Michael Thomas Ratcliffe
63 Ayrefield rd, Robymill, Upholland Lancashire, WN8 0QP
Email: mike@michaelratcliffe.com
Tel: 01257 252441 *Mobile*: +44 (0)7510530073
UK National with full, clean driving licence

Mechanical and Electrical Engineer with strong foundations and experience in automation, control, and computational mathematical modelling/simulation of real world systems. Currently employing these Skills in the Open Source automation, optimisation and public relations of Urban and Peri Urban farms.

Education and Qualifications

2016- 2018 **Nuffield Farming Trust Fellowship**
NSch Fellowship By research
Funded by the Richard Lawes Foundation

Overview: Nuffield Farming Scholarships Trust awarded mentoring, connections and funding for a Ten week Global Focus Programme and a further Ten week personal study travel. The GFP involved a round the world knowledge exchange trip with 8 high calibre agricultural farmers and leaders, 10 countries and hundreds of farm visits. The Personal Study is centred around Technology Adoption and Development strategies, what changes can we make to ensure technology is developed to solve today's needs of farmers and that it reaches the practitioners who need it in an affordable and prompt fashion, ensuring technologies are a part of leading positive changes in agriculture. Presenting the learnings to policy makers, government organisations and leading farming practitioners.

2012- 2014 **Lancaster University, Lancaster**
MSc by Research Mechanical Engineering
Funded by the Sir John Fisher Foundation

Research Project and Publication: "BLDC Motor Power Control Techniques, A novel current control technique" This research project summarised the current state-of-the-art with respect to digital motor commutation techniques, progressed to propose and simulate a novel current control technique aimed at increasing efficiency under part load conditions. Heavily based around simulation, leading to a good base knowledge about how simulations are performed and implemented and provided a great opportunity to network with leading researchers from around the world. Work was presented and published at IEEE POWERENG international conference [Istanbul, Turkey].

2009- 2012 **Lancaster University, Lancaster**
BEng (Hons) Mechanical Engineering (**2.1**)
(**Accredited** by the IMECHE)

Primary Project: "ARTEMIS PROJECT": A novel air-siphon power generation & environmental regeneration solution using lake Grevelingen (Holland) as a case study" Involves researching and assessing the viability of air siphon technology in a maritime environment.

2007 – 2009 **Wigan & Leigh College**
National Diploma in Mechanical Engineering treble grade: **DISTINCTION-DISTINCTION- MERIT**
National Certificate in Mechanical Engineering double grade: **MERIT- MERIT**

Abraham Guest High School
Usual cluster of subjects, with grade's consisting of **A**'s and **B**'s.

Key Skills and Competencies

Computational skills
Along with being computer literate with respect to the usual Microsoft office programs, also proficient in the use of:

- Solid-Works/Autocad
- MATLAB SimuLink
- C++
- Linux
- Arduino IDE
- Integrating MCU's and HTML

Technical skills and Competences

A busy personal life and strong academic achievements have strengthened many technical skills and competences, some noteworthy ones can summarised as such:

- Computational Simulation
- Automation, sensing and control
- Energy conservation/ process refinement
- Technical writing and presentation
- Electrical and Mechanical principles
- Mathematical practices and theory

Teamwork, Leadership and Communication

Culturally sensitive and internationally travelled. Ability to identify attributes and strong personal traits suited to tasks and putting personal ego aside for the benefit of the team, taking the lead when necessary to give the team motivation, direction and conflict management. International research collaboration and professional leadership training honed the ability to present complex ideas and developed concise, technical writing skills and communicate well through written reports and publications.

Projects

Some examples of past projects can be seen below, many were successful some failed and none exploded:

- Non contact Hydropower
- BLDC motor control
- Aquaponics automation
- Quadcopter noise reduction
- Feedback tuning
- Vision based sensing and control
- Renewable energy integration
- Weather measurement

Career History

Policy Advisor [UKUAT, UK]
2018–Current

- Representing the UK agg tech sectors interest and liaising with Policy makers.

Collaborator and Control Systems Engineer [Aquaponics-Lab, UK]
2015 –Current

- System automation and optimisation of Open Source Aquaponic systems.

Nuffield Farming Scholar [Global]
2016–2018

- Assessment of technology use in Urban and Peri Urban farming operations.

English Tutor [Beijing, People's Republic of China]
2014-2015

- Worked with students on a one to one basis, mainly to develop communication skills.

Lab Assistant and Demonstrator [Lancaster University]
2012- 2013

- Lab assistant for modules of interest, working with students building knowledge and understanding needed to implement tasks presented in practical labs.

Memberships

Elemet14's Member of The Month September 2015: For exceptional projects and documentation.

- IMECHE
- IET
- AVF
- AquaponicsLab
- Element14
- HackADay

Hobbies and Interests

Problem solving, Automation and Control System Optimisation, Electronics, Farming, Aquaponics, Travel, DIY and Automotive Maintenance, along with Reading, Teaching and PingPong.

References

Examples of work, academic and professional references available upon request.