Agrya Halder

+91-8981141872 | agryahalder1998@gmail.com | agryahalder98.github.io

Work Experience

Indian Statistical Institute (ISI) Kolkata
Kolkata, India

Project Linked Personnel (PLP) *Mar 2024 - present*

[advised by **Prof. Sanghamitra Bandyopadhyay and Dr. Abhik Ghosh**]

- Recovery of cell locations in spatial single cell RNA sequences.

Indian Institute of Technology(BHU)
Varanasi, India

Senior Research Fellow (SRF) *Sep 2023 - Jan 2024*

- Leading a team of 2 postgraduate students in order to solve MOT challenge and planning challenges like Multi-person Tracking (accepted @ Multimedia Tools and Appl.), occlusion reconstruction (accepted @TNNLS IEEE), and Suspicious Activity Recognition.
- Extended the Gait de-identification with the inclusion of pose substitution network in order to achieve 30% (SIVP 2022) less recognition accuracy.

Indian Institute of Technology(BHU)
Varanasi, India

Junior Research Fellow (JRF) *Sep 2021 - Aug 2023*

- Collaborated with Prof. Shatish Kumar (Washkewicz College of Engineering, Ohio, USA) to develop a a gait de-identification model.
- Significantly boosted the de-identification score in terms of reducing the recognition accuracy of de-identified frames.

Sciffer Analytics Pvt. Ltd.
Pune, India

Data Science - Intern *Nov 2020 - Feb 2021*

- Collaborated with a five-person team to develop a CNN model that utilised FRCNN as a foundation to improve the accuracy of real life data classification.
- Collaborated with data collection team in order to collect a significant amount of dataset for image detection purpose.
- Involved in a team to optimize operational research problems.

Education

Banaras Hindu University
August 2018 - July 2020

MSc in Computer Science *8.09/10.0*

- **Graduated with First Class** (top 2% on overall achievements out of the class)
- Thesis: Multimodel Sentiment Analysis using Multi-head Cross-modal Attention

University of Calcutta
July 2015 - June 2018

BSc(H) in Computer Science *First Class*

- Passed with First Class
- Specialised in Physics and Maths with Computer Science as major

Past Projects

Multimodal Sentiment Analysis using Multi-head Cross-modal Attention
Varanasi, India

Master Thesis - Major *2019 - 2020*

- Analysing Multimodal data (combination of Video, Audio, and Texts) from CMU-MOSEI dataset and discover patterns in the data that show trends between positive and negative sentiments.
- Re-design the network with the help of self-attention layers of transformer blocks to outperform the state-of-the-art accuracy score in terms of classification.
- Our model claimed to increase the accuracy by 2% in aggregated feature representation.

Twitter Texts sentiment analysis using Deep Learning
Varanasi, India

Master Thesis - Minor *2018 - 2019*

- Analysing data from twitter through api access and discover patterns in the data that show trends between positive and negative sentiments.
- Study Recurrent Neural architecture, LSTM, and GRU variations to find textual sentiment trends in the trend of our data.
- Specific case studies were traced back to validate State-of-the-art scores.

Skills

Programming	Python (Pandas, NumPy, Scikit-learn. etc.), C/C++, HTML/CSS, MatLab, SQL.
Framework	PyTorch, TensorFlow, OpenMP
Miscellaneous and Tools	Linux, Shell (Bash/Zsh), LaTeX(Overleaf), Microsoft Office, Git, draw.io, GIMP

Achievements

2023	**Best Student Paper**, Presented and awarded as Best Paper on CVIP'2023 at IIT Jammu.	*India*
2023	**DST**, Awarded a travel grant to present paper at CVIP'2023	*India*
2022	**SERB DST**, Awarded a travel grant to attend ICVGIP'2022	*India*
2021	**JRF**, joined as junior researcher at IIT(BHU)	*India*
2020	**GATE**, Qualified	*India*
2019	**Silver**, Applied Natural Language Processing NPTEL Exam	*India*

Peer-reviewed Publications and Patents

Journal Articles

GSSTU: Generative Spatial Self-Attention Transformer Unit for Enhanced Video Prediction [Paper]
Binit Singh, Divij Singh, Rohan Kaushal, **Agrya Halder***,Pratik Chattopadhyay
IEEE Transactions on Neural Networks and Learning Systems 2023

A Systematic Survey on Recent Deep Learning based Approaches to Multi-Object Tracking [Paper]
Harshit Agarwal,**Agrya Halder***, Pratik Chattopadhyay
Multimedia Tools and Applications 2023

STAFU: Spatio-Temporal Attentive Fusion Unit for Future Frame Prediction in Video Sequences [First revision]
Binit Singh, **Agrya Halder***, Pratik Chattopadhyay
Expert Systems With Applications 2023

BGaitR-Net: An Effective Neural Model for Occlusion Reconstruction in Gait Sequences by Exploiting the Key Pose Information [Paper]
S.S. Kumar, Binit Singh, Pratik Chattopadhyay, **Agrya Halder***, Lipo Wang
Expert Systems With Applications 2023

GTNet: Gait Transformation Network for Gait De-identification with Pose Preservation[Paper]
Agrya Halder*, Pratik Chattopadhyay, Sathish Kumar
Signal, Image and Video Processing (SIVP) 2022

Conference Papers

MotionFormer: An Improved Transformer-Based Architecture for Multi-Object Tracking [**Best Student Paper**]
Harshit Agarwal, **Agrya Halder***, Pratik Chattopadhyay
The 8th International Conference on Computer Vision & Image Processing (CVIP-2023)

Interests

Cooking	I love cooking. I am an expert in most Indian-style cooking, enjoy baking and making my meal.
Linux	Since 2017, I have been in love with Linux. I recently switched to Mac OS, which feels like a premium of Linux.
Technical Writing	I write descriptive blogs about Deep Learning. some of them are on my Medium.

References available upon request.