.
  - Scholarship from Department of Space, Govt. of India.
- High School Diploma, XII (Central Board of Secondary Education), 2018 - 2020
  Ryan International School, New Delhi (2020) Percentage: 90.6 %
  - Won 1st position in Tinker Fest 2018 organized by Atal Tinkering Labs for the project "Algae Based Air Purifier and Quality Sensor" at Ryan International School.

EXPERIENCE

- Research Intern, June 2024 - Current
  Indian Institute of Technology, Delhi
  - Working under Dr. Ankur Miglani (Indian Institute of Technology, Indore) to develop deep learning based computer vision technique to categorize and identify the damage on a wheat grain kernel post harvest.
  - Working on AI-driven safety device to prevent accidents in construction environments.
- Summer Intern, May 2023 - August 2023
  National Remote Sensing Center, Indian Space Research Organization (ISRO)
  - Worked under Prof. Deepak Mishra (IIST) to segmented RAW complex valued PolSAR data using Complex U-Net models and analyzed the effect of different dropout rates on model overfitting.
- Undergraduate Researcher, Aug 2021 - May 2024
  Indian Institute of Space Science and Technology
  - Worked with Prof. Marcos M. Raimundo (University of Campinas, Brazil) and Prof. Deepak Mishra (IIST) to a research on Registration of Medical Images with Semi-Supervised Learning and Spatial Transformers using hybrid dataset comprising of real and synthetic datasets to reduce the data required and see the effects of transfer learning.
  - Created a Schlieren/RGB Flame Images Analyzing Tool based on Fast Fourier Transform (FFT) and Wavelet Transform to estimate the frequencies in an unstable combustion environment under Prof. Rajesh Sadanandan (IIST).

– Conducted Complex Network Analysis of the OPEC Crude Oil Trade Network with Prof. Manoj BS (IIST), quantifying the global crude oil markets and effects of world events, and there was a 5.25% loss in the trade network recovery post COVID.

SKILLS

- **Languages:** Python, C++, MATLAB, JavaScript, HTML/CSS, SQL
- **Developer Tools:** Git, GNU Octave, LaTeX, AWS
- **Libraries:** TensorFlow, PyTorch, Keras, OpenCV

AWARDS/RECOGNITIONS

- 3^{rd} position in student's flash talks at Frontiers symposium in Data science 2024, IISER Trivandrum
- Ranked among the top 2% of over 1 million candidates in the Joint Entrance Examination (JEE) Advanced

PUBLICATIONS

- **Saumya Vilas Roy***, & Manoj BS. (2024). A Complex Network Analysis of the OPEC Crude Oil Trade Network. DOI: 10.36227/techrxiv.171169316.66809297/v2
- **Saumya Vilas Roy***, Deepak Mishra & Rajesh Sadananan (2025). Combined FFT and Wavelet Analysis of Schlieren and Flame Luminosity Time-Series to Visualize Regions of Combustion Instability. (Accepted NAPC 2025)
- **Saumya Vilas Roy***, Deepak Mishra & Marcos M. Raimundo (2025). HybridMorph: Bridging the Gap between Synthetic and Real Data for Accurate MR Image Registration. (In review WACV 2025)
- **Saumya Vilas Roy***, Deepak Mishra, Satheesh K. & Rajesh Sadananan. Estimating Non-Uniform Temperature Profiles in Combustion Systems using Laser Absorption Spectroscopy and Multi-Output Gaussian Process Regression. (In preparation)
- **Saumya Vilas Roy***, Husain Kanchwala & Ankur Miglani. Deep CNN-based damage classification of milled what grains using a high-magnification image dataset. (In preparation)

PRESENTATIONS

- "Meta-Learning for Space Applications for Advancements in Space Technology", Hindi Technical Conference 2023, IIST organized by Indian Space Research Organization (ISRO).
- "Complex Valued U-Net for Segmentation of PolSAR Images", ISG-ISRS 2023.

REFERENCES

- Husain Kanchwala, Assistant Professor, Center for Automotive Research and Tribology, IIT Delhi, Email: husaink@iitd.ac.in
- Deepak Mishra, Professor, Department of Avionics, Indian Institute of Space Science and Technology, Email: deepak.mishra@iist.ac.in
- Marcos M. Raimundo, Assistant Professor, Institute of Computing, University of Campinas (UNICAMP), Email: mraimundo@ic.unicamp.br