

Arkadip Maitra

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Education

Ramakrishna Mission Vivekananda Educational and Research Institute Belur, India July 2018 – June 2021

- M.Sc. in Computer Science
- GPA: 8.70/10

Ramakrishna Mission Vivekananda Centenary College Rahara, India Aug 2021 – June 2023

- B.Sc. in Computer Science
- GPA: 9.04/10

WORK EXPERIENCE

Associate Data Scientist, PrediQt – Kolkata, India July 2023 – Present

- Fine-tuning large language models for particular tasks that enables better commerce. Tasks like categorization, description generation from product title and images, filtering input query, relevant product identification based on retrieved context. The fine-tuning was done based on cached previous user interaction data and publicly available datasets.
- A complete shopping assistant solution that can be integrated to organization. This solution can answer questions from any document or recommend products and answer questions about those products. This solution can any number of question on the specifics of any product or normal informative question about the company. It is a RAG based solution using Fastapi. The solution is robust and modularized for quick deployment to any potential client. [DEMO]
- A virtual real-estate agent that answer user's query and recommends them properties across united states from our catalogue of 1.4M properties. It is a specific location solution that pinpoints properties according to user query location. The query classification, location specific filtering and property retrieval is done in under 4 seconds after which final answer streaming starts. User's natural language is used to extract location and property variants to answer question seamlessly. [RealEstate]
- A virtual shopping asistant that answer user's query and recommends them products from our product database. It is a RAG based solution. The query classification, product retrieval is done under 3 seconds after answer streaming starts. [DEMO]
- Created a imperceptible document watermarking solution. A document specific fine tune of Stegastamp was used. Achieved a watermark decryption accuracy of 87% on well lit watermarked RGB documents when tested with 30 samples. This solution was delivered to client for testing.

Data Analyst, Intern, PrediQt – Kolkata, India Feb 2023 – June 2023

- Predicting Jira support ticket volume raised on any particular date. A Time-series Forecasting problem. Various models like Prophet, Neural Prophet, LSTM and Transformer were tested. A transformer variant achieved lowest MSE of **0.27**. This solution is used internally for addressing staffing requirements based on predicted ticket volume.

Android Developer Intern, Kyrion Technologies – Kolkata, India June 2019 – July 2019

- Developed an android application that tracks student attendance based on login through our web portal. Google Maps API was used to verify student location at the workshop centre. Each student's progress and specific certification program attendance was tracked.

RESEARCH EXPERIENCE

Associate Researcher, Department of Computer science, RKMVERI – Belur, India July 2022 – Dec 2023

- Supervisor: Prof. Soumitra Samanta
- A robust text to sign language generation system.
- A robust Sign Language recognition system. Our proposed Hierarchical Windowed Graph Attention Network

outperforms all other existing comparable models across various datasets. [DEMO]

Research Intern, CVPR Unit, ISI – Kolkata, India

July 2022 – Dec 2023

- Supervisor: Prof. Umapada Pal and Prof. Saumik Bhattacharya
- A decorrelation-based paradigm of self-supervised learning and apply the same to learning disentangled stroke features for writer identification.
- Achieved results on par with various supervised models and better results compared to existing self supervised loss functions.

Bachelors Thesis, RKMVCC – Rahara, India

Jan 2021 – May 2021

- Supervisor: Anirban Mukhopadhyay
- A better ensemble clustering technique.
- This algorithm works when the original data is available and when just the cluster labels are available.
- The proposed algorithm is on par or outperforms CSPA, HGPA, MCLA, HBGF, NMF across five different datasets measured on four different cluster validity indices.

Student Researcher, University of Calcutta – Kolkata, India

Oct 2020 – Oct 2021

- Supervisor: Amlan Chakrabarti
- Earthquake Early Warning (EEW) system using various classical machine learning models.
- This solution works by monitoring continuous seismic data to extract parameters τ_c and Pd from fast arriving P-wave. Alarm is raised when the predicted magnitude is above 5.5. This fast, lightweight solution is ideal for robust deployment in the Himalayan region. (ICDMAI '22)

SELECTED PUBLICATIONS

Suvajit Patra, **Arkadip Maitra**, Megha Tiwari, K. Kumaran, Swathy Prabhu, Swami Punyeshwarananda, Soumitra Samanta "Hierarchical Windowed Graph Attention Network and a Large Scale Dataset for Isolated Indian Sign Language Recognition", (*Under Review*) [paper]

Arkadip Maitra, Shree Mitra, Siladitya Manna, Saumik Bhattacharya, Umapada Pal "Decorrelation-based Self-Supervised Visual Representation Learning for Writer Identification", Transactions on Asian and Low-Resource Language Information Processing (*Under Review*)

Samik Basu, Sayan Tripathi, Soumen Halder, **Arkadip Maitra**, Pritha Banerjee, Amlan Chakrabarti "Enhancing Earthquake Preparedness in the Himalayan Region: A Machine Learning Approach using EEW System Parameters", Iranian Journal of Science and Technology, Transactions of Electrical Engineering (*Under Review*)

Samik Basu, **Arkadip Maitra**, Soumen Halder, Soumya Pandit, Soma Barman, Pritha Banerjee, Amlan Chakrabarti "Machine Learning Based Earthquake Early Warning (EEW) System: A Case Study of Himalayan Region", International Conference on Data Management, Analytics & Innovation 2022 [paper]

Anubrata Das, Soumen Halder, **Arkadip Maitra**, Shree Mitra and Raj Sen "A Method for Artifacts Removed from MRI of Brain", European Journal of Pharmaceutical and Medical Research [paper]

MISCELLANEOUS

Teaching Assistant for the **Deep Learning, Natural Language Processing** course for the fall semester 2024 at Department of Computer Science, RKMVERI, Belur India.

Student Ambassador at **Hugging Face** from Sep 2022 to March 2023. Helped people who were part of Hugging Face discord server with issues with Hugging Face libraries.

CERTIFICATES

Generative Adversarial Networks (GANS) Specialization, Coursera. [Certificate]

Deep Learning Specialization, Coursera. [Certificate]

Machine Learning, Coursera. [Certificate]

Introduction to Programming in Java, Microsoft. [Certificate]