The Centre for Excellence in Artificial Intelligence (CoEAI)
Indian Institute of Technology Kharagpur
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Omprakash Chakraborty PhD Scholar

Research Interests:

Computer Vision (Action Recognition, Vision and Language based multi-modal Learning, Object detection in videos and Semantic segmentation)
Deep Learning (Efficient learning, Learning with limited labels and Limited compute resources)

Education:

PhD, Centre for Excellence in Artificial Intelligence *(2019-Present)* Indian Institute of Technology Kharagpur Topic: Semi and Un-Supervised Representation Learning for Efficient Video Understanding Guide: Prof. *Abir Das*, Department of Computer Science and Engg., IIT Kharagpur	**ongoing**
MS, Computer Science and Engineering *(2015-2018)* Indian Institute of Technology Kharagpur Topic: Multi-Criteria based Network Analysis for Disaster Mangement Guide: Prof. *Soumya K. Ghosh*, Department of Computer Science and Engg., IIT Kharagpur Prof. *Pabitra Mitra*, Department of Computer Science and Engg., IIT Kharagpur	**9.44/10**
B.Tech in Information Technology(IT) *(2011-2015)* Haldia Institute of Technology, Haldia, West Bengal University of Technology	**8.67/10**
Higher Secondary Examination *(2009-2011)* Kendriya Vidyalaya, Haldia, West Bengal CBSE-AISSCE	**89.4 %**
Secondary Examination *(2008-2009)* The Assembly Of God Church School, Haldia, West Bengal ICSE	**93 % (best of 5)**

Selected Publications:

(a) **XPL: A Cross-Model framework for Semi-Supervised Prompt Learning in Vision-Language Models**,
O Chakraborty, Aadarsh Sahoo, Rameswar Panda, Abir Das
(Under Review), 2024.

(b) **AnyDA: Anytime Domain Adaptation**,
O Chakraborty, Aadarsh Sahoo, Rameswar Panda, Abir Das
International Conference on Learning Representations (ICLR), 2023.

(c) **Semi-Supervised Action Recognition with Temporal Contrastive Learning**,
O Chakraborty, Ankit Singh, Ashutosh Varshney, Rameswar Panda, Rogerio Feris, Kate Saenko, Abir Das
Computer Vision and Pattern Recognition (CVPR), 2021

(d) **Multi-facilities based Road Network Analysis for Flood Hazard Management**,
O Chakraborty, P Mitra, S K. Ghosh
Journal of Spatial Science, 2019

(e) **Multi-objective based road-link grading for health-care access during flood hazard management** ,
O Chakraborty, Yeshwanth V, P Mitra, S K. Ghosh
International Conference on Computational Science and Its Applications(ICCSA), 2018

(f) **A Multi-objective Framework for Assessment of Road Network Vulnerability and Facility Location for Flood Hazard**,
O Chakraborty, A Das, A Dasgupta, P Mitra, S K. Ghosh, T N. Mazumdar
Transactions in GIS, 2017

(g) **A Geospatial Service Oriented Framework for Disaster Risk Zone Identification**,
O Chakraborty, J Das, A Dasgupta, P Mitra, S K. Ghosh
International Conference on Computational Science and Its Applications(ICCSA), 2016

Selected Past Projects:

(a) **Efficient Adaptation of VLMs in a dynamic setting** *(June'18 - Jun'19)*
Research Internship Project under the guidance of **Prof. Bernard Ghanem**, (**KAUST**)

- Applying parameter-efficient transfer learning methods on an otherwise frozen VLM to finetune for downstream tasks in a dynamic setting.
- Vary the depth and breadth of VLMs by scaling the number of layers and attention heads while recompensating the losses using efficient tuning strategies.

(b) **Integrated Information System and Knowledge Discovery Platform for ONGC (IIS)** *(June'18 - Jun'19)*
Project under **J. C. Bose Fellowship** Scheme, under the guidance of Prof. P. P. Chakrabarti, Prof. Jiaul H. Paik and Prof. Sudeshna Sarkar, IIT KGP

- Machine learning paradigms to aid various inference modules and evaluation policies for diverse seismic and oil extraction processes.
- Self-Learning aids Knowledge Graph and Workflow development towards efficient distributed data management

(c) **Multi-criteria based network analysis for disaster management** *(June'15 - Jun'18)*
MS research work, under the guidance of Prof. Soumya K. Ghosh and Prof. Pabitra Mitra, IIT KGP and Prof. T. N. Mazumdar, in collaboration with Dept. of Architecture IIT KGP

- Analysis of spatial vulnerability of facility access links along with citizen mobility
- Suitable facility-location prediction for efficient service provisioning during flood hazards

Experience:

Aug'23 - Dec-'23	**Research Intern** at King Abdullah University of Science and Technology (**KAUST**) under **Prof. Bernard Ghanem**
Dec'19 - present	**Teaching Assistant** for Deep Learning(DL) with 70+ students for every semester in which the course was offered
Jun'16 - present	**Teaching Assistant** for Programming and Data Structure(PDS), with 90+ students for every semester in which the course was offered
Jun'18 - June'19	**Junior Research Fellow** at Department of Computer Science and Engg., IIT Kharagpur.
Jun'15 - June'18	**Junior Research Fellow** at Department of Computer Science and Engg., IIT Kharagpur.
Dec'16 - Jun'17	**Teaching Assistant** for Relational Database Management Systems(RDBMS) with 90+ students

Awards and Achievements:

(a) Recipient of the prestigious **Google PhD Fellowship**

(b) Joint Runner's Up for **ACM Kolkata Chapter Best BTech (CS/IT) Dissertation Award**

(c) **Topper of I.T. Department**, from 6^{th} semester onwards (W.B.U.T.).

Workshops Organized:

– The *Dynamic Neural Networks Meets Computer Vision* Workshop, CVPR **(2021**, **2022)**.

– Conducted yearly workshops on Geospatial Data Modeling, Registry Services and Mobile Apps for GI Application for Government Officials from sixteen National Agencies - Worked with a team of 6, and headed the GIS based Registry Service Development Session (July 2016). Organized an earlier phase of the same workshop in March 2016

Professional Services:

– Reviewer for IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Association for the Advancement of Artificial Intelligence (AAAI), Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP)

Extra Curricular Activities:

– Won many medals in various sports events which include basketball and athletics.
– Active part in Anti-Ragging Committee.
– Interested in singing and other music related activities.