An Cao

Toronto, Ontario, Canada

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EDUCATION

University of Toronto (UofT) **Sep 2024 – Dec 2025**
Master of Science in Applied Computing (AI concentration) *Toronto, Canada*

- *Vector Scholarship in Artificial Intelligence in 2024-2025*

Huazhong University of Science and Technology (HUST) **Sep 2020 – Jun 2024**
Bachelor of Engineering in Software Engineering - GPA: 3.96/4.0 *Wuhan, China*

- *Excellent Undergraduate Graduates in 2024*
- *Outstanding Undergraduates in Term of Academic Performance in 2021*
- *Merit Student in 2022-2023, 2021-2022 and 2020-2021*
- *Scholarship for Academic Excellence in 2020-2021*
- *Provincial University Student Entrepreneurship Project in 2022-2023*

TECHNICAL SKILLS

- **Functional**: *Machine Learning, Deep Learning, Computer Vision, Vector Database, NLP, LLM*
- **Tools**: *Python, Pytorch, MangoDB, PostgreSQL, Pinecone, Langchain, CogCache, Flask, Azure*

INTERNSHIP

Vector Institute **Sep 2024 – Present**
Role: *Machine Learning Associate* *Toronto, Canada*

Project: DiligenceGPT

Keypoints:

- Developed a Data Retrieval module to extract information from structured and unstructured data in different formats
- Prototyped an AI-driven agent to output insights into the value of startups and draft due diligence reports
- Engineered an interactive system to provide clarification, guide modifications to the draft report and collect feedback
- Created a Feedback-Adaptive mechanism to adjust model behavior dynamically according to users' responses

Project: Conversational Audience Builder for Synthetic Society

Keypoints:

- Designed the project framework, including Attributed Recommendation and Conversational Search Guidance
- Implemented Vector Search, Query Decomposition and Dynamic Sub-query to improve the recall to 89%
- Designed Indexing Reranking and Validation module to reduce the token cost and stabilize the output of LLMs
- Prototyped a streaming events backend for the project to present model outputs to users

RESEARCH

Deep Learning Lab **Sep 2021 – Aug 2024**
Role: *Student Deep Learning Researcher* *Wuhan, China*

Fields: Deep Learning, Machine Learning, Computer Vision, Multimodality, Diffusion, Transformer

Experience:

- Launched and led a 4-member team in the lab to research on Computer Vision.
- Finished two Computer Vision projects as the core researcher of model implementation and algorithm design.
- Authored a conference paper and a SCI Q1 Journal paper for the projects as the first author.
- Supported senior lab members' on model implementation and algorithm refinement in their projects

PUBLICATIONS

Diff-STAR (Accepted by IMAVIS, SCI Q1) **Sep 2023 – Aug 2024**

A. Cao and G. Shen, "Diff-STAR: Exploring student-teacher adaptive reconstruction through diffusion-based generation for image harmonization," Image Vis. Comput., vol. 151, p. 105254, Nov. 2024, doi: 10.1016/j.imavis.2024.105254.

LisaCLIP (Accepted by IJCNN as ORAL) **Sep 2022 – Feb 2023**

A. Cao, Y. Zhou, and G. Shen, "LisaCLIP: Locally Incremental Semantics Adaptation towards Zero-shot Text-driven Image Synthesis," in 2023 International Joint Conference on Neural Networks (IJCNN), Jun. 2023, pp. 1–10. doi: 10.1109/IJCNN54540.2023.10191516.