

Joshua Bettles

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PROFILE

First Year postgraduate researcher at the University of Manchester developing technologies for the nuclear industry. With experience working in a startup centred around the development of a large-scale metal-DED system gaining hands on experience with KUKA robotics, PLC and HMI design. Highly conscientious and keen to learn new skills.

EDUCATION

2018 – Present The University of Manchester

PhD in Electronic and Electrical Engineering – Start date September 2023

Research topic: Development of a Cobot Radiological Survey Assistant

MEng (Hons) Mechatronic Engineering with Year in Industry: First Class (Hons)

- Specialising in Control Systems, Industrial Robotics, Mobile Robotics and Manipulators, Data Networking, Concurrency, Numerical Analysis and System Identification.
- Developed teamwork and leadership through being project manager for 4th year team project developing an automated radiochemical reactor achieving best team project.
- Project lead for the design and construction of an autonomous line following robot.
- Ran a bespoke 3rd year project evaluating the design, construction, and the control system for a small omnidirectional mobile robot.

2013 - 2018 Sharnbrook Academy

- A-Levels: Mathematics (A), Physics (A), Chemistry (A)
- GCSEs: 13 GCSEs (A* - C) including Maths(A*) and English(A/C)

PROFESSIONAL QUALIFICATIONS AND MEMBERSHIPS

Member of the Institute of Engineering and Technology (MIET) – September 2018

Associate Fellow of the Higher Education Academy (AFHEA) – June 2021

University of Manchester Stellify Award – June 2023

Gas Safety – Pass 01/2022

Fire Marshal – Pass 06/2023

First Aid at Work – Pass 03/2022

AgilePM Project management – Pass 04/2023

WORK EXPERIENCE

Jun 21 – Jun 24 WAAM3D Robotics Engineer

- Worked as one of the lead robotic engineers, integrating KUKA robotic manipulators with industrial PLC's, welding power sources, sensors and other proprietary equipment used for metal additive manufacturing.
- Developed custom KUKA software to interface with new equipment seamlessly, simplifying integration of new systems and allowing more freedom of operation to the AM engineer.
- Developed time management, organisational skills, people management through being the lead project manager for prestigious Italian aerospace customer project for integration of hardware and software in a custom metal-DED application. Continual discussions and client meetings improved my client interactions, time and resource management as well as financial management skills through ensure kept to tight budget.
- Lead and a member of several domestic and international installations, leading the electrical teams on the installations.
- Programmed a custom control system on an Allen-Bradley PLC in Ladder logic for control of a hazardous environment, safety systems, robot motion and orchestrating operation of valves and extraction systems to achieve certain environmental conditions.
- Lead conformity assessment of WAAM3D products to relevant standards EU directives, UK regulation and harmonised standards developing technical construction files, conformity assessment and information for use.

RELEVANT EXPERIENCES

- Volunteering
 - FIRST Lego league – Worked alongside industry experts and academics from different companies to assess presentations from lower and middle school students and discussed engineering and renewable energy. Allowed me to engage in new situations where I had to develop my technology transfer skills to engage the students.
 - The RAIN Hub – Worked with members from the RAIN Hub promoting engineering and nuclear energy to the next generation of engineers.
- Numerous personal projects developing software proficiency, problem solving and commercial awareness such as development of custom Vinyl cutter, BB-8 Clone, and 3D printing and CAD design.

POSITIONS OF RESPONSIBILITY

Apr 19 – Current University of Manchester Robotics Society
Events Manager - Current
Educational Lead – Previous
President – Previous
Social Secretary - Previous

- Elected to the positions of Social Secretary, President, Educational Lead and Events Manager.
- Developed personal and social skills through hosting numerous socials and events throughout my time in the society. Grew event planning confidence through Organising academic talks, events, and Hackathons.
- Practiced written communication through submission of funding proposals.
- Oversaw several bespoke and group projects, ran and taught workshops to students from all over the university.
- Grew the society to over a hundred members.

Sept 19 – Jun 21 University of Manchester
PASS Student Coordinator - Previous
PASS Leader - Previous

- Led PASS (Peer Assisted Study Session) sessions with approximately 20 students facilitating their learning using specific methods such as wait time and redirection.
- Organised talks and presentations from careers service for PASS leaders.
- Attended and then later co-ordinated debriefs for all PASS leaders, talking about best practises, methods, and techniques.
- Developed planning and preparation skills through development of the session plans.
- Awarded Associate Fellowship in Higher Education which is an accredited award displaying my teaching and facilitating ability.

ADDITIONAL SKILLS

IT: Microsoft Office, Embedded C and C++, MATLAB, Simulink, LabView, VHDL, Assembly, MapleSim, Solidworks, ARM Mbed, Allen-Bradley ladder logic, KUKA KRL.
Self-taught: Python, Arduino, Raspberry Pi, Basic photoshop and illustrator, Fusion 360, Eagle, Linux, ROS, ROS2.

Driving: Full UK driving licence.

INTERESTS AND ACTIVITIES

During my free time, I like to take part in outreach and volunteering activities within the community, whether that is running robotics workshops for year 8 students to charity bake sales or environmental work. Recently, I fundraised for a sponsored hike in support of the Marie Curie charity, raising close to £4000 before August 2023. I like to attend and organise hackathons to further better my knowledge and widen my skill set. I attended the Great Uni Hack 2019 where my team developed a M&M firing robot coming in the top 10 teams. I also attended ManMetHacks 2.0 where I hacked a Nintendo DS creating my own custom game, Snek 2, which won 1st place in the Koderly Challenge as well as coming second in best software hack. In 2023 I was lead organiser for the robotics society's Hack-A-Bot which was attended by over 130 students for the 24 hour period. When I am not tinkering with new projects or 'hacking', I like to play hockey. Playing for the Tri-service and Law teams in the university's campus league. It gives me an opportunity to meet new people along keep my fitness up as there is training every Friday and matches on the weekend.