Maoran (Andy) Li

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Education

Monash University — Faculty of IT 04/2024 ~ current

Doctor of Philosophy on Multi-Agent Path Finding

Monash University — Faculty of Engineering & Faculty of IT 02/2018 ~ 12/2022

Advanced Computer Science & Electrical and Computer Systems Engineering (Honours) BachelorMelbourne, Australia

Theory of Computation	88	Computer organization & programming	83
Computational modelling & simulation	81	Signals and Systems	86
Computer Vision	92	Planning and automated reasoning	86

Job Experience

Teaching Assistant

Master of Artificial Intelligence 01/2025 ~ current

- FIT5047 — Fundamentals of Artificial Intelligence
- FIT5222 — Planning and Automated Reasoning (TA Admin)

Bachelor (Honours) of Electrical and Computer Systems Engineering 01/2026 ~ current

- ECE2071 — Computer Organisation and Programming
- ECE2131 — Electrical Circuits
- ECE3073 — Computer Systems
- ECE4078 — Intelligent robotics (Deputy Unit Coordinator)

Full Stack Developer 08/2022 ~ 04/2024

- Developed a plugin for an online consultation website affiliated with the Victoria Department of Health, including UI/UX design, frontend and backend development, as well as rigorous testing.
- The plugin has undergone evaluation by four medical professionals and a significant number of patients, with the majority of users providing favorable feedback.
- Implemented many functions into the plugin under very strict T&C rules.
  - A lightweight client-side dictation
  - A local translation service (without using commercial APIs for privacy and ethical concerns)
  - Privacy information anonymisation system

Research Experience

Optimization Research 08/2021 ~ current

- Long-term cooperation with professors as a research assistant.
- Increased current MAPD algorithm 8× faster than the latest paper's result.
- Extended current state-of-the-art model MAPF_{R} to MAPF_{RX}, which allows partial continuous space.
- Modified the current state-of-the-art algorithm CCBS to CCBS-ES, which can solve MAPF_{RX}.
- CCBS-ES output outperforms CCBS by up to 24% currently, with many potentials still in progress.
- Improved the performance of CCBS by up to four orders of magnitude, primarily by providing stronger constraint reasoning.
- Established a well-defined model of MAPF_{R} under the floating-point representation limitation.

Large Language Models for Summarizing Palliative Care Consultations Journal article, 2024

X. Chen, W. Zhou, R. Hoda, ***A. Li****, C. Bain & P. Poon* — DIGITAL HEALTH, vol. 10

- Co-authored a peer-reviewed pilot study evaluating large language models (GPT-3.5, GPT-4 and LLaMA 2) for zero-shot summarisation of doctor–patient palliative care consultations.
- Benchmarked summary quality with BLEU, ROUGE-L, METEOR and BERTScore, alongside Flesch–Kincaid readability scoring.
- Found GPT-4 strongest on ROUGE-L, METEOR and BERTScore, while LLaMA 70B produced the simplest, most readable summaries — informing model selection for patient-friendly medical summaries.

Comparing LLMs and Traditional Machine Translation for Medical Consultation Summaries
Journal article, 2026
***A. Li**, W. Zhou, R. Hoda, C. Bain & P. Poon* — JMIR Formative Research, vol. 10

- First-authored a peer-reviewed pilot feasibility study comparing three LLMs (GPT-4o, Llama-3.1, Gemma-2) against three traditional machine-translation tools (Google Translate, Bing Translator, DeepL) for translating English medical summaries into Arabic, simplified Chinese and Vietnamese.
- Evaluated translations against professional reference versions using BLEU, CHR-F and METEOR metrics.
- Found traditional MT stronger on surface-level metrics while LLMs showed relative strengths in semantic similarity for Vietnamese and Chinese — underscoring the need for human review and specialised evaluation before clinical deployment.

Supervision Experience

Software Engineering Research 12/2022 ∼ 08/2023

- Developed a sophisticated system designed to autonomously collect patient medical histories and symptom information, subsequently condensing this data into a standardized medical record format.
- The system effectively harnesses the capabilities of five GPT-3.5 models working collaboratively to accomplish the task.
- Supervised a team of three master's students during a winter project focused on the creation of two web applications based on the system.
- One application facilitates human assessment of the system for research purposes through a comprehensive rating system applied to each individual component.
- The other application functions as a commercial prototype, poised for seamless integration into the daily workflow of medical practitioners, thereby enhancing their operational efficiency.

