Jirui ZHANG

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Educational Background

University of Nottingham **Nottingham, UK**
09/2024-06/2026
Major: Computer Science with Artificial Intelligence
Core Courses: C++ Programming, Develop Maintainable Software, Individual Dissertation, Software Engineering Group Project
Major GPA: 80/100

University of Nottingham Ningbo China **Ningbo, China**
09/2022 – 06/2024
Major: Computer Science with Artificial Intelligence
Core Courses: Fundamentals of Artificial Intelligence, Programming & Algorithms, Data Bases and Interfaces
Major GPA: 82.5/100

National University of Singapore **Singapore**
01/2023 – 02/2023
Online Course: Machine Learning in Python

Research and Internship Experiences

Artificial Intelligence and Cross-Cultural Digital Humanities (Textbook Project) 10/2025-
Research Assistant

- Contributed to the development of the textbook ***Artificial Intelligence and Cross-Cultural Digital Humanities: Theory, Methods, and Practice.***
- Assisted in literature review, chapter drafting and cross-cultural case study curation.
- Supported data collection and verification for sections on NLP, multimodal analysis and AI ethics.

Xinhua Education Technology 06/2025-09/2025
Software Engineer

- Optimized Unreal Engine real-time rendering & frame-time bottlenecks (profiling, batching, resource management), boosting scene throughput by 40% for interactive 3D experiences.
- Refactored core runtime modules with data-oriented patterns to improve update performance and maintainability; introduced automated tests to prevent regressions during rapid content iteration.
- Partnered with domain experts and content designers to translate learning requirements into game-like interactive mechanics and scalable engine features (systems, tools, and reusable components).

Motus VR 10/2024-05/2025
Game Development Intern

- Built an amusement-park game hub with portal-based level selection, and developed core mini-games (Maze Adventure, Chase Escape, Red Light, Green Light) in UE5 Blueprints, including VR pawn movement/input bindings, collectibles/health systems, and responsive UI feedback loops.
- Implemented enemy gameplay AI using state-based logic (Idle/Patrol/Chase/Attack) driven by line-of-sight & proximity triggers, and tuned navigation behavior; improved chase accuracy by 20% and reduced pathfinding errors by 30%.
- Added procedural maze generation and difficulty-driven parameters (speed/lives/objectives), then analyzed gameplay telemetry with regression/feature analysis to quantify gameplay–rehab progress (R^2=0.65); proposed gait-analysis–driven adaptive rehabilitation (e.g., LSTM).

Development of a Multimodal Siamese Discriminant Network 06/2024-
Researcher

- Proposed and led an innovative project addressing the limitations of existing jigsaw-solving models.
- Built a dataset of 9,000 images (printed text, handwritten text, and mixed graphics).
- Developed multimodal architecture combining CNN-based text detection, BERT for semantic understanding and Custom attention layers for cross-modal fusion.
- Outperformed baseline models by integrating computer vision, NLP, and large language models for contextual reconstruction.

Generative AI for In-game Dynamic Non-playable Characters Creation and Adaptation 09/2025-
Researcher

- Developed a text-to-NPC gameplay authoring tool (custom Unity Editor window): converts natural-language descriptions into engine-ready NPC specs via schema-constrained JSON, then binds outputs into in-game stats/behaviour presets for immediate playtesting.
- Built a Unity Vampire Survivors–style playable sandbox for testing runtime NPC injection, using Scriptable Object blueprints + prefab templates to support high-density enemy spawning and fast iteration.

- Integrated a locally deployed LLM (Qwen3-VL) with an async C# wrapper, adding validation + safety guardrails (type/schema checks, fallback defaults, non-blocking execution) to keep the editor and game loop responsive.

Matrix Data Technology 05/2024-09/2024
AI Intern
- Designed incremental evaluation mechanism for logistics path planning, reducing computational overhead by 35%.
- Developed hybrid reinforcement learning system combining model-based planning and DQN for obstacle avoidance.
- Accelerated convergence by 22% using prioritized replay and autoencoder-based state compression.

Alphabet
02/2024-07/2024
Software Developer (Online)
- Developed a full-stack music platform using Node.js, integrating database connectivity, feature extraction and evaluation, and cloud deployment.
- Designed and implemented both recall and ranking models, and combined them into a complete user recommendation system.
- Built an integrated back-end framework and implemented the front-end music player and login interface, successfully completing the project end-to-end for the first time.

Tianjian Jingrui Co., Ltd 05/2023-09/2023
Software Engineer
- Developed an educational database system with Python Flask, HTML and SQLite.
- Built image preprocessing pipeline with JavaScript (resizing, renaming, hashing), improving database efficiency by 40%.

Honors

- Provost Scholarship, University of Nottingham Ningbo China 06/2024
- Dean Scholarship, University of Nottingham Ningbo China 06/2025

Computer Skills

Programming Languages
- Proficient in Python, C++, Java, JavaScript, C, Haskell, Lean, SQL, HTML/CSS, Flask, Matlab, Latex, GeoGebra, nand2tetris, MIPS, NS2

Frameworks & Tools
- Unreal Engine 5, Unity, TensorFlow, PyTorch, NumPy, OpenCV, Flask, Node.js, React, Docker,

Other Skills
- Data preprocessing, full-stack development, cloud deployment (GCP), collaborative research & leadership

Extracurricular Activities

Mandarin Teaching Volunteer, Confucius Institute, University of Nottingham Ningbo China 09/2022-06/2024
Lecturer
- Taught Mandarin to international students, enhancing cross-cultural communication skills and adaptability in diverse learning environments.
- Gained valuable experience in explaining complex concepts clearly, a skill transferable to collaborative research and technical discussions in AI.

Mandarin Corner, University of Nottingham Ningbo China 09/2022-06/2024
Program Manager
- Oversaw the planning and execution of regular events for international participants.
- Strengthened project management, organizational and leadership abilities by coordinating activities, resources, and participant engagement.

Freshman Orientation Program 09/2023-01/2024
Peer Mentor
- Guided new students in adapting to university life by offering academic and personal support.
- Recognized for leadership and interpersonal skills in fostering a welcoming and supportive environment.

Panda Habitat Conservation and Care Program 01/2023-02/2023
Key Member
- Participated in the maintenance and cleaning of giant panda habitats alongside a team of volunteers.
- Developed teamwork, problem-solving, and coordination skills through fieldwork in a collaborative setting.