# Shuvozit Ghose

+1-431-554-2105 shuvozit.ghose@gmail.com /shuvozitghose.github.io/ Canada
/shuvozitghose/ /ShuvozitGhose

## Summary

An Artificial intelligence (AI) or Machine Learning(ML) engineer / Data Scientist 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*
University of Manitoba, Canada

**Computer Vision Lab**
DGPA: 4.20/4.50.
*Research Field*: Computer Vision, 3D Understanding 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: 171** (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

## 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.

## Certification

**Big Data Hadoop by Omega Technologies**

- Extracted raw e-commerce data from GitHub and stored it in Hadoop HDFS storage.

- Applied MapReduce for Parallel distributed processing of e-commerce data.
- Utilized Hive for querying and analyzing structured commerce data stored in HDFS.
- Utilized Pig for data processing tasks such as data cleaning, transformation, aggregation, and insights.

## Technical Skills

*Python* | *Pytorch* | *OpenAI* | *Large language models(LLMs)* | *Natural Language Processing(NLP)* | *Azure* | *Reinforcement Learning(RL)* | *Computational geometry* | *Computer Vision(CV)* | *GenerativeAI* | *Git* | *AWS* | *Microsoft Power BI* | *Financial Data* | *Docker* | *Kubernetes* | *Software Development Life Cycle* | *CI/CD* | *Tensorflow* | *OpenCV* | *SQL* | *Numpy* | *Panda* | *Java* | *C++* | *C*

## Research Background

(i) Point Cloud Understanding
(ii) Generative Adversarial Network
(iii) Meta-Learning
(iv) Self-supervised Learning
(v) Few-Shot Learning
(vi) Reinforcement Learning
(vii) Prompt Learning & Foundation Model
(viii) Object Detection
(ix) Semi-supervised Learning
(vii) Incremental Learning
(viii) Image Saliency
(ix) Incremental Learning

## Notable Projects

**2021 Tokyo Olympic data analytics in Microsoft Azure**

- Extracted raw Tokyo Olympic data from GitHub using Azure Data Factory.
- Transformed raw data using Apache Pysparck in Azure Databricks and stored in Azure Data Lake Gen 2.
- Loaded transformed data in Azure Synapse Analytics and Visualized the results using Microsoft Power BI.

**Design Personal Website using HTML, CSS, Javascript and AJAX** (Demo)

- Designed Personal Website using HTML, CSS, Javascript, and AJAX
- Designed navigation header for the website and hosted on GitHub.
- Integrated Google Analytics for traffic analytics and management.

## 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
*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

**User Constrained Thumbnail Generation Using Adaptive Convolutions** *May 2019*

C0 Perla Sai Raj Kishore, Ayan Kumar Bhunia, **Shuvozit Ghose**, Partha Pratim Roy

*International Conference on Acoustics, Speech, and Signal Processing* ***(ICASSP)*** *PDF*

## References


**Dr. Yang Wang** *Phone: +1-514-848-2424 ext 8596*

Associate Professor Email: yang.wang@concordia.ca

Department of Computer Science and Software Engineering

Concordia University, Canada

**Dr. Ruppa Thulasiram** *Phone: +1-204-474-6538*

Professor Email: tulsi.thulasiram@umanitoba.ca

Department of Computer Science

University of Manitoba, Canada