Max Simmonds

Engineering (MEng, MIET, ex-CLD)

- ‣ Voted Bright Spark, 2019
- ‣ Manufacturer Top 100, 2014
- ‣ Winner of NASA Hackathon, 2013

Skills

Engineering	6+ years
C	6+ yrs.
Python	4+ yrs.
Problem Solving	20+ yrs.
Web Development	8+ yrs.
mySQL	8+ yrs.
git	3+ yrs.
Internet of things	4+ yrs.
English	L1
Russian	A1.1

Biography

Full stack developer, and engineering with over half a decade of experience. A strong background in maths, and exceptional inter-personal skills. I am experienced in algorithms and embedded system programming. I have worked for CERN, European Space Agency, Start-ups, and world leading aerospace companies. Competencies include C, python, and JavaScript.

Achievements

- First Class Master's degree, with an aggregate mark of 84%
- Voted "Bright Spark 2019" by RS Components
- Co-author of a paper on discrete modelling of switch mode converters
- Manufacture Top 100 (exemplary award) 2015 - a prestigious list of exceptional individuals in the UK
- Previously certified LabVIEW Associate Developer (CLAD) & Certified LabVIEW Developer (CLD)
- Presented at the Royal Institute of Science with Professor Danielle George (hosted by Professor Brian Cox)
- Two published articles in engineering journals - See LinkedIn profile for full details
- Developer of world first myRIO powered musical Tesla coil and self-balancing electric unicycle - See LinkedIn profile for full details

Relevant Experience

Thales Alenia Space | Technical Lead
Small Scale Cryogenic Coolers
Bristol, UK

Oct 2021 - Present

- After two months, I was promoted to the technical lead due to my technical and leadership skills. I accelerated the cryogenics coolers team, moving it forwards and achieving more goals than in the last 6 years.
- I wrote the firmware for a cryogenic cooler driver, allowing the company to definitively prove our new method of controlling coolers was better on all fronts
- I wrote register level drivers and algorithms in embedded C (UART, CLI terminal, and numerically controlled oscillator). This streamlined testing, enabling 3x faster testing
- I liaised with, and found, third party providers to reduce cost of prototype builds by 100x,vimplemented a new way of testing using raspberry pis, reducing risks, and increasing time to testing significantly
- I wrote MATLAB scripts to run system identification of captured data, generating electrical equivalent models, and bode plots
- Work package manager, hour tracking/estimating, following up with product orders, communicating with manufactures and stake holders. Managed several teams, including mechanical, systems, thermal, electronics, and quality

Education

2022 - Present

CS50x

Havard University

- Currently I have passed all problem sets and lab exercises with 100% pass mark
- How to think algorithmically and solve programming problems efficiently
- Concepts like abstraction, algorithms, data structures, encapsulation, resource management, security, software engineering, and web development
- Familiarity in a number of languages, including C, Python, SQL, and JavaScript plus CSS and HTML

2012 - 2017

MEng Electrical & Electronic Engineering

University of Plymouth

- Master thesis on design/implementation of an Inertial Navigation System in GPS restricted environments, for government agency.
- Achieved first class grade, involved mathematical modelling of the Earth's rotation through different frames of references, novel probabilistic models, and algorithm such as binary search
- Developed an electric self-balancing unicycle, including hardware and software
- Developed an audio monitoring system, working over over TCP, multi-threaded to handle keyboard input and data streams, MUTEXs used for critical code sections

TEO Robotics Ltd | CEO & Founder — **Apr 2020 - Present**

Design Consultancy
Bristol, England

- Founded a successful consulting company, with no initial investment, which immediately began organic growth
- Working with a range of customers, from the mining industry through to musicians, fuel cell manufacturing companies, and other well established design consultancies. I have successfully taken "back of the envelope" ideas through to production, on budget, on time, and on quality
- Some projects include python scripting for auto code generation (reducing time to write code significantly) and FPGA / verilog programming to control electronics, operating at speeds up to 800MHz

Diamond Light Source | Power Supplies Engineer — **Sept 2020 - Oct 2021**

UK's National Synchrotron
Didcot, England

- I reduced time taken to digest test data for the power electronic division several orders of magnitude. I also increased the ease of access of this data, and introduced an alert feature to notify users, via email, if a test was experiencing any anomalies
- I implemented a MySQL database, grafana web server, and data aggregation script, allowing access to test data anywhere in the synchrotron. I then ported to a Kubernetes cluster
- Role mainly focused on electronics, designing ultra sensitive (0.000001 amp) current sensors and new power supplies for the UK's national Synchrotron

