Shuvozit Ghose

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Summary

An Artificial Intelligence (AI) or Machine Learning(ML) engineer/researcher with 5+ years of hands-on experience in machine learning research and development with publications at top conferences (like CVPR, ICCV, ICPR, ICASSP). My expertise encompasses a profound understanding of key machine learning or deep learning concepts, coupled with a comprehensive grasp of data preprocessing, model training, and effective deployment strategies. My practical work has spanned diverse machine-learning techniques, including prompt learning, Large language models (LLMs), graph neural networks, Transformers, graphical models, dimension reduction, clustering, classification, regression techniques, etc.

Education

M.Sc. — Computer Science *Sept 2021 – Oct 2023*
Computer Vision Lab University of Manitoba, Canada
DGPA: 4.20/4.50.
Research Field: Computer Vision, NLP, Foundation Model, LLM and Deep Learning
Thesis: CLIP for Point Cloud Understanding
Advisors: Prof. Yang Wang and Prof. Yiming Qian
Examiners: Prof. Lorenzo Livi and Prof Carson Kai-Sang Leung
Status: Completed M.Sc. in October 2023.
Google Scholar Citations: 175 (h-index: 7) *Google Scholar*

Bachelor of Technology — Computer Science and Engineering *Aug 2016 – Aug 2020*
DGPA: 8.87/10. Maulana Abul Kalam Azad Univ. of Tech.(IEM), India

Technical Skills

Programming Languages: C, C++, Java, SQL, Python (5 Years+). *Source Control:* Git, GitHub

Deep Learning Frameworks: Tensorflow, PyTorch (5 Years+). *DevOps:* CI/CD, Kubernetes

Big Data Platform: Hadoop, Map-Reduce, Hive, Hbase, Pig, Scoop.. *Cloud Frameworks:* Azure (1 Year).

Professional Experience

Graduate Research Assistant | ***University of Manitoba*** *Sept 2021 – Oct 2023* | *Canada*

- Developed 3D Generative AI-based point cloud recognition model utilizing Large language models (LLMs) and image-based geometric deep learning models using Python and Pytorch.
- Developed point cloud classification model performing 3D shape analysis, topology analysis, view geometry analysis, functional mapping, and geometric deep learning.
- Developed Multi-modal deep learning for point cloud classification by connecting Large language models (LLMs) with image models.
- Computed inference using PyTorch on both CPU and GPU running CUDA 11.2 (@Acc $>$ 90%).

Graduate Teaching Assistant | ***University of Manitoba*** *Sept 2021 – Oct 2023* | *Canada*

- Collaborated with the instructor and led the lab for undergraduate students for course Comp 2140 (data structure and algorithm using Java).
- Collaborated with the instructor and Graded courses COMP 4360 (machine learning using Python), COMP 2150 (object orientation using Java, C++, and Javascript), COMP 3350 (Software Engineering using Java and Android Studio), and COMP 3490 (Computer Graphics I using processing).

Research Intern | ***University of Surrey*** *June 2020 – Mar 2021* | *UK*

- Developed deep learning model for 2D image and text recognition exploiting neural network architectures, regularization techniques, learning techniques, loss functions, optimization strategies, etc using Python and PyTorch.
- Developed transformer-based 2D text image recognition model for handwriting and scene text recognition using TensorFlow.

Achievements

1. Awarded **University of Manitoba Graduate Fellowship (UMGF)** at the University of Manitoba 2022-2023.
2. Awarded **International Graduate Student Entrance Scholarship (IGSES)** at the University of Manitoba 2021.
3. Got NPTEL Elite Certification in Deep Learning for Visual Computing, 2018.

Research Background

(i) Large Language Model (LLM)
(ii) Graph Neural Network (GNN)
(iii) Generative AI
(iv) Self-supervised Learning
(v) Transfomers
(vi) Reinforcement Learning
(vii) Prompt Learning & Foundation Model
(viii) Large vision Language model (LVLM)
(ix) Semi-supervised Learning
(vii) Diffusion models
(viii) Convoltuion Neural Network (CNN)
(ix) Meta-Learning

Publications

C7 **Meta Episodic learning with Dynamic Task Sampling for CLIP-based Point Cloud Classification** *April 2024*
Shuvozit Ghose, Yang Wang
Conference on Robots and Vision ***(CRV)(Oral)*** PDF

C6 **Joint Visual Semantic Reasoning: Multi-Stage Decoder for Text Recognition** *Oct 2021*
Ayan Kumar Bhunia, Aneeshan Sain, Amandeep Kumar, **Shuvozit Ghose**, Pinaki Nath Chowdhury, Yi-Zhe Song
IEEE Conference on International Conference on Computer Vision ***(ICCV)*** PDF

C5 **MetaHTR: Towards Writer-Adaptive Handwritten Text Recognition** *June 2021*
Ayan Kumar Bhunia, **Shuvozit Ghose**, Amandeep Kumar, Pinaki Nath Chowdhury, Aneeshan Sain, Yi-Zhe Song
IEEE Conference on Computer Vision and Pattern Recognition ***(CVPR)*** PDF

C4 **Modeling Extent-of-Texture Information for Ground Terrain Recognition** *Sept 2020*
Shuvozit Ghose, Pinaki Nath Chowdhury, Partha Pratim Roy, Umapada Pal
IEEE International Conference on Pattern Recognition ***(ICPR)*** PDF

C3 **UDBNET: Unsupervised Document Binarization Network via Adversarial Game** *Sept 2020*
Amandeep Kumar*, **Shuvozit Ghose***, Pinaki Nath Chowdhury, Partha Pratim Roy, Umapada Pal (* equal Contributions)
IEEE International Conference on Pattern Recognition ***(ICPR)*** PDF

C2 **Fractional Local Neighborhood Intensity Pattern for Image Retrieval using Genetic Algorithm** *Sept 2020*
Shuvozit Ghose, Abhirup Das, Ayan Kumar Bhunia, Partha Pratim Roy
Multimedia Tools and Applications PDF

C1 **A Deep One-Shot Network for Query-based Logo Retrieval** *July 2019*
Ayan Kumar Bhunia, Ankan Kumar Bhunia, **Shuvozit Ghose**, Abhirup Das, Partha Pratim Roy, Umapada Pal)
Pattern Recognition PDF

C0 **User Constrained Thumbnail Generation Using Adaptive Convolutions** *May 2019*
Perla Sai Raj Kishore, Ayan Kumar Bhunia, **Shuvozit Ghose**, Partha Pratim Roy
International Conference on Acoustics, Speech, and Signal Processing ***(ICASSP)*** PDF

References

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