Cooperative-ORCA* 2026

- Supervised the development of C-ORCA* and C-ORCA*-MAPF, continuous-space multi-agent path-finding algorithms that proactively prevent deadlocks by reasoning over agents' full spatial trajectories, removing the post-hoc correction overhead of prior real-time solvers (ORCA*-MAPF).
- Cut expensive MAPF fallback invocations by up to **3–4 orders of magnitude** versus ORCA*-MAPF.
- Sustained a ∼**100% success rate at 200 agents** on the Random benchmark (vs. ∼50% for ORCA*-MAPF) and over **80%** on Warehouse, where prior solvers degrade rapidly.
- Achieved this proactive deadlock avoidance at **near-zero per-timestep overhead**, with per-step computation almost identical to ORCA*.

Other Experience

Workshop on Multi-Agent Path Finding (WoMAPF), AAAI-26 01/2026
Lead Organizer & Main Contact Singapore

- Led the organisation of the MAPF workshop at AAAI-26, coordinating a four-person organising team alongside an advisory committee.
- Oversaw the full program pipeline — call for papers, peer review and scheduling — handling over **40 paper submissions**.

Tax Invoice Management System 09/2020 ∼ 11/2020

- Continually working with 3 accounting companies which manage over 20 companies' tax information.
- Completely self-developed, including contacting clients, designing UI, implementing functionalities, etc.
- Self-learnt license system, accounting knowledge and familiarised with the patent system.

Unmanned Aerial Systems 09/2019 ∼ 07/2021
Obstacle Avoidance Algorithm Melbourne, Australia

- Developed an auto-flying algorithm independently with extremely low computation consumption (time complexity $O(N)$ for each time step).
- Quick (real-time) response even on a low computation power chip.
- 0.026s of calculation on a regular laptop can simulate 78s of path.

Connect5 PVC 07/2020 ∼ 07/2020
Individual project (`https://github.com/AndyLi-26/connect5`) Melbourne, Australia

- Developed a Connect5 player-vs-computer in Python.
- Self-learnt tkinter, then designed and implemented a UI for the game.
- Assigned weights to different shapes through inspiration from machine learning.
- Combined with dynamic programming and predicts up to 3 future moves, making the best move according to the weight.
- Designed a testing UI just for testing and recording the order of moves.

Game Automation Individual projects

- Automated game-play for many mini-games.
- Automated Minesweeper based on probability and successfully completed the game.
- Planned paths for the computer to pass Snake (the length of the snake fills the screen).
- Used a genetic algorithm to make the computer complete Sudoku instantly.
- Computer can play Tetris indefinitely with a proprietary algorithm.
- Implemented Pong's human-computer combat and death replay through lambda calculus.

Electrical and Computer Systems Engineering — Student Mentor 07/2020 ~ 11/2020
Melbourne, Australia

- Helped more than 20 students in total and received positive feedback from all of them.
- Helped students with their future career planning and academic planning.
- Provided guidance and answered questions about students' professional knowledge and study methods.
- Provided students with time-planning methods and extracurricular activities.

- Undergraduate student tutoring, mainly teaching level 1~3 units.
- Auckland site — Second place in ICPC 2021.
- IEEEXtreme 2021: Global rank 504, Section rank 4, University rank 1 (`https://r10.ieee.org/victorian/news/ieee-xtreme-15-0-competition-winners/`).
- MATLAB Minidrone Competition 2021 — Pacific Site Champion (`https://au.mathworks.com/academia/student-competitions/minidrones/minidrone-masters.html`).

Others

- **Skills:** C/C++, Python, MATLAB, JavaScript, Java, MIPS/Qsys, Verilog, PLC, SolidWorks, Haskell, SQL, VB, Office, Discrete and Continuous Math, Graph Theory, Circuit Design, Logical Circuit Design, Power Grid Design, PCB Design, Algorithm Development, Signal Processing, Data Modelling, Parallel Programming.
- **Languages:** English (barrier free), Chinese.
- **Hobbies:** Push-bike riding (9 yr), work-out training (1.5 yr).