Tra My (Chiffon) Nguyen

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Research Interests

Current and future AI systems aligned with and representative of diverse human experiences: **AI safety** (pluralistic alignment, evaluation, cooperative AI), multilingual and multicultural AI, socially responsible AI, and AI ethics.

Education

Minerva University, College of Computational Sciences Sep 2021 — May 2025

B.Sc in Computational Sciences (Machine Learning and Statistics), GPA: 3.7/4.0 *San Francisco, CA, USA*

- **Relevant Coursework**: Machine Learning (A), AI Ethics, Bayesian Modeling (A), Statistical Modeling and Causal Inference (A), Optimization Methods (A), Probability and Statistics (A-), Software Engineering
- **Global Rotation**: Seoul (South Korea), Chinese Taipei, Hyderabad (India), Buenos Aires (Argentina), Berlin (Germany)
- **Self-study**: Technical AI Alignment (ARENA, 2025), Introduction to AI Alignment (Bluedot Impact, 2025)

Research Experience

AI Safety Research Mentee Oct 2025 — Present

Algoverse AI Research (Mentor: Yeonwoo Jang) *Remote*

- Topic: Scaling behavior of **full chain-of-thought monitoring**. To be submitted to ICLR workshop. [Code]
- Proposal: Evaluating correlation between monitor success rates (PR-AUC) and capability gap of monitor-target pairs within Qwen3 model family (8B–480B) (and cross-family), using **Inspect AI** and **sandbagging** as case study

Machine Learning Research Assistant Jun 2024 — Aug 2024

AI & Mixed Reality Lab, Landshut University of Applied Sciences *Landshut, Bavaria, Germany*

- Mentors: Prof. Sandra Eisenreich and Prof. Eduard Kromer
- Topic: 3D object detection with PointPillars algorithm on standard and synthetic LiDAR point cloud datasets

Teaching & Mentoring Experience

Curious Cardinals, *Passion Project & Executive Functioning*, Mentor Nov 2025 — Present

- Mentoring a 10th grader for computational neuroscience research linking HEMA genes with Parkinson disease

Minerva University, *PR51 Programming with Python*, Lead Peer Tutor and Data Analyst Spring 2025

- Taught 40+ first-year students from 20+ countries in **weekly hands-on programming labs** for 11 weeks, covering Python, OOP, debugging, security, and computing fundamentals
- Extracted **40 data-driven pedagogical insights** using Google Drive API, Google Sheet trackers, student and tutor surveys, improving hands-on learning and student engagement for the next class iteration by 15%

Minerva University, *FA50/FA51 Logic, Probability & Statistics*, Lead Teaching Assistant Fall 2023 — Spring 2024

- Guided **150+ students each semester** for four semesters in formal logic, probability and statistics, algorithmic thinking, and simulation, through weekly office hours
- Provided **formative assessment on 25 quizzes** for 50 students to correct and shape their learning
- Assisted professors in **grading** three math and programming assignments per semester

Leadership

SEACrowd **Communications Assosicate & Design Engineer** Aug 2025 — Present

Selected Research Projects

More projects on mychiffonn.com/projects and github.com/mychiffonn

Multilingual Token Optimization via Cross-Lingual Embedding Alignment Jan 2026 - Present

- Developing a modular framework that trains tokenizers and aligns parallel tokens across morphologically diverse languages in the embedding space, improving cross-lingual transfer.

Replication: Unsupervised Elicitation of Language Models (github.com/mychiffonn/icm) Dec 2025

- Replicated Wen et. al (2025)'s Internal Coherence Maximization, which elicits human concepts from base language models by maximizing mutual predictability and local consistency among concept-related examples.

Replication: Counterfactual Test for Natural Language Explanations (github.com/mychiffonn/faithfulness-test) Dec 2025

- Replicated Atanasova et.al. (2023)'s counterfactual test, which can be applied to evaluate whether language model explanations are faithful by checking if perturbing input features leads to changes in model output and explanation.

Replication: Synthetic Control (Causal Inference) (github.com/mychiffonn/synthetic-control-rep) Dec 2023

- Replicated and extended Chrisinger (2021)'s analysis of Philadelphia's SNAP benefit redemption in R, analyzing policy impacts across 4 counties and 50+ months of longitudinal data
- Identified critical limitations in dataset reliability and magnitude discrepancies between original and replicated results
- Conducted new leave-one-out robustness analysis on synthetic control models, showing model instability

Selected Machine Learning Projects

Mnemonic Generation for Vocabulary Learning (github.com/mychiffonn/mnemonic-gen) Oct 2024 — Mar 2025

- Designed an AI chatbot that generated diverse and memorable mnemonic devices for learning and retaining vocabulary, synthesizing 50+ papers across linguistics, psycholinguistics, language education, and large language models
- Utilized chain-of-thought distillation from a teacher model (DeepSeekR1) to instill linguistic chain-of-though reasoning to a student model (Gemma3-1b) through **supervised fine-tuning (QLoRA)** with `unsloth`
- Implemented a **Direct Preference Optimization (DPO)** pipeline through `trl` for preference modeling on Gemma3-1b using 500 human and LLM-annotated preference pairs (on memorability, imageability, and retention rates)

Mini-LLaMA2 PyTorch Implementation (github.com/mychiffonn/cmu-advanced-nlp-minllama-assignment) Nov 2025

- Implemented the core architecture of Llama-2 from scratch in PyTorch, including critical components including Rotary Positional Embeddings (RoPE), RMSNorm, and SwiGLU activation functions
- Developed a custom training loop with AdamW optimization to pretrain the model on a small corpus and fine-tune it for sentiment classification tasks (SST-5), resulting in convergence and coherent text generation

Selected Web/App Projects

SportConnect: Connect Through Local Sport Events (github.com/mychiffonn/sport-connect) Nov 2025

Scalable web application connecting users to local recreational sports events, featuring secure multi-provider OAuth authentication, comprehensive event management, easy event discovery and filtering, and real-time RSVP tracking. Two-person full-stack project with TypeScript, React, Express, PostgreSQL, TailwindCSS, DaisyUI, and BetterAuth.

Academic Portfolio Theme for Researchers (github.com/mychiffonn/website) Aug 2025 — Oct 2025

High-performance academic theme, enabling fast, accessible, and multilingual publishing of publications and technical blogs while ensuring top-tier SEO (99) and Lighthouse (100) scores using Astro, TailwindCSS, and shadcn/ui

Certificates

- **Advanced Web Development**, CodePath (drive.google.com/file/d/1n4dHj4TFM8HWlDXMTt9ZGjEXVIpkP-F-)
- **Natural Language Specialization**, deeplearning.ai (coursera.org/verify/specialization/3FJ3W7QJX8GK) Nov 2023
- **Applied Data Science**, World Quant University (credly.com/badges/2e1e6902-aae4-47c4-97e2-0ad9265e5561)Aug 2023
- **Machine Learning Specialization**, deeplearning.ai (coursera.org/verify/specialization/G9898XKB9EAV) Jun 2022

Skills

- **Programming Languages**: Python, TypeScript, SQL, R, Bash
- **Machine Learning**: PyTorch, Inspect, unsloth, trl, petri, scikit-learn, LangGraph, LlamaIndex
- **Web Development**: Astro, React, FastAPI, Flask, Express.js, PostgreSQL, TailwindCSS, shadcn/ui
- **Tools & DevOps**: Git, Docker, Render, Netlify, LaTeX, Zotero, Typst
- **Languages**: Vietnamese (native), English (fluent/C2), Mandarin Chinese (lower-intermediate/band 4)