

Aaron Zecheng Qiu

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Personal Website | Google Scholar | ORCID | GitHub

EDUCATION

Macau University of Science and Technology (M.U.S.T.) <i>Bachelor of Science in Computer Science</i>	Macao S.A.R. <i>Sep. 2023 – Aug. 2027 (Expected)</i>
<ul style="list-style-type: none">• CGPA: 3.73 / 4.00 2024-2025 GPA: 3.85 / 4.00 (Rank: 14/429)• Honors: Dean's Honor List (2024-2025); Entrance Scholarship (Outstanding Category).	

PUBLICATIONS

- Y. Wu, Z. Qiu, J. Yang. "A three-dimensional multi-phase-field vesicles model and its practical finite difference solver." *Submitted to Computer Physics Communications (CPC)*. (Under Review). [Code]

RESEARCH EXPERIENCE

Research Group of Prof. Victor Junqiu Wei <i>Research Assistant</i>	M.U.S.T. <i>Mar. 2025 – Present</i>
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- **Conversational Text-to-Trajectory Visualization (Text2Traj).**

- Developed a dialogue-centric visualization system on **PostgreSQL** and **PostGIS**, integrating Text-to-SQL paradigms to process complex spatio-temporal queries.
- Implemented an **LLM-based semantic reasoning layer** to autonomously detect and resolve query ambiguities (e.g., spatial granularity conflicts, underspecified visualization types) and identify unanswerable requests.
- Constructed a large-scale benchmark dataset containing adversarial examples to evaluate the robustness of Large Language Models in handling spatial constraints and administrative boundary logic.

PF-CFD Team (Prof. Junxiang Yang) <i>Research Assistant</i>	M.U.S.T. <i>Feb. 2024 – Present</i>
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- **Multi-Phase-Field Vesicle Simulation**

- Implemented a hybrid numerical solver for 3D fluid vesicle dynamics in **C++**, integrating phase-field models into an existing simulation framework.
- Applied a semi-implicit finite difference scheme to evolve phase-field equations, ensuring rigorous numerical stability and energy conservation.
- Optimized memory management and data storage strategies, significantly reducing computational overhead for multi-vesicle interaction simulations.

- **3D Phase-Field Simulation for Tissue Growth**

- Developed a 3D numerical simulation framework from scratch using **C++** and **MATLAB** to model curvature-dependent tissue growth on complex bio-scaffolds.
- Engineered an **Alternating Direction Implicit (ADI)** solver with second-order temporal accuracy, replacing the legacy explicit scheme to ensure unconditional numerical stability.
- Extended the theoretical model from 2D surfaces to 3D volumetric geometries, enabling precise prediction of tissue evolution in realistic porous structures.

INTERNSHIP EXPERIENCE

CoCreative Information Technology Co., Ltd. <i>Java Software Engineer</i>	Shenyang, China <i>Jun. 2025 – Aug. 2025</i>
<ul style="list-style-type: none">• Developed and maintained software functions using Java and JavaWeb technologies.• Performed SQL query optimization to enhance database performance and project efficiency.• Contributed to the core codebase and participated in the full development lifecycle of company software projects.	

ACADEMIC SERVICES

- **External Reviewer**, IEEE International Conference on Data Engineering (ICDE) 2026.

- Invited by Prof. Victor Junqiu Wei to review submissions related to DB4AI and LLM Agent Memory Systems.
- **Student Representative**, HKIE Accreditation Interview Panel.
 - Served as one of the student representatives during the HKIE accreditation interview to support the validation of the BSc in Computer Science program.

TECHNICAL SKILLS

- **Languages:** C/C++ (High Proficiency), Python, SQL (PostgreSQL), Java, L^AT_EX.
- **Technologies:** PyTorch, PostGIS, MATLAB, Linux, Git, Docker.
- **English:** IELTS 7.0 (Proficient).

EXTRACURRICULAR COURSES

The University of Hong Kong (HKU) Summer Institute

Course: AI Engineer: Gen-AI and Virtual Worlds

Hong Kong S.A.R.

Jul. 2024