Jacob Toller

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Profile

Hi, my name is Jacob Toller and I'm currently awaiting results for a Master's degree in Computer Science and Mathematics, due to graduate in July 2023. I have a dedicated work ethic and a perfectionist mindset.

I have an interest in Physics and Engineering (especially in the automotive field); and my career ambition is to eventually end up working with cutting edge robotics, or with high performance vehicles.

Education

Computer Science and Mathematics (Undergrad. Masters), Loughborough University — **Expected Result: 1st** — **2019 - 2023**
Key modules: Mathematical Modelling, Managing a project team, Robotics
Masters project: 'Developing a system for human-robot interaction'

Ridgewood School/Ridgewood Sixth Form; Scawsby, Doncaster — **2012 - 2019**
A Levels: Further Mathematics (A), Mathematics (A*), Computer Science (B), Physics (B)
GCSEs: 2x A*'s, 1x 2*-Distinction, 3x A's, 1x B; Mathematics (9), English (4)

Applicable Skills

- Full UK Drivers Licence.
- 3 day First Aid qualified.
- Well versed in Python 3 (inc. Jupyter, Numpy, PyTorch, JSON); knowledgeable in C#, Java, JavaScript, PHP.
- Experience with using systems of differential equations to model systems and behaviours in the real world (Mathematical Modelling). Knowledgeable in MATLAB and Maple.
- Experience in using ROS2 (See projects.)
- Experience with common tools/environments used for development (Git, Linux, VSCode etc.).
- Some experience with the SAP enterprise resource planning software.
- Strong experience in presentations, in both writing and delivery.

Voluntary/Work Experience

Canoe & Kayak Coach, Lifeguard Trainer/Assessor — **Manvers Lake, Rotherham** — **March 2020 - Present**
(In addition to the OW Lifeguard role)

- With this role, I have coached on an individual and small group level (inc. children & vuln. adults); over a range of abilities from beginners to Olympic candidates.
- Managed logistics of the storage warehouse, such that the kit is well maintained and accessible to 2000+ members.
- Obtained professional coaching qualifications that include coaching techniques that are relevant in a professional setting.

Open Water Lifeguard — **Manvers Lake, Rotherham** — **April 2014 - Present**
(While the core role has remained the same since 2014, not legally responsible until qualified in 2017.)

- In this role, I am responsible for managing a team of lifeguards for both our regular sessions and large, national competitions/events, supervising up to 200 swimmers in the water at a time.
- While having this role, I have improved my communication and developed team management skills, as well as excellent attention to detail in monitoring.

Martial Arts Instructor **Direct Martial Arts, Doncaster** **July 2017 – March 2020**

- Was responsible for running the classes, instructing and coaching large groups (inc. children & vuln. adults) while maintaining a safe and welcoming environment.
- During this time, I gained soft skills like effective communication with colleagues, customer service; as well as time management.

Notable Projects

Developing a System for Human-Robot Interaction (University Master's Thesis project)

- This was my Master's Thesis project, where I was tasked to develop a system for human-robot interaction that would allow for a robot to easily be able to communicate with a person, while using novel technologies/techniques.
- Modular system created by following software development process; from establishing requirements/specification, to programming components, to integration.
- Utilises Head-Pose detection to determine whether or not a person would like to interact with the robot; and then allows for a person to converse with the robot with responses generated by ChatGPT.
- This project is where I picked up all of my skills in utilising ROS2; and also taught me a lot about handling Linux.
- Not currently publicly available, source-code & thesis can be provided upon request.

Active Walkers (University project, 83% overall mark.)

- Basically an ant simulator.
- The task for this was to develop a stochastic model for simulating the behaviour of simple robots ('active walkers') or ants, and the way they use pheromones/markers to locate and return food.
- Utilises a simple grid system with an agent-based model; where walkers/ants can only navigate by sensing marker/pheromone concentration in front of them, eventually forming trails between food and nest.
- Available at https://github.com/jacob-toller/mathematical-modelling-4; with the report contained within.
- This project was incredibly well received for both its submitted report, and accompanying presentation

Managing a Project Team (University module)

- Tasked with overseeing and managing three teams of 2nd year CompSci students, using an agile software development methodology.
- Maintained progress in each of the teams and resolved conflicts (absent team members, disagreements between members based on their progress).
- Generated concise yet detailed reports for the module leader (acting as supervisor) on my teams.