

# Zecheng Qiu

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Personal Website | Google Scholar | ORCID | GitHub

## EDUCATION

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

## 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

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| <b>Research Group of Prof. Victor Junqiu Wei</b><br><i>Research Assistant</i> | M.U.S.T.<br><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.

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| <b>PF-CFD Team (Prof. Junxiang Yang)</b><br><i>Research Assistant</i> | M.U.S.T.<br><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

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

## 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

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- **Languages:** C/C++ (High Proficiency), Python, SQL (PostgreSQL), Java, L<sup>A</sup>T<sub>E</sub>X.
- **Technologies:** PyTorch, PostGIS, MATLAB, Linux, Git, Docker.
- **English:** IELTS 7.0 (Proficient).

## EXTRACURRICULAR COURSES

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**The University of Hong Kong (HKU) Summer Institute**

*Course: AI Engineer: Gen-AI and Virtual Worlds*

Hong Kong S.A.R.

*Jul. 2024*