Open Cosmos | Electronics Engineer — **Jul 2019 - Sept 2020**

New Space Start up
Didcot, England

- I wrote Python scripts for automating tests and control of Open Cosmos's space hardware equipment. This reduced the time taken to perform power measurement tests by several days, and significantly reduced risk of damage to flight hardware
- Used Pythons "FTDI" library, PyFTDI for interfacing between hardware and software
- Role mainly focused on electronics, designing the electrical power subsystem for a cubesat, currently in orbit around the Earth

Safran (UK) Electrical & Power | Senior Specialist Engineer — **Aug 2018 - Jul 2019**

Research and Technology Division
Pitstone, England

- I captured and fed down FPGA firmware design requirements to the firmware team, working closely with them to ensure correct code
- Role mainly focused on electronics, I digitised the Airbus A380 Generator Control Unit (GCU)

European Space Agency (ESA) | Power Systems Engineer — **Jul 2017 - Jul 2018**

Power Conditioning and Distribution
Noordwyk, Netherlands

- I programmed a digital controller for high frequency switch mode converters, in VHDL (a hardware description language), allowing for the publication of a paper in IEEE
- Implemented a fixed point PID controller with ADC reader
- Role mainly focused on electronics, I co-authored a paper on my work, which was a research based project on the feasibility of digital control of high frequency switch mode converters in spacecraft

Volunteer & Leadership

- Technical lead for cryogenic coolers, leasing with stake holders, organising teams including electronics, software, systems, and mechanical.

- LabVIEW Student Ambassador - organising and teaching LabVIEW training to university students

- Outreach Ambassador at Plymouth University for STEM subjects

- Project manager (MEng project) for a central government agency

- Completed first stage of the Engineering Leadership Program (ELP) at National Instruments

Certificates

- Certified LabVIEW Developer

- Certified LabVIEW Associate Developer

- NVQ Level 2 - Engineering

Interests

- Rock Climbing
- Motorbikes
- Engineering
- Coding
- DIY

Contact

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- github.com/maxsimmonds1337

- maxsimmonds.engineer/

- LeetCode/progress

CERN - European Organisation for Nuclear Research | **July 2016 - August 2016**

Application Engineering Summer Student
Geneva, Switzerland

- Wrote LabVIEW drivers for controlling state-of-the-art optical equipment and thermo-electric controllers. This enabled an project that was on hold for several years to be used, reducing the size of the old filter by an order of magnitude
- Project to reverse engineer, upgrade, & restore existing fibre optic notch filter - used in the Antiproton Decelerator in CERN

National Instruments (NI) | **July 2014 - August 2015**

Application Engineer & Technical Marketing Engineer
(Industrial Placement)
Newbury, England

- One of two interns (out of 16) to pass the 4 hour 'Certified LabVIEW Developer' exam, along with 'Certified LabVIEW Associate Developer'
- Developer of world first myRIO powered musical Tesla coil - https://youtu.be/AyXX_V5bcWM
- Solved customer programming issues on a daily basis. Receiving an average of 92% customer satisfaction rating, being made the key customer liaison

- Presented at technical conferences and taught customer education classes

Projects

Ebike Controller Firmware
Code to run on microcontroller for controlling an Ebike, written in C

Numerically Controller Oscillator, in C
Implementation of a numerically controlled oscillator algorithm in C on an embedded microcontroller. Click link for full write up

Github Markdown graph plotter, in Python
A script called from git hook. Interprets markdown files and replaces code with images of rendered graphs. Click the link for full description.

Leetcode API with CORS Proxy, in Javascript
Javascript that uses LeetCode's graphql API and returns information on my leet code stats. Involved writing a CORS proxy on cloudflare server/worker.

Pastebom.com
A website designed from scratch, hosted at home on my own Apache server. It's used for sharing/storing BOMs, or Bills of Materials, frequently used in Engineering. It uses HTML, CSS, AJAX, JavaScript and required good knowledge of Linux

Publications

- "Discrete-time modelling of pulse-width modulated DC-DC converters in sub-sampling conditions". In: *2018 IEEE 19th Workshop on Control and Modelling for Power Electronics (COMPEL)*, 25-28th Jun, 2018.

- "Fibre Optic Notch Filter For The Antiproton Decelerator Stochastic Cooling System". In: *CERN Document Server*, 24th Aug, 2016.

- "Man is a robot with defects". In: *Engineering Careers*, 20th Feb, 2015.

- "Putting the hybrid approach to the test". In: *Electronic Product Design Test*, 18th May, 2015

2nd October 2022 _____

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