Arkaprava Sinha | Graduate Research Assistant

University of North Carolina, Charlotte

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Education

Program	Institution	Year
PhD. Computer Science (Computer Vision)	University of North Carolina, Charlotte *North Carolina, USA*	2023-2028
M.Sc. Data Science	Chennai Mathematical Institute *Chennai, India*	2018-2020
B.Sc. (Hons.) Statistics	Calcutta University *Kolkata, India*	2015-2018
Senior School (AISSCE)	Delhi Public School, Ruby Park *Kolkata, India*	2013-2015

Experience

University of North Carolina, Charlotte　　　　　　　　　　**Aug 2023 - May 2028**
Graduate Research Assistant

○ Video Understanding in Long Untrimmed Videos for Actions of Daily Living

○ Multimodal Learning for Action Recognition in Videos

Accenture AI　　　　　　　　　　**Nov 2021 - Feb 2023**
Data Scientist

○ Generating Insights from thousands of Earning Transcripts of companies using Natural Language Processing

○ Contribution to a Library of Algorithms for Accenture AI

Larsen and Toubro Infotech　　　　　　　　　　**July 2020 - Nov 2021**
Data Scientist

○ Building Industry solutions using Image Processing and Computer Vision

○ Reviewing Machine Learning and Deep Learning Products

Teradata India Pvt. Ltd.　　　　　　　　　　**May 2019 - July 2019**
Data Science Intern

○ Implementation of Topic Modeling Frameworks for Teradata MLE

○ Research on new approaches for Clickstream Analysis

Tata Steel India Ltd.　　　　　　　　　　**June 2018 - July 2018**
Intern

○ Worked on the application of Data Analytics in HR

○ Built a model to predict employee attrition based on Qualification, Experience, Age and Level of employees

Publications

1. **Arkaprava Sinha**, Dominick Reilly, Pu Wang, Francois Bremond, and Srijan Das, *"SKI Models: Skeleton Induced Vision-Language Embeddings for Understanding Activities of Daily Living"*, accepted at The 39th Annual AAAI Conference on Artificial Intelligence (AAAI 2025).

2. **Arkaprava Sinha**, Monish Soundar Raj, Ahmed Helmy, Pu Wang, and Srijan Das, *"MS-Temba: Multi-Scale Temporal Mamba for Efficient Temporal Action Detection"*, under review.

3. Dominick Reilly, Rajatsubhra Chakraborty, **Arkaprava Sinha**, Manish Kumar Govind, Pu Wang, Francois Bremond, and Srijan Das, *"LLAVIDAL: A Large Language Vision Model for Daily Activities of Living"*, under review.

4. Rajatsubhra Chakraborty*, **Arkaprava Sinha***, Dominick Reilly*, Manish Kumar Govind, Pu Wang, Francois Bremond, and Srijan Das, *"LLAVIDAL: Benchmarking Large Language Vision Models for Daily Activities of Living"*, accepted at 2 NeurIPS Workshops 2024.

5. Mahmoud Ali, Di Yang, **Arkaprava Sinha**, Dominick Reilly, Srijan Das, Gianpiero Francesca, and Francois Bremond, *"Quo Vadis, Video Understanding with Vision-Language Foundation Models?"*, accepted at NeurIPS Workshop 2024.

Key Projects

1. *SinGAN: Image Generation from a Single Image*   **July 2021 - September 2021**
(Guide: Dr Deepak Gupta (University of Amsterdam))   *Personal Project*

- Worked on Single Shot Image Generation
- Explored capabilities of Vision Transformers to replace the Convolution Operations to utilise Global Information for feature generation
- *Keywords: Computer Vision, Transformers, GAN*

2. *Intrusion Detection on an Edge Device*   **December 2020 - March 2021**
(Data Scientist)   *Larsen and Toubro Infotech*

- Built an end-to-end Computer Vision product from data capture to deployment on an Edge Device.
- The project analysed videos real-time to alert users when a human appeared in a restricted area even in low light conditions.
- *Keywords: Computer Vision, Object Detection, IoT Edge Device*

3. *Smart Traffic System*   **December 2020 - March 2021**
(Data Scientist)   *Larsen and Toubro Infotech*

- Built an end-to-end Computer Vision solution.
- The project analysed videos real-time to alert users when a human appeared in a restricted area even in low light conditions.
- *Keywords: Computer Vision, Object Detection, IoT Edge Device*

4. *Estimating Option Prices using Deep Neural Networks*   **January 2020 - March 2020**
(M.Sc. / Guide: Prof. Anindya Goswami (IISER, Pune))   *Chennai Mathematical Institute*

- Literature Review on Option Pricing using Deep Learning techniques
- Performed Experiments on the State-of-the-art
- My contributions were a valuable part of a long term project which eventually led to a paper ('DATA-DRIVEN OPTION PRICING USING SINGLE AND MULTI-ASSET SUPERVISED LEARNING', International Journal of Financial Engineering), where my efforts have been acknowledged.
- *Keywords: Option Pricing Theory, Deep Learning*

Course Projects

1. *Neural Style Transfer*   **August 2020**
(M.Sc. / Guide: Prof. Rukmini Vijaykumar)   *Chennai Mathematical Institute*

- Used Pre-trained VGG19 model to transfer the 'Style' of one image to the 'content' of another.

2. *Sentiment Analysis on Product Reviews Using RNNs*   **April 2020**
(M.Sc. / Faculty: Prof. Ramaseshan Ramachandran)   *Chennai Mathematical Institute*

- Built an RNN from Scratch for analysing the polarity of a multi-sentence review

3. *High Frequency Time Series Analysis*   **November 2019**
(M.Sc. / Faculty: Prof. Sourish Das)   *Chennai Mathematical Institute*

- Worked on Hourly Energy Consumption Data. Predicted future Energy Consumption for identifying possible surges.

Course Work

Data Science Courses   **August 2018 - April 2020**
(Core and electives)   *Chennai Mathematical Institute*

- Computer Vision
- Deep Learning
- Probability and Statistics with R
- Reinforcement Learning
- Natural Language Processing
- Machine Learning
- Discrete Mathematics
- Regression and Classification

Statistics Courses **July 2015 -April 2018**

(Core and electives) *Calcutta University*

- Statistical Inference
- ANOVA and ANCOVA
- Time Series Analysis
- Statistical Quality Control

- Testing of Hypothesis
- Linear Algebra
- Multivariate Analysis
- Economics

Technical Skills

- Programming Languages: Python, R, C++
- Packages: PyTorch, Tensorflow, OpenCV, ScikitLearn
- Softwares: Minitab, SPSS