Jian Gu

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👤 https://jianguda.github.io

EDUCATION

- **(Top 50) Monash University** — Melbourne, Australia
  PhD Candidate (Supervised by Prof. Aldeida Aleti, Prof. Chunyang Chen, Prof. Hongyu Zhang)   Oct 2022 – Present
  - **Visiting Scholar**: NLP Lab @ THU (Oct 2024 – Jun 2025), SE&AI Lab @ TUM (Jun 2025 – Aug 2025)
  - **Research Intern**: Fermat @ Huawei HKRC (Sep 2025 – Jan 2026), CodeFuse @ Ant Group (Feb 2026 – Present)
- **(Top 100) University of Zurich** — Zurich, Switzerland
  PhD Candidate (Supervised by Prof. Harald C. Gall)   Sep 2020 – Sep 2022
- **(Top 100) KTH Royal Institute of Technology** — Stockholm, Sweden
  Master's Degree in Machine Learning (Thesis Supervisor: Prof. Martin Monperrus)   Aug 2018 – Aug 2020
- **(Project 985) Shandong University (the Elite Class)** — Jinan, China
  Bachelor's Degree in Computer Science (Thesis Supervisor: Prof. Jun Ma)   Sep 2012 – Jun 2016

SELECTED PAPERS

- **Rethinking Weight Tying: Pseudo-Inverse Tying for Stable LM Training and Updates**
  Jian Gu, Aldeida Aleti, Chunyang Chen, Hongyu Zhang   Under Review

- **Beyond Neural Incompatibility: Cross-Scale Knowledge Transfer in Large Language Models through Latent Semantic Alignment**
  Jian Gu, Aldeida Aleti, Chunyang Chen, Hongyu Zhang   Under Review

- **SeMe: Training-Free Language Model Merging via Semantic Alignment**
  Jian Gu, Aldeida Aleti, Chunyang Chen, Hongyu Zhang   Under Review

- **Semantic-based Optimization for Repairing LLMs: Case Study on Code Generation**
  Jian Gu, Aldeida Aleti, Chunyang Chen, Hongyu Zhang   ICSE'26 @ Rio de Janeiro

- **Semantic-Aware Layer-Freezing for Computation-Efficient Fine-Tuning of LMs**
  Jian Gu, Aldeida Aleti, Chunyang Chen, Hongyu Zhang   ACL'25 @ Vienna

- **Vocabulary-Defined Semantics: Latent Space Clustering for Beyond-Context Learning**
  Jian Gu, Aldeida Aleti, Chunyang Chen, Hongyu Zhang   Under Review

- **Neuron Patching: Semantic-based Neuron-level LM Repair for Code Generation**
  Jian Gu, Aldeida Aleti, Chunyang Chen, Hongyu Zhang   TOSEM (2026)

- **Towards Top-Down Automated Development in Limited Scopes: A Neuro-Symbolic Framework from Expressibles to Executabless**
  Jian Gu, Harald C. Gall   FSE'23 @ San Francisco

- **Assemble Foundation Models for Automatic Code Summarization**
  Jian Gu, Pasquale Salza, Harald C. Gall   SANER'22 @ Hawaii

- **Multimodal Representation for Neural Code Search**
  Jian Gu, Zimin Chen, Martin Monperrus   ICSME'21 @ Luxembourg

- **On the Effectiveness of Transfer Learning for Code Search**
  Pasquale Salza, Christoph Schwizer, Jian Gu, Harald C. Gall   TSE (2022)

- **Automated Classification of Overfitting Patches with Statically Extracted Code Features**
  He Ye, Jian Gu, Matias Martinez, Thomas Durieux, Martin Monperrus   TSE (2021)

WORK EXPERIENCE

- **Huawei HKRC** — Hong Kong, China
  Research Intern — *Sep 2025 – Jan 2026*
    - **Byte-Level Encoder**: Support compiler provenance recovery, serving for the performance load reduction in HarmonyOS software ecosystem.
    - **On-Device Language Models**: LM pretraining and post-training for intelligent coding in HarmonyOS IDE.

- **Monash University** — Melbourne, Australia
  Teaching Assistant — *Jul 2023 – Jun 2024*
    - **Lab Tutoring (1 semester)**: FIT5003 Software Security.
    - **Co-Supervisor (2 semesters)**: FIT4701/FIT4702 Final-year Project; Honours Project and Research Thesis.

- **University of Zurich** — Zurich, Switzerland
  Research Assistant — *Sep 2020 – Sep 2022*
    - **Course and Seminar**: In charge of Q&A, reviewing assignments and the exam content, and scoring projects.
    - **AI for Pair Programming**: Designed and guided a Master's project on code intelligence (retrieval, generation).

- **KTH Royal Institute of Technology** — Stockholm, Sweden
  Research Engineer — *Jun 2019 – Aug 2019*
    - **Eclipse Repairnator**: Repairnator is an influential software project for automated program repair in continuous integration, hosted by the eclipse foundation. Integrated Coming and SequenceR into Repairnator for overfitting ranking to enhance the repairing ability. Implemented its official GitHub app.
    - **Coming & DSpot**: Implemented and Integrated Prophet4J and Sketch4Repair into Coming to generate code patch, and integrated Context2Name into DSpot to prettify the generated test cases. Coming is a tool for mining git repositories and DSpot is a tool for generating missing assertions in JUnit tests.

- **Smart Software Studio** — Yancheng, China
  Software Engineer — *Jul 2017 – Jun 2018*
    - **YoYo**: Delivered a technical solution including websites and apps for online community, with the supports for local advertisements. It is for identity-based social, such as communications between alumni or neighboring people.
    - **WiiPM**: Developed a 2D rogue-like game on the mobile platform. WiiPM contains elements of turn-based battles as well as collection and role-plays adventure. The technique of procedural content generation is adopted.
    - **BAMI**: Translated a living book named "Biological and Machine Intelligence", which is authored by Numenta Inc. It continuously documents a novel theoretical framework on both biological and machine intelligence.

- **UCar Inc.** — Beijing, China
  Software Engineer — *Mar 2016 – Nov 2016*
    - **Anti-Fraud / Anomaly Detection**: Analyzed unusual operation logs and GPS records, summarized common patterns of anomaly patterns, to help punish promotion abuse activities. Java EE development for web panels.
    - **Streaming Data Pipeline**: Maintained the streaming pipeline for real-time transaction data.

- **Hisense Group (R&D Center)** — Qingdao, China
  Algorithm Intern — *Sep 2015 – Feb 2016*
    - **Recommendations**: Improved online recommender systems (itemCF and content-based). Extracted plot tags and review tags to build movie knowledge graph. Designed unified knowledge base to fuse multiple data providers.
    - **GenePool**: Developed one workflow system collecting and processing movie metadata as well as one corresponding recommender system for demonstration.

SERVICES

- **SE Conferences & Journals (TSE, TOSEM, etc)** — Reviewer

- **AI Conferences & Journals (ICLR, AAAI, WWW, TAI, etc)** — PC, Reviewer

AWARDS & GRANTS

- **Top-Up Scholarship + Supplementary Funding** — Monash University 2025 – 2026

- **$80K (2000 kSU) Research Grant** — AU National Computational Infrastructure 2024 – 2026

- **$30K HPC Research Grant** — DUG Technology Ltd 2023 – 2024