AJ Wright

14wright08@gmail.com
https://github.com/ajwright1408

Research Interests

Artificial Intelligence, Robotic Manipulation, Reinforcement Learning, Real-world applications of AI, Robotics for Material Discovery, Computer Vision

Education

University of Liverpool(2024–2025)
MSc Advanced Computer Science

- **COMP702 MSc Project**
  - **A summer project extended over the entire year, creating a Tool Morphology Framework to discover the most suitable tool for simulation.**
  - **Have already studied current literature**

University of Liverpool (2021–2024)
BSc Computer Science with Artificial Intelligence

- **Graduated First class honours**
- First Year Average: 81.5%
- Second Year Average: 69.8%
- Third Year Average: 73.4%

- *Group Project (COMP 208):* Gained valuable experience in collaborative coding and enhanced skills in comprehending and manipulating unfamiliar code due to project modifications.
- *Autonomous Mobile Robotics (COMP 329):* Provided a framework for the mathematical underlying for kinematics and pose estimation.
- *Robot Perception and Manipulation (COMP 341):* Gave an understanding of implementing computer vision techniques into robotics, while expanding knowledge on kinematic systems.
- *Image Processing (ELEC 319):* Introduced multiple techniques to improve the efficiency of robot manipulation and reinforcement, focusing on manipulating images to be suitable for robotics.
- **COMP390 Dissertation:** Robot Learning for Laboratory Environments
  - A year-long project researching how robots learnt a simulated environment (Orbit with NVIDIA Isaac) to design robotic chemists. In my project, I focused specifically on using deep reinforcement learning and imitation learning, such that the robot

learns how to lift a beaker. This was picked as it is a simple yet necessary task in chemistry labs, and with the knowledge gained this skill can be expanded into a full chemistry workflow.

BRGS Sixth Form
A Levels: Biology (B), Chemistry (B), Physics (C), Computer Science (A)

Research Experience

AIChemy Summer Research Internship (2024) (gabriella.pizzuto@liverpool.ac.uk)

- Developed a simulated environment in Orbit-Chemistry to study the sim2real gap in robotic environments.
- Focused on material manipulation, specifically the behaviour of slurries during stirring tasks.
- Collaboration with the University of Toronto and Acceleration Consortium.

CTL Robotics Summer Internship (2024) (jhicks94@liverpool.ac.uk)

- Set up UR5e robot, learning how to interact via Python code, and created a repository that was used in Winter School and MSc digital chemistry
- Learnt how to use Ros-2 and Moveit with the UR5e arm, made a driver to be able to control Hand-E via Ros, and created multiple example robotic tasks, such as pipetting and setting up a spectrometer expeirement

Teaching Experience

Postgraduate Demonstrator, University of Liverpool (2022, 2023)

- Demonstrated weekly assignments for *Introduction to AI* to 4 classes and conducted grading.
- Improved skills in presenting and explaining concepts to students unfamiliar with AI.

Committee Member, Game Development Society, University of Liverpool

- Conducted training sessions on game development, focusing on enemy AI and game engine mechanics.

Committee Member, Game Society, University of Liverpool

- Ran weekly sessions of 20+ members, and I am helping to organise and run an annual charity event.

Skills

Programming

- Proficient: Python, Java, C#, C++, C
- Practised: Haskell

Tools and Frameworks

- Proficient with Visual Studio Code (VSCode), GitHub, and Git for collaboration.
- Experience with robotic simulators (e.g., NVIDIA Isaac) and robot learning frameworks (e.g., Orbit).
- Familiarity with software management tools (e.g., Maven).

General Skills

- Effective team player
- Proficient presenter
- Academically inclined and eager to learn
- Adaptable to peer feedback

Publications

- FLIP: Flowability-informed Powder Weighing
- MATTERIX: Towards a Digital Twin for Robotics-Assisted Chemistry Lab Automation