Bailey Trang Nguyen

PhD Student @ Stanford · Causal AI for Medicine

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Education

Stanford University *Stanford, CA, USA*

PhD in Computer Science *From Autumn 2024*

- Advisor: Professor Ehsan Adeli, Co-advisor: Professor Fei-Fei Li
- Research topic: Causal AI for Medicine
- Overall GPA: 4.3/4.3

Tokyo Institute of Technology *Tokyo, Japan*

Master of Artificial Intelligence *Spring 2022 - Spring 2024*

- Advisor: Professor Naoaki Okazaki
- Thesis: Causal Reasoning through Two Cognition Layers for Improving Generalization in Visual Question Answering
- Overall GPA: 4.0/4.5 (equivalent to 4.0/4.0)

Ho Chi Minh City University of Science *Ho Chi Minh City, Vietnam*

Bachelor of Computer Science - Advance Program *Fall 2017 - Fall 2021*

- Minors in Artificial Intelligence
- Thesis: Towards Robust Abstractive Text Summarization via Augmenting Essential Information
- Overall GPA: 3.72/4.0

Research Appointments

2024.9 - now **Stanford University, Dept. Computer Science and School of Medicine**, Graduate Research Assistant
Advisors: Professor Ehsan Adeli and Professor Fei-Fei Li

2024.2 - 2024.9 **National University of Singapore, School of Medicine**, Research Assistant
Advisor: Professor Dianbo Liu

2022.4-2024.4 **Tokyo Institute of Technology, Dept. Computer Science**, Graduate Research Assistant
Advisor: Professor Naoaki Okazaki

2021.5-2024.2 **Mila - Quebec AI Institute**, AI Research Intern
Advisors: Professor Yoshua Bengio and Professor Dianbo Liu

2021.5-2023.5 **FPT AI Residency Program, Vietnam**, AI Resident
Advisors: Dr. Khuong Nguyen and Dr. Phong Nguyen

2019.8-2021.5 **Ho Chi Minh City University of Science, Dept. Knowledge Engineering**, Undergraduate Research Assistant
Advisor: MSc Nhi Tran

Awards, Fellowships, & Grants

2024-2025 **School of Engineering Graduate Fellowship**, Stanford University

EDGE: Enhancing Diversity in Graduate Education, Stanford University

2022-2024 **Honda Y-E-S Award**, Honda Foundation for Graduate Study in Japan

2017-2021 **Le So Memorial Scholarship of Excellence**, Sunflower Mission, USA

Publications

Under Review

[1] **Bailey Trang**,..., Fei-Fei Li, and Ehsan Adeli. *Discovering Latent Knowledge Graphs for Capturing Diversity in Conditional Image Generation*. **Under-reviewed**

Published

[5] **Bailey Trang**, ..., Dianbo Liu, and Yoshua Bengio. *Reusable Slotwise Mechanisms*. **NeurIPS 2023**

[4] **Bailey Trang** and Naoaki Okazaki. *Causal Reasoning through Two Cognition Layers for Improving Generalization in Visual Question Answering*. **EMNLP 2023** Long-Main track

[3] **Bailey Trang**, ..., Yoshua Bengio, and Dianbo Liu. *Causal Discovery in Gene Regulatory Networks with GFlowNet: Towards Scalability in Large Systems*. **GenBio@NeurIPS 2023**

[2] **Bailey Trang**, Nam Van, and Nhi Tran. *Performance-Driven Reinforcement Learning Approach for Abstractive Summarization*. **PRICAI 2021** - The Pacific Rim International Conference on Artificial Intelligence

[1] **Bailey Trang** and Nhi Tran. *Contour: Penalty and Spotlight Masks for Abstractive Summarization*. **ACIIDS 2020** - Asian Conference on Intelligent Information and Database Systems

Research Experience

Stanford University - School of Medicine & Department of Computer Science *Stanford, CA, USA*

ADVISORS: ***Professor Ehsan Adeli*** AND ***Professor Fei-Fei Li*** *Sept 2024 - Now*

- Project: "***Discovering Latent Knowledge Graphs for Capturing Diversity in Conditional Image Generation***"
  - Propose a conditional image generation framework that capture the inherent uncertainty and generate diverse images, addressing the limitation of relying on randomness to generate multiple samples of previous approaches.
  - Outperformed baselines with high-fidelity and diverse generations in text2image, image synthesis, image-editing, and counterfactual generation tasks.

National University of Singapore - School of Medicine *Singapore*

ADVISOR: ***Professor Dianbo Liu*** *Feb 2024 - Sept 2024*

- Project: "***Causal Discovery in Gene Regulatory Networks with GFlowNet: Towards Scalability in Large Systems***"
  - Proposed a variable-wise influence concept to enhance causal understanding and scalability in large, intricate biological systems.
  - Outperformed baselines in small-scale experiments and achieved comparable or superior performance in large-scale gene networks exceeding 1,000 nodes, while also reducing inference time.
- Co-organized the AI Tea Talk Singapore, an online talk series on general AI topics.

Mila - Quebec AI Institute *Quebec, Canada*

CO-ADVISORS: ***Professor Yoshua Bengio and Professor Dianbo Liu*** *May 2021 - Feb 2024*

- Project: "***Reusable Slotwise Mechanisms***"
  - Proposed to enhance generalization by relaxing the inductive biases in object slot communication.
  - Outperformed baselines on video prediction, visual question answering, and action planning tasks in both iid and OOD scenarios.
- Project: "***Causal Discovery in Gene Regulatory Networks with GFlowNet: Towards Scalability in Large Systems***"
  - Collaborated with the Research Assistant position at the National University of Singapore.

Tokyo Institute of Technology - Department of Computer Science *Tokyo, Japan*

ADVISOR: ***Professor Naoaki Okazaki*** *Apr 2022 - Apr 2024*

- Thesis: "***Causal Reasoning through Two Cognition Layers for Improving Generalization in Visual Question Answering***"
  - Proposed a counterfactual learning approach with two mediators to address distribution-shift challenges.
  - Outperformed three baselines across four datasets, achieved new state-of-the-art results on the PathVQA dataset, and significantly improved generalization on the VQA-CPv2 dataset.

FPT AI Residency Program *Ho Chi Minh City, Vietnam*

ADVISORS: ***Dr. Khuong Nguyen and Dr. Phong Nguyen*** *May 2021 - May 2023*

Ho Chi Minh City University of Science - Department of Knowledge Engineering *Ho Chi Minh City, Vietnam*

ADVISOR: ***MSc. Nhi Tran*** *Aug 2019 - May 2021*