

Chencheng Liang

PhD in Computer Science

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Research Experience

2019-01 – 2025-06

Doctoral Researcher in Machine Learning for Automated Reasoning

Uppsala University, Sweden

- Developed a GNN-based framework for constraint solving, Horn-clause solving, and word-equation solving, including dataset generation, graph representation, model training, solver integration, and empirical evaluation in Python and PyTorch
- Ran large-scale GPU experiments on Slurm-managed HPC clusters, automating batch submission, hyperparameter sweeps, checkpointing, logging, and result aggregation across repeated runs
- Built modular and reproducible experimental workflows for comparing model behaviour, solver performance, and generalisation across different problem classes
- Collaborated with researchers in machine learning and automated reasoning, supervised master's projects, and translated research results into peer-reviewed publications and international presentations

Work Experience

2026-06 – Present

Lecturer in Uppsala University

- Lecturer for the course Artificial Intelligence (1DL340), an English-taught Master's level course at Uppsala University.
- Responsible for teaching, assessment, and course administration throughout the autumn 2026 teaching period. delivery

2025-08 – 2026-06

Independent AI & Automation Consultant

- Built and operated Python-based AI workflows for live e-commerce and consulting projects, combining web scraping, image-based information extraction, structured LLM outputs, schema-based data processing, and multilingual normalization
- Developed backend workflows for an independent Shopify store covering product ingestion, attribute extraction, categorization, SEO metadata, localization, and marketing-content generation, converting manual operating steps into repeatable automated pipelines
- Worked directly with business owners to break operational requirements into technical implementation tasks, select and integrate tools, and resolve data, model-output, workflow, and deployment issues during delivery

Skills

- **Programming:** Python, C/C++, Java, Scala, Bash
- **AI/ML:** PyTorch, TensorFlow, PyG, GNNs, Transformers, RNNs, Reinforcement Learning, NLP
- **Model Research:** Dataset generation, model training, hyperparameter tuning, checkpointing, experiment tracking, empirical evaluation
- **LLM & Automation:** Structured LLM outputs, schema-based extraction, prompt design, tool and API integration, workflow automation
- **Compute & Systems:** GPU/HPC environments, Slurm, NAISS, Linux/Unix, Docker, Git, MLflow, AWS
- **Backend & Data:** Python backend services, REST APIs, web scraping, data pipelines, image-based extraction, multilingual data standardization

- **Automated Reasoning:** Formal verification, constraint solving, Horn clauses, word equations, algorithm design
- **Languages:** Chinese (Native), English (Fluent), Japanese (Basic)

Education

2019 – 2025	Uppsala University, Sweden <i>PhD in Computer Science</i> Thesis: “Learning to Guide Automated Reasoning: A GNN-Based Framework” Advisors: Philipp Rümmer, Yi Wang, Marc Brockschmidt Opponent: Stephan Schulz
2016 – 2018	University of Göttingen, Germany <i>Master of Science in Computer Science</i> Thesis: “Topology Control Using Fuzzy Game Theory in Mobile Underwater Sensor Networks” Grade: 1.0 (Sehr gut, highest distinction)
2010 – 2014	Chengdu University, China <i>Bachelor of Science in Software Engineering</i> Graduated 1st in class

Selected Applied AI Projects

2025	CozySteps - LLM-powered Activity Recommender <i>Impact Hack 2025, AI Sweden</i> • Built mobile app prototype for families with autistic children • Implemented LLM-based activity recommendation engine • Won recognition for addressing real societal challenges
2023	Insilico - AI-Driven Art Installation <i>Uppsala Art Museum</i> • Integrated AI-based sentiment analysis for Mat Collishaw’s art installation • Developed real-time Twitter sentiment analysis system • Connected digital hostility to physical art expression

Teaching Experience

2019 – 2025	Uppsala University, Sweden <i>Course Instructor & Teaching Assistant</i> • Natural Computation Methods for Machine Learning (Master’s, 10 credits, 2019-2025) • Imperative and Object-Oriented Programming Methodology (Bachelor’s, 10 credits, 2023-2024) • Project CS (Master’s project course, 30 credits, 2022-2024) • Introduction to Studies in Embedded Systems (Master’s, 5 credits, 2019-2021)
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Thesis & Project Supervision

2024	Federated Learning meets Large Language Models <i>Master's Project Supervision</i> Students: Mahtab Mirhaji, Oguzhan Ersoy, Yixin Huang, Shiqi Shu Ericsson Research & Uppsala University
2023	Distributed Mobility Prediction in Telecommunication Networks <i>Master's Project Supervision</i> Students: Shreyansh Singh, Lifang Zheng, Savvas Giortsis, Tobias Lass, Yilei Zheng, Salum Nassor Ericsson Research & Uppsala University
2022	Shortest Path Reliable Estimation: Applying Graph Neural Networks - SpreadNet <i>Master's Project Supervision</i> Students: ChanVuth Chea, Boli Gao, Jennifer Gross, Haouyuan Li, Paarth Sanhotra, George-Alexandru Stoian, Sofia Afnaan Syed, Haodong Zhao Ericsson Research & Uppsala University
2021	Exploring Properties and Limitations of Graph Neural Networks (GNNs) in Software Verification <i>Master's Thesis Supervision</i> Student: Kexin Xu Uppsala University

Professional Service

- **Subreviewer for Conferences:**
 - FMCAD 2025, FM 2024, LPAR 2024, VMCAI 2024, FMCAD 2023, LPAR 2023
 - FMCAD 2022, IJCAR 2022, FroCoS 2021, CADE 2021, TACAS 2020
 - iFM 2019, FroCoS 2019, CADE 2019
- **Talks & Presentations:**
 - “Guiding Constraint Horn Clauses Solving using Graph Neural Networks” - ISTA, Austria, 2024
 - “Boosting Constrained Horn Solving by Unsat Core Learning” - HCVS Workshop, Luxembourg, 2024
 - “Exploring Representation of Horn Clauses using GNNs” - AITP Conference, France, 2022
 - “Guiding Interpolation for Model Checking by Deep Learning Techniques” - AVM, Czech Republic, 2019

Publications

2025 |
2024 |
2022 |
2021 |
2019 |
2017 |
2015 |