Nguyen (William) Nguyen

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PROFESSIONAL SUMMARY

Applied Scientist with 5+ years in AI research and translating research into business impact. Developed open-source domain-specific LLMs adopted by global semiconductor and maritime leaders. Specialized in Computer Vision, Natural Language Processing, and AI agents, with production pipelines that accelerate AI agents development cycles by 5×.

WORK EXPERIENCE

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

- Domain-specific foundation model: Led development of SemiKong and Llamarine, the first open-source Large Language Models (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 Llamarine 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, an agent framework that learns from failure cases to self-improve performance. **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

- Object state captioning: Proposed a new task to describe object states in detail. Designed a multimodal LLM that can perform QA, conversation, and reasoning. **Achieved 90% of GPT-4V's performance** with a significantly smaller and faster model.
- Scene text spotting: Incorporated language priors to make the Scene text spotting system more robust, significantly surpassed state-of-the-art (SOTA) by **2-4% in every standard benchmark**.
- Instructional video understanding: Developed algorithms to understand human actions and architected task guidance algorithms from egocentric and instructional videos. [http://bit.ly/4dXNgol].

AI Research Engineer, VinAI Research, Hanoi, Vietnam — 01/2022 – 06/2022

- Face recognition: Developed unified models for recognizing normal faces, faces with masks, and extreme pose faces. Improved masked face recognition by **18%** by generating synthetic masked face from normal face images. Built lightweight models for running on-edge devices by using knowledge distillation, preserved **97%** accuracy.

AI Research Resident, VinAI Research, Hanoi, Vietnam — 12/2019 – 12/2021

- Scene text recognition: Incorporated knowledge from a dictionary into both the training and inference stage, surpassing the SOTA by 3-5%. Introduced a novel Vietnamese scene text understanding dataset.
- Scene text spotting for street sign: Architected text traffic sign recognition framework with faster inference; proposed novel annotation method that reduced annotation costs by **50%** while maintaining quality.

AI Engineer Intern, Teko, Hanoi, Vietnam — 04/2019 – 11/2019

- Product Clustering: Represent e-commerce product data by attributes and product descriptions, building an automated pipeline from data collection, feature selection, dimensionality reduction with VAE, and clustering. Build a visualization dashboard for product analysis.

Note: *VinAI Research was later acquired by Qualcomm and became Qualcomm AI Research.*

TECHNICAL SKILLS

Programming Languages	Python, C/C++, Bash, SQL
Machine Learning / Deep Learning	PyTorch, TensorFlow, 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, Postman
Full-stack Prototyping	Streamlit (for rapid AI demos), Flask, React

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.

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

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*", preprint, 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.

REFERENCES

The following individuals have agreed to serve as references and can provide insight into my qualifications and experience. Please contact me before reaching out to them.

Dr. Christopher Nguyen
Chief Executive Officer
Aitomatic, Inc
Email: ctn@aitomatic.com

Professor Yapeng Tian
Assistant Professor, CS Department
University of Texas at Dallas
Email: yapeng.tian@utdallas.edu

Professor Minh Hoai Nguyen
Deputy Director, AIML
The University of Adelaide
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