Tairan Wang

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Education

University College London London, UK
Master of Engineering — Mathematical Computation Sep 2022 – Present

Research Projects

Learning with LLMs: Background Knowledge Transfer and Confidence After Failure
Upcoming UCL Jan 2026
This experimental study investigates two main research questions: (1) whether learning with the assistance of large language models facilitates background knowledge transfer, and (2) whether confidence gained through LLM-supported learning is more vulnerable to being undermined after failure. The project was proposed by myself and is conducted under the supervision of Prof. David Lagnado.

ReadFiller: A Predictive Incremental Code Reading Model for Code Readability
In progress UCL Sep 2025 – Present
We propose a code readability model based on progressive program reading. The model reads source code sequentially and continuously attempts to predict upcoming code fragments. Portions of the code that are successfully predicted are skipped. The project is currently led by myself at UCL.

CognaScore: A Working-Memory Model for Code Readability
In progress UCL Jun 2025 – Present
We propose a code readability model inspired by the mechanisms of human short-term memory. The model extracts memory chunks from source code and simulates human semantic abstraction to merge and refine these chunks. The project is currently conducted under the supervision of Prof. Earl T Barr.

HoarePrompt: Structural Reasoning About Program Correctness in Natural Language
ICSE 2026 Paper UCL & PKU Jun 2024 - Feb 2025
We propose a new method for reasoning about and verifying program correctness directly from natural language specifications. Our approach leverages Hoare triples and the strongest postcondition calculus to infer whether a program satisfies a specification without executing the program. For loops, we introduce k-induction to improve reasoning performance.

The Axiom of Choice Math Research Project
Presentation at UCL Presentation UCL June 2023
Studied the Axiom of Choice, its proofs, and its applications in computation and physics. The project examined its equivalence to Zorn's Lemma and connections to recursion, ordered sets, and structural induction.

Working Experience

Summer Research Internship, Department of Computer Science, UCL
UCL Jun 2025 – Sep 2025
Selected as one of ten students for the departmental summer research internship. Worked on the CognaScore code readability model.

Skills

- **Programming:** Proficient in Python and Java.
- **AI-Assisted Development:** Experienced in using LLMs to accelerate software development.
- **App & Front-End Development:** iOS app developer; front-end developer.

- **Media Production:** Skilled in video editing and content creation.
- **Other:** Proficient in Latex. Interesting in game develop.

Performance

Achieved outstanding academic and research-related performance:

- Ranked **1/150** in COMP0010 (Software Engineering); **1/130** in the COMP0169 final exam (Machine Learning for Visual Computing); and **1/50** in COMP0024 (Artificial Intelligence and Neural Computing).
- Received two unsolicited recommendation letters: one from Prof. Earl supporting my research funding application, and another from Prof. Tobias commending my exceptional performance in coursework. Earl's letter, Tobias's letter

Recent Projects

- A mind mapping-based LLM web app development.
- A survival/creation game, a blocky world Unity game development project.