Mark K Cowan

Software Engineer

Tallinn, Estonia

hackology.co.uk

mark@battlesnake.co.uk

Skills

- C++
- C
- Kotlin
- Java
- C#
- Bash + GNU coreutils
- Front-end (HTML5 + CSS3)
- Python
- JavaScript, Node.js, TypeScript
- Embedded systems
- Digital electronics
- Analog electronics
- Optics
- French
- Football
- Squash
- StarCraft II
- Counter-strike

Experience

2018-2018 Lead flight software engineer — Open Cosmos

Designing the next-generation flight software (C/Kotlin), to be flown on hundreds of mass-produced spacecraft.
Training others in the design and in associated computer-science and operating-systems theory, so that they can implement it and maintain it.

2017-2018 Head of software — Open Cosmos

Building & growing a team of skilled software engineers, aerospace engineers & physicists.
Training/teaching the team:

- Object-orientated design patterns (gang-of-four)
- Algorithms & data-structures
- Concurrency (distributed/parallel/asynchronous styles)
- Functional programming basics (for SQL, react, lodash, etc)
- Networking
- POSIX/Linux
- Gitlab/DevOps
- Real-time (latency-constrained) programming

Managing resource-allocation/acquisition across several separate software projects.
Helping the infrastructure/ops team to replace my original "startup-grade" infrastructure with a robust and resilient micro-service architecture, using tools such as:

- Kubernetes
- RabbitMQ
- Docker
- Redis

2015-2016 Software & payload engineer — Open Cosmos

Developing:

- Flight software (C / FreeRTOS / AVR32)
- Mission-control software (C)
- Radio control software (C++ / SDR)
- Radio modulator/demodulator DSP software (C)
- Cloud infrastructure (Docker / DigitalOcean)
- Machine-to-machine communications (ZeroMQ),
- Webapp (AngularJS / TypeScript / Node.js / PostgreSQL)
- Mission simulator (Java / Maven / Gradle)
- Development kits (Das U-boot / Linux / systemd / coreutils)

2015-2015 Entrepreneur in residence — Entrepreneur First

Invited onto Entrepreneur First cohort #5, from where I saw the start of Open Cosmos, which I joined a few months later.

2014-2015 Front-end developer — Eesti Rahvusringhääling

Development and maintenance of widgets such as the homepage schedule browser and the live-stream viewer.
Using HTML5, CSS3, JS, C#, .NET MVC4.

2012-2013 Various freelance jobs and short-lived startups.

2012-2012 Lab demonstrator — University of Manchester

Teaching and supervising lab-work involving real-time tomographic imaging of mixing processes.

2006-2011 Head coach / coach / assistant coach — Various squash clubs

Coaching at various squash clubs in the north-west of England.

Other

2016 Patent — GB201603920A

Apparatus and method for satellite payload development.

2016 Hackathon — ActInSpace @ Tallinn

Won fast-track to Prototron accelerator with lunar agriculture concept.

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Education

2013-2013 Machine Learning — Coursera

Andrew Ng's course on Coursera, 100% score.

2011-2013 PhD Chem. Eng. & Analytical Sci. — University of Manchester

I taught a lab project involving real-time tomographic imaging of mixing processes. I left the PhD during 2nd year, as rate of progress was too slow for my liking.

I took several extra taught courses including:

- COMSOL Multiphysics
- NMR spectroscopy
- OpenCL
- OpenACC
- OpenMP
- MPI
- Intel Parallel Studio XE

2010-2011 MSc Photon Science — University of Manchester

Distinction in:

- Holography and imaging
- Optical instruments
- Soft-matter physics

Merit in:

- Semiconductor quantum structures,
- Laser technology
- Laser photomedicine
- Lasers and photonics
- Soft-matter physics

I was elected as representative for the course.
I was elected as treasurer for the post-graduate society.

2007-2010 BSc (Honours) Maths and Physics — University of Leeds

First class in:

- Advanced quantum mechanics
- Medical imaging
- Calculus and mathematical analysis
- Modelling with differential equations
- Intro to music technology

Upper second-class includes (non-exhaustive):

- Nuclear physics & energy
- Advanced mathematical methods
- Further linear algebra
- Project (distributed computer simulation)

I represented the university nationally at:

- Squash
- Aikido
- Korfball
- Tenpin bowling

2000-2007 High school / Sixth form — Lancaster Royal Grammar School

Advanced (A) level in:

- Maths
- Further Maths
- Physics
- Chemistry
- Critical thinking

Various awards including:

- Community Sports Leadership award
- "Distinction" in British Informatics Olympiad
- Consistent "Gold" awards in Mathematics Olympiad