AGNISH BHATTACHARYA

Website ◇ agnishbhattacharya@gmail.com
LinkedIn ◇ GitHub ◇ Google Scholar

EDUCATION

B.E. in Electrical Engineering, Jadavpur University *Jul 2020 - Jul 2024*
CGPA: 9.22/10

ICSE and ISC, Science, St. Xavier's Institution *Mar 2013 - Mar 2020*
Score - 98.2% (ICSE Aggregate) and 98.25% (ISC Aggregate)

TECHNICAL SKILLS

Languages	Python, C/C++, R, MATLAB, SQL, HTML/CSS
Tools/Frameworks	PyTorch, TensorFlow, OpenCV, Pandas, NumPy, Matplotlib, Linux, SAS, Excel

INDUSTRIAL EXPERIENCE

Sumitomo Mitsui Financial Group India Credit, Mumbai, India
Management Trainee, Corporate Strategy & Planning *Jun 2024 - Nov 2024*

- Collaborated across Risk, Product, and Tech teams to execute strategic initiatives like M&A, portfolio acquisition, capital infusion, new market-entry, etc. by preparing detailed valuation models, performing extensive market research and drafting board-level strategy presentations.
- Enhanced deal pipeline efficiency by building an automated financial tracker for 25+ targets, monitoring NPAs, market share shifts and profitability.

Management Trainee, Analytics & Information Management *Nov 2024 - Present*

- Involved in the preparation of scorecards, building logistic regression models for company portfolio analysis, and data extraction using SAS and SQL for investigation of trends.

RESEARCH EXPERIENCE

Indian Statistical Institute, Kolkata, India *Aug 2022 - Present*
Research Intern, ECS Unit — Advisor: Dr. Swagatam Das

- Learned about advanced **Data Augmentation** & **Imbalance-handling** methodologies.
- Developed **MixUp** methods & **Bias-Mitigation** techniques for improved classification of minority classes.

Indian Institute of Technology, Kanpur, India *May 2023 - Jul 2023*
Research Intern, Comp-Bio Research Group — Advisor: Dr. Hamim Zafar

- Developed an architecture for **graph representation learning** on multi-omics data.
- Analyzed complex biological data for tissue-wise cell clustering.

Leiden Medical University, Netherlands (LOR) *Aug 2022 - Jun 2023*
Research Intern, Division of Image Processing — Advisor: Dr. Marius Staring

- Worked on generative modeling of living cell shapes using Neural Implicit Functions.
- Learned about 3D-image reconstruction and **Generative Adversarial Networks**.

Jadavpur University, India *Feb 2022 - Sep 2022*
Research Assistant, CMATER Lab — Advisor: Dr. Ram Sarkar

- Developed meta-heuristic hybrid **feature-selection algorithms** for computationally effective classifications.
- Composed **semantic segmentation architectures** and performed **loss function engineering**.

RESEARCH PUBLICATIONS

- **Agnish Bhattacharya**, Biswajit Saha, Soham Chattopadhyay, Ram Sarkar, "Deep Feature Selection using Adaptive β-Hill Climbing aided Whale Optimization Algorithm for Lung and Colon Cancer Detection," (*Published in* ***Biomedical Signal Processing and Control, ELSEVIER***).
- Faizanuddin Ansari, **Agnish Bhattacharya**, Biswajit Saha, Swagatam Das, "**Mo2E: Mixture of Two Experts for Class-Imbalanced Learning from Medical Images**," (*Presented at* ***IEEE ISBI, 2024***).

ONGOING PROJECTS

- **Spatial Multi-omics integration using Graph Variational Auto-Encoders**(*Manuscript to be submitted to* ***Nature Communications***) (Project Link)
  - Developed a novel framework that leverages a 'Graph Attention Variational Auto-Encoder' and an 'Adaptive Spatial Attention' mechanism to seamlessly reduce the high-dimensional multi-omics data to a common low-dimensional latent space embedding.
  - The framework also incorporates an OpenAI's 'CLIP' inspired loss function to precisely represent the similarity between the data points in the embedding, for accurate final clustering of the cells in a tissue sample.
- **Leveraging Contextual Bias Information for Fair and Robust Classification**(*Manuscript submitted to* ***IEEE ICASSP, 2025***)
  - Developed a novel augmentation technique to overcome spurious correlations in datasets, enhancing the robustness & fairness of classification models.
  - The proposed method synthesizes new training examples by combining the background of majority class bias label images with the foreground of minority class bias label images within the same class.
- **PITSNet: A Poly-Attention Intel Transfer Segmentation Network for Skin Lesion Segmentation** (Project Link)
  - Developed a state-of-the-art segmentation architecture incorporating ConvNeXT layers as the encoder with a bottleneck decoder having a compression ratio of 0.25, followed by the addition of attention-based squeeze excitation modules for intelli transfer from the initial to the latter layers.
- **Automated E-commerce Product Listing Framework**
  - Developing a tool to automate product listing creation from social media content by processing audio and visual data; implemented OpenCV for frame extraction, Whisper for audio transcription, YOLO v8 for object detection, and Gemini for text refinement, followed by CLIP for image-description matching, producing high-quality listings optimized for e-commerce platforms.

OPEN-SOURCE PROJECTS

- Melanoma detection through Semantic Segmentation using U-Net (Project Link)
- Deep feature extraction from CNNs followed by optimization with GA(Project Link)
- SARS-CoV-2 detection using SVM, MLP and KNN models (Project Link)

RESEARCH INTERESTS

Broad Interests	Computer Vision, Natural Language Processing, Deep Learning
Specific Interests	Data Pre-processing Techniques, Generative Networks, Large Language Models

ACHIEVEMENTS/AWARDS

- **All India Rank 7** at the Secondary Examinations (ICSE) and **All India Rank 8** at the Higher-Secondary Examinations (ISC)
- WBJEE (2020) Rank: **701/1L (99.3 %ile)**
- **Swami Vivekananda Scholarship (SVMCM)** by Bikash Bhavan, Government of West Bengal
- **SURGE-2023 Research Fellowship** by Indian Institute of Technology, Kanpur (Certificate)