Teng Lei

Tel: +86-13316109057 | E-mail: lei24627@gtiit.edu.cn | https://github.com/Rayleiteng

EDUCATION

Guangdong Technion-Israel Institute of Technology, Shantou, China **Sep. 2023-Present**

Bachelor of Science in Mathematics with Computer Science *Expected in June 2027*

- **GPA: 97.4/100 ； Ranking: 1/74**
- **Core Coursework: Introduction to Systems Programming, Data Structures, Digital Systems and Computer Structure, Combinatorial Algorithms, Operating Systems, Probability theory, Mathmetical Statistics, Introduction to Numerical Analysis**
- **Honors: Vice Chancellor's list Scholarship, Second Class Chancellor's Scholarship**

RESEARCH EXPERIENCE

Optimization of CodaMOSA with LLM-Assisted Program Synthesis Jan. 2026 - Present

Independent Research Project / Advisor: Prof. Diego GARBERVETSKY and Nazareno AGUIRRE

- Conduct independent research on LLM-augmented program synthesis, focusing on optimizing CodaMOSA through prompt design and system-level parallelization.
- Investigate asynchronous collaboration between MOSA and large language models to improve computational efficiency.
- Implement LLM-based output auditing to assess semantic validity and reduce synthesis errors.
- Propose an automated deserialization mechanism for resolving structural ambiguities in natural-language-generated code artifacts.

Algebraic equations of low degree and introduction to Galois theory Oct. 2025 - Present

Advisor: Boris Shapiro

- Advanced reading on the algebraic and topological aspects of polynomial solvability. Studied topics including solutions of cubic and quartic equations, Abel–Ruffini theorem, insolvability of the general quintic, monodromy groups, Riemann surfaces of algebraic functions, and Arnold's elementary and topological approaches to equation theory.

Automatic Recognition of Mathematical Blackboard Writing with LaTeX Output Nov. 2025 - Present

NLP Project / Advisor: Prof. Antti Resila

- Plan to design and implement a specialized language modeling framework for recognizing handwritten mathematical blackboard content, combining OCR preprocessing, BPE-based tokenization, and Transformer architectures to handle complex symbolic and structural patterns.
- Implemented an end-to-end recognition pipeline for handwritten mathematical blackboard notes, converting noisy visual inputs into structured LaTeX outputs to enhance clarity and interpretability.

PROJECT EXPERIENCE

Operating System Design and Implementation – xv6 Kernel Projects Nov. 2025 - Dec. 2025

Class Project / Advisor: Prof. Guillaume Hoffmann

- Extended the xv6 operating system with modern OS features, including null pointer checking, memory address protection, and multithreaded concurrency support.
- Modified core kernel components, including process management and memory handling, and verified the functional completeness and correctness of the system.
- Achieved full marks for the project through rigorous testing and validation of system-level enhancements.

Implementing the Huarong Dao Puzzle Game in Z80 Assembly Dec. 2024 - Jan. 2025

Class Project / Advisor: Prof. Guillaume Hoffmann

- Led a team of four to develop the Huarong Dao puzzle game from scratch using Z80 assembly language, implementing core gameplay mechanics including block selection, release, collision detection, and movement.

- Designed 10 progressively challenging levels and implemented a step-counting and scoring system to enhance gameplay structure.
- Performed extensive debugging and low-level optimization to improve correctness and execution stability.

WORK EXPERIENCES

GAC R&D CENTER Guangzhou, China

Data Analyst Intern *Sep.2024-Oct.2024*

- Processed and analyzed 100,000+ real-world vehicle driving records, performing data cleaning, classification, and statistical aggregation.
- Examined behavioral patterns under special conditions (e.g., low-battery trips) to support data modeling for intelligent vehicle systems development.
- Wrote and optimized SQL queries to extract and aggregate large-scale driving data from multiple databases.
- Delivered multiple data summary reports based on large-scale vehicle datasets, providing quantitative insights for data-driven decision-making.

Guangzhou Kexiang Sports Development Co., Ltd. Guangzhou, China

Technical Instructor *Jul.2024-Aug.2024*

- Provided hands-on instruction in racing drones and fixed-wing UAV systems, focusing on low-level control logic, system behavior, and operational safety.
- Guided students in hardware assembly, soldering, disassembly, debugging, and system-level troubleshooting, strengthening understanding of embedded systems and hardware–software interaction.
- Supervised and managed junior trainees in safety-critical environments, ensuring reliable execution of flight operations through structured communication and process control.

LANGUAGES & SKILLS

Programming: C/C++, Python, Java, SQL, x86, MIPS, z80, etc.

Technical Framework: Unix/Linux, MySQL, PyTorch, TensorFlow, etc.