

Nguyen (William) Nguyen

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EDUCATION

University of Rochester, Rochester, NY 08/2022 – 05/2024

M.S. in Computer Science

University of Engineering and Technology, Hanoi, Vietnam 08/2016 – 08/2020

B.S. in Computer Science

RESEARCH INTERESTS

Vision-Language: Visual captioning; Multimodal-LLMs; Scene text understanding; Language-guided visual generation.

Machine Learning: Representation learning; Unsupervised learning; Self-supervised learning.

WORK EXPERIENCE

Senior Applied Scientist, Aitomatic, Inc, Palo Alto, CA 08/2024 – present

Reported directly to: [Dr. Christopher Nguyen \(CEO\)](#)

- Domain-specific foundation model: Led development of SemiKong and Lllamarine, the first open-source LLMs for semiconductors and maritime domains, **adopted by global industry leaders** TSMC (semiconductors), Tokyo Electron (semiconductor equipment), and Furuno (maritime electronics).
- Use cases: (1) Semiconductor equipment root cause analysis: reduced engineers' troubleshooting time by 30%. (2) Maritime navigation assistant: achieved **100% accuracy** in recommending regulation-compliant actions under complex conditions by using Lllamarine and incorporating synthetic domain expert knowledge.
- TRAIN product: Led technical development of a platform enabling users to create domain-specific agents with minimal setup. Pioneered automated data curation (pretraining + finetuning) and expert knowledge synthesis methods, cutting training cycle time by **5×** and enabling the company to support **20% more customers**.
- Agents: Developed ProSEA, a hierarchical structured agent solves the problems by learning from past failures. **Outperformed algorithms from other providers in real-world device troubleshooting**, as confirmed by customers.
- Research contributions: Lead author of 2 peer-reviewed papers. Co-inventor (2nd listed, technical lead) on 2 US patents in domain-specific AI agents, and co-inventor on 1 patent in agentic architectures.

Research Assistant, University of Rochester, Rochester, NY 06/2022 – 06/2024

Advisor: [Professor Chenliang Xu](#)

- Object state captioning: Propose a new task to describe object states in detail. Built a model using multimodal-LLM that can perform QA, conversation, and reasoning. Model **achieved 90% compared to GPT4V** on both metrics and human evaluation.
- Scene text spotting: Incorporate language priors to make the Scene text spotting system more robust, significantly surpassing SOTA from 2-4% in every standard benchmark.
- Instructional video understanding: Understand human action and building task guidance algorithms from egocentric and instructional videos. [[Demo video](#)].

AI Research Resident, VinAI Research (Acquired by Qualcomm now), Hanoi, Vietnam 12/2019 – 06/2022

Advisor: [Professor Nguyen Minh Hoai](#)

- Scene text recognition: Incorporate knowledge from a dictionary into both the training and inference stage, surpassing the SOTA by 3-5%. Introduce a novel Vietnamese scene text understanding dataset.
- Scene text spotting for street sign: Develop a framework for text traffic sign recognition with improved inference speed, proposing an annotation method saves the company 50% annotation cost and maintains data quality.
- Face recognition: Develop unified models for recognizing normal faces, faces with masks, and extreme pose faces. Improve masked face recognition by 18% by generating synthetic masked face images from normal faces. Build a lightweight model for running on-edge devices by using knowledge distillation.

Research Assistant, Vietnam National University, Hanoi, Vietnam 06/2018 – 03/2020

Advisor: [Professor Xiem Hoang Van](#)

- Machine learning for video coding: Define handcraft feature and use machine learning to speed up quad-tree partitioning and enhance decoded frame quality by classifying whether blocks need to be splitted.

TECHNICAL SKILLS

Programming Languages

Python, C/C++, Bash, SQL

ML / DL Frameworks

PyTorch, TensorFlow, Keras, Scikit-learn, MLlib, SciPy, statsmodels

LLM / Agents / RAG

LangChain, LlamaIndex, vLLM, HuggingFace, OpenAI API, Ollama, FAISS, TRL

Data & Visualization

PySpark, Pandas, NumPy, Matplotlib, Seaborn, Plotly, Bokeh, Dash

CV / NLP Toolkits

OpenCV, Detectron2, CLIP, LLaVA, Tesseract, SpaCy, NLTK, BeautifulSoup

Infrastructure & Deployment

GCP (VMs for training/hosting), Docker, Git, Flask, Postman

PROFESSIONAL SERVICES

Reviewer: WACV 2022, CVPR 2023, CVPR 2024, ACM MM 2024, AAAI 2025, CVPR 2025

Invited Speaker: VinAI Research Workshop 2021, OSAI4MU Workshop (AAAI'25).

