

Arthur Lu

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EDUCATION

University of Southern California

Master of Science in Computer Science.

Los Angeles, CA

May 2028 (Expected)

University of Nottingham Ningbo China

B.S. (Hons), Computer Science with Artificial Intelligence.

Ningbo, China

Jul 2026

Second-Class Honours (Division One).

EXPERIENCE

Undergraduate Research Assistant

Jun 2025 - Aug 2025

University of Nottingham Ningbo China

Ningbo, China

- Owned HoloLens 2 integration within a **6-person team**, connecting a Python/OpenPose pose-processing pipeline with C#/Unity feedback components to support interactive assessment of 6 rehabilitation movements.
- Implemented geometry-based estimation against an existing 3D human model to recover **occluded joints** and calculate ankle and toe angles; evaluated the pipeline on video clips, including foot flexion and extension movements.

Undergraduate Research Assistant

Jun 2024 - Aug 2024

University of Nottingham Ningbo China

Ningbo, China

- Led a **7-person team** to deliver a Raspberry Pi/Arduino security prototype: defined module interfaces, coordinated integration of entry detection, alarms, and camera capture, and implemented control code for its hardware components.

Software Development Intern

Jan 2024 - Feb 2024

Shenzhen Topsy Software

Shenzhen, China

- Owned 3 native **WeChat Mini Program** pages for vaccine details, purchase, and appointment booking; passed QA acceptance and shipped to a **nationwide healthcare** booking platform with 4,000 partners, 600+ cities, 67M+ cumulative members.
- Integrated 3+ backend APIs to feed the product-selection popup with images and prices and link it to appointment booking; corrected object-copying defects that produced **duplicate product entries**, restoring consistent selection behavior before release.

PROJECTS

RunSleuth | PyTorch Training Diagnostics & Repair Verification

Sep 2026 - Present

- Independently built a verifier that decides whether to accept the **repairs LLM agents make** to deep-learning training code, where faults are silent: runs finish and accuracy barely moves. It judges each task requirement from recorded run evidence and short probe runs, then accepts, rejects, or sends the repair to human review.
- In preliminary held-out tests on 180 repairs from 5 LLM agents across 6 faults in Camelyon17-WILDS and HAM10000 pipelines, it accepted **0 of 16 wrong repairs** and rejected **0 of 164 correct** ones, sending 44 to review, where a metric gate accepted 12 wrong repairs and the best LLM reviewer 2; hidden tests and analysis were frozen before any test repair.

CMCD | Cross-Modality MRI Translation

Jun 2025 - May 2026

- Independently engineered a PyTorch **MRI-translation pipeline** spanning NIfTI preprocessing, conditional diffusion training, checkpoint recovery, and inference; processed **20K+ BraTS 2020 slices** into standardized 256x256 inputs for T1-to-T2 synthesis.
- Combined anatomical conditioning, MSE/L1/SSIM losses, and classifier-free guidance for T1-to-T2 synthesis; achieved **27.47 dB PSNR** on BraTS 2020, exceeding the strongest of 6 baselines by 1.74 dB; **first-author paper** accepted at ICONIP 2026.

Motion Capture | Real-Time Dual-Camera Tracking

Oct 2024 - Apr 2025

- Extended an offline, single-camera object-pose pipeline to live **dual-camera processing** with real-time 6-DoF tracking at **60 FPS**, evaluated on 3 objects across changing scenes.
- Built a **Flask/Socket.IO and Vue.js** interface to persist and reuse object-reference data, allowing previously registered objects to be tracked without repeating video capture and reference-data preprocessing.

PUBLICATIONS

- Lu, Z.**, Huang, M., & He, X. CMCD: Conditional Diffusion Model for Medical Image Modality Translation. International Conference on Neural Information Processing (ICONIP), 2026 (accepted).
- Fan, S., **Lu, Z.**, Yan, Z., & Hu, L. Interactions of Three Berberine Mid-Chain Fatty Acid Salts with Bovine Serum Albumin (BSA): Spectroscopic Analysis and Molecular Docking. International Journal of Biological Macromolecules, 274, 133370, 2024.

SKILLS

Languages: Python, C++, JavaScript, Java, C#, SQL

Software Engineering: Data structures and algorithms, OOP, Flask, FastAPI, Vue.js, Socket.IO, Git, Docker, Linux

ML & GenAI: PyTorch, OpenCV, LLM agents, diffusion models, Hugging Face, OpenAI API, Transformer