SAM WILCOCK

samdemon42@gmail.com

EDUCATION

The University of Leeds
MScEng Mechatronics and Robotics **2018 – 2019**
Dissertation Title: "*Estimation of Extinct Animal Bone Structure and Computational Dynamics Simulation to Find a Stable Walking Policy*"
Pass with distinction, see appendix

The University of Nottingham
BSc (Hons) Mechanical Engineering **2011 – 2017**
1 year hiatus of studies in 2014-2015 whilst studying masters year
Returned to studies in 2015, changed course to BSc in 2016 due to health reasons
Graduated with a 2.1

Bury Grammar School Boys VIth Form, Manchester
A2-levels in Physics, Mathematics,
Systems and Control Technology, Chemistry, Further Mathematics **2009 – 2011**
Mathematics, Further Mathematics, Physics: A
Chemistry, Systems & Control Technology: B

Bury Grammar School Boys
GCSEs in Mathematics, Additional Science, English, English Lit, **2004 – 2009**
Systems and Control Tech., Science, Latin, History, Art
Mathematics, English, Additional Science: A*
English Literature, Electronics, Science, Latin: A
History, Art: B
BTEC Level 2: Public and Uniformed Services, Distinction Star
Free Standing Maths Qualification: C

PREVIOUS EMPLOYMENT

Panic Family Circus, UK-wide
Workshop Coordinator **2009 – 2020**
I worked developing workshops in various circus skills for festivals and home education events of all sizes, as well as assembling big top marquees and performing in clown shows, trapeze shows and Punch & Judy puppet shows.

Self Employed, UK-wide
Squash Court Installations, Refurbishments and Flooring **2016 – 2020**
I constructed 7 squash courts at the Nottingham University Sports Centre as a temporary worker, and then used the contacts gained from this work to gain additional contracts installing courts and sports floors nationwide.

AREAS OF RESEARCH

Control systems – My recent work at the University of Leeds has focused on creating control laws for actuated bipedal walking robots, both classical and more adaptive schemes. During my Bachelor's degree, my final project focused on designing and manufacturing a prototype factory floor robot, adhering to relevant BS:EN and ISO standards.

Dynamics simulation and modelling – I delved into learning about Denavit-Hartenberg parameterisation as part of a drone robotics module in my postgraduate study. I then went on to self-direct study in inverse dynamics, particularly the Recursive Newton Euler method, in order to better understand actuator control strategies for manipulator arms. As part of my dissertation project, I then trained myself to use the Bullet and ODE dynamics engines, in order to simulate dynamic systems and test control strategies on bipedal gaits.

Genetic algorithms and Neural Networks - My previous work in developing novel controllers for bipedal walkers led me to utilise genetic algorithms and other bio-inspired computing methodologies to find optimal, realistic parameters for joint trajectories.

Software development – A large part of my studies, both academic and recreational, has centred around building my capabilities in programming and software, in order to quickly produce results for both design and analytical work.

SOFTWARE PROFICIENCIES

Python, MATLAB, Embedded C (Arduino, ARM Cortex-M), Visual Basic, HTML, C++, C#, **R, Golang** – Proficient in writing and debugging complex programs in all of the above languages.

Javascript, CSS, HTML – Capable of delivering webpages and userscripts to user requirements.

Solidworks, Pro Engineer/PTC Creo – Proficient in designing and assembling 3D representations of products and mechanisms for CAD/CAM, and simulating system stresses to inform design choices.

Simulink – Experienced in using Simulink to create and optimise system models.

Altium – Experience in designing PCB masks.

Github - Worked in group projects relying heavily on collaborative workflows.

Microsoft Project – Experienced in software aided project management, producing Gannt charts, PERT and risk analyses.

Microsoft Office - High proficiency in formation of engineering reports and presentations utilising Word, Excel, Powerpoint etc.

REFEREES

Available on request.