Iain Rudge

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Recent graduate in Mechatronic Engineering and Mathematics. Passionate about optimisation and control systems, with strong technical, business and interpersonal skills for working in a team and succssfuly completing projects.

Education

Academic Qualifications

- **University of Queensland**
  BE(Hons) Mechatronic Engineering - Extended Major, II-b *2013–2018*
- **University of Queensland**
  BSc Mathematics *2013–2018*

Notable Projects

- **Honours Thesis:** *'Optimisation of Dragline Block Length'*
  My honours thesis was a year long project utilising both engineering and mathematical knowledge to model the behaviour of a typical dragline as it operates on a strip within a mine. Using this model I then applied mathematical methods to determine optimal lengths for blocks within each strip in a mine. I am currently writing a paper on this topic under recommendation from my supervisor.
- **Advanced Topics in Operations Research:** *'Stable Matching for Dynamic Ride-Sharing'*
  Under the course of Math4202 I was tasked with choosing a recent research paper within the field of operations research and remodelling and implementing the problem. Working alongside another student we were able to model and solve problems regarding the matching of drivers and passengers within a ride sharing system to reduce the total distance driven. This project required knowledge of operations research, game theory and python. The project was successful in replicating results of the original paper while taking an alternate approach in some techniques.
- **Mechatronic System Design Project II** *'Tele-operated Mine Rescue Robot'*
  In the course Metr4810 myself and 3 other students designed and built a scale robot capable of moving within a maze to locate and rescue trapped miners. This course has a focus on analysis, design and testing in real world conditions. I lead the electrical and firmware design however was also heavily involved in the design of the control and mechanical subsystems. Technical and interpersonal skills were vital to overcoming the challenges proposed implementing a robust system that was able to function in the real world. Upon completion of this course I was asked to tutor the following year and subsequently became a senior tutor.

Employment Experience

- **Micromelon Robotics**
  Co-Founder *November 2017 – Present*
  As Co-Founder for Micromelon Robotics I have learnt a great deal regarding startups and the general practices of small businesses. In a three person start up I learnt a lot on a range of topics, including grant applications, industrial design,pitching to investors, generating MVPs and working with customers. I have been through the UQ startup accelerator and the QUT Robotics accelerator, while also pitching at both the International Conference for Robotics and Automation and the Young Starters competition, winning people's choice at the latter.

- **University of Queensland**
  Academic Tutor *July 2016 – July 2018*

  I have been employed as a tutor for several courses at UQ (seen below), tutoring these courses requires both a high technical knowledge as well as the ability to properly present and explain concepts to students. As a tutor it is important to have both excellent interactive skills and professional behaviour at all times.

  METR4202-Advanced Control & Robotics
  ELEC3004-Signals,Systems & Controls
  METR4810-Mechatronic System Design Project II
  Math3202-Operations Research & Mathematical Planning

- **Robotics Design Lab,University of Queensland**
  Research Assistant *November 2016 – March 2017*

  As an Undergraduate working in the RDL I was tasked with the design and implementation of an open source robotic arm with supporting software.The application of this arm was for use in university courses and rapid prototyping. The arm been used in the course METR4202.

- **Zonefresh/Megafresh**
  Produce Assistant *March 2013 – March 2017*

  At both Zonefresh and Megafresh I demonstrated a good work ethic working at unusual and strenuous hours alongside a university workload. This job while non-technical helped me develop a strong work ethic and interpersonal skills with a diverse range of people.

Technical and Personal skills

- **Programming Languages:** Proficient in: Python, Matlab, Arduino, TeX
  Also basic ability with: C,C++,Java
- **Industry Software Skills:** AutoDesk (Advanced), Matlab (Advanced), Gurobi (Intermediate), Eagle (Intermediate), KiCad (Intermediate), OpenCV (Intermediate)
- **General Business Skills:** Pitching (Intermediate), Teamwork , MVP Validation.

Interests and extra-curricular activity

- I was vice president of the University of Queensland robotics club for two years, actively leading several successful projects with the club promoting an interest and passion for robotics. As a project leader and vice president I am expected to have a high technical knowledge, and have led multiple successful projects, including placing 2nd and 8th in the QUT droid race competition.

References

- **Dr. Michael Kearney**
  Thesis Supervisor *m.kearney@uq.edu.au*
- **Dr. Michael Forbes**
  Math4202 Lecturer *m.forbes@uq.edu.au*
- **Dr. Ross McAree**
  Head of School, Mechanical Engineering and Mining *p.mcaree@uq.edu.au*