Organizer: Vietnamese Scene Text Recognition Challenge 2021.

PUBLICATIONS

1. **William Nguyen**, An Phan, Konobu Kimura, Hitoshi Maeno, Mika Tanaka, Quynh Le, William Poucher, Christopher Nguyen, “*Llamarine: Open-source Maritime Industry-specific Large Language Model*”, The 39th Annual Conference of the Japanese Society for Artificial Intelligence, 2025.
2. Christopher Nguyen, **William Nguyen**, Atsushi Suzuki, Daisuke Oku, Hong An Phan, Sang Dinh, Zooey Nguyen, Anh Ha, Shruti Raghavan, Huy Vo, Thang Nguyen, Lan Nguyen, Yoshikuni Hirayama, “*SemiKong: Curating, Training, and Evaluating A Semiconductor Industry-Specific Large Language Model*”, OSAI4MU, AAAI, 2025.
3. Vinh Luong, Sang Dinh, Shruti Raghavan, **William Nguyen**, Zooey Nguyen, Quynh Le, Hung Vo, Kentaro Maegaito, Loc Nguyen, Thao Nguyen, Anh Hai Ha, Christopher Nguyen, “*DANA: Domain-Aware Neurosymbolic Agents for Consistency and Accuracy*”, preprint, 2024.
4. Jing Bi, Yunlong Tang, Luchuan Song, Ali Vosoughi, **Nguyen Nguyen**, Chenliang Xu, “*EAGLE: Egocentric AGgregated Language-video Engine*”, ACM Multimedia (ACMMM), 2024.
5. **Nguyen Nguyen**, Jing Bi, Ali Vosoughi, Yapeng Tian, Pooyan Fazili, Chenliang Xu, “*OSCaR: Object States Captioning and State Changes Representation*”, NAACL, 2024.
6. Jing Bi*, **Nguyen Nguyen***, Ali Vosoughi*, Chenliang Xu (* equal contribution), “*MISAR: A Multimodal Instructional System with Augmented Reality*”, AV4D, International Conference on Computer Vision (ICCV), 2023.
7. **Nguyen Nguyen**, Yapeng Tian, Chenliang Xu, “*Efficiently Leveraging Linguistics Knowledge for Scene Text Spotting*”, under reviewed, 2023.
8. **Nguyen Nguyen**, Thu Nguyen, Vinh Tran, Triet Tran, Thanh Duc Ngo, Thien Nguyen, Minh Hoai, “*Dictionary-guided Scene Text Recognition*”, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021.

PATENTS

1. Christopher Nguyen, **Manh-Nguyen Nguyen**, Hong An Phan, Zooey Nhu-Quynh Nguyen, The-Vinh Luong, Elise Nhu-Y Nguyen, Thomas Rasmussen, Anh Hai Ha, Phi-Hung Vo, Xuan-Sang Dinh, Huy-Thuan Bui, Anh-Quoc Dang, Timothy Michael Gerard Rozario, “*Delivering Domain-Expert Agents and Models Using Synthetic Knowledge*”, US Patent App. 63/726,322, 2024.
2. Christopher Nguyen, **Manh-Nguyen Nguyen**, Hong An Phan, Zooey Nhu-Quynh Nguyen, The-Vinh Luong, Elise Nhu-Y Nguyen, Thomas Rasmussen, Anh Hai Ha, Phi-Hung Vo, Xuan-Sang Dinh, Huy-Thuan Bui, Anh-Quoc Dang, “*Delivering Domain-Expert Agents for Improving Problem-Solving*”, US Patent App. 63/721,419, 2024.
3. Christopher Nguyen, The Vinh Luong, Xuan Sang Dinh, Zooey Nhu-Quynh Nguyen, Shruti Raghavan, **Manh Nguyen Nguyen**, Quynh Thi-Tham Le, Phi Hung Vo, Tan Loc Nguyen, Anh Hai Ha, Phuong Thao Nguyen, “*Domain-Aware Neurosymbolic Agents For Improving Problem-Solving Accuracy And Consistency*”, US Patent App. 63/696,337, 2024.