

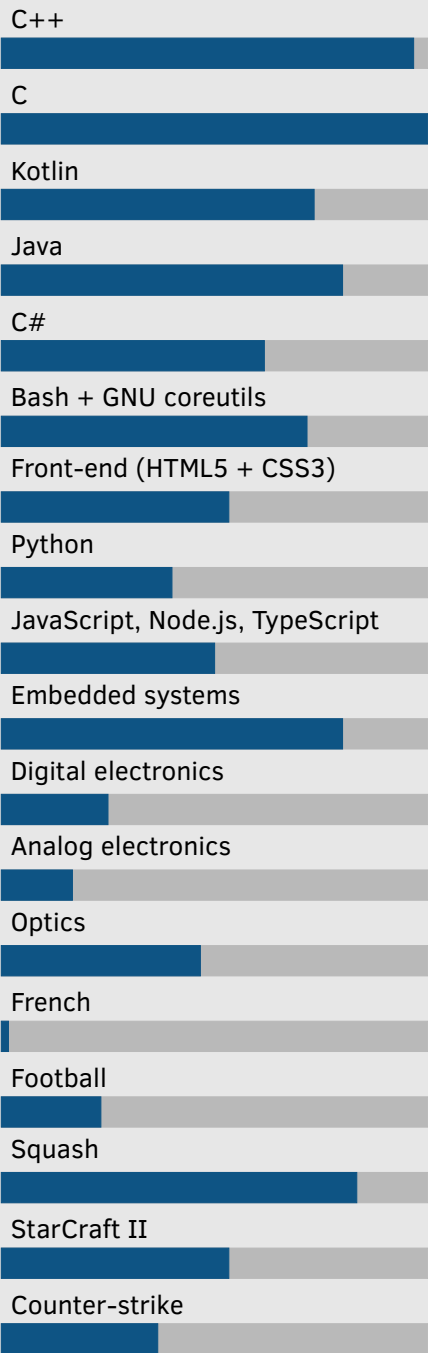


# Mark K Cowan

## Software Engineer

- Tallinn, Estonia
- hackology.co.uk
- mark@battlesnake.co.uk

### Skills



### 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.  
Headhunting, approaching, interviewing, testing – the whole lot.  
Managing resource-allocation and acquisition across projects.  
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) programmingHelping the infrastructure/ops team to replace my original “startup-grade” infrastructure with a robust and resilient micro-service architecture, using tools including:
  - ▶ Kubernetes
  - ▶ RabbitMQ
  - ▶ 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)
  - ▶ Web app (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** Entrepreneur *Various freelance jobs and short-lived startups*
- 2012-2012** Lab demonstrator University of Manchester  
Teaching and supervising laboratory projects for BSc students, involving real-time tomographic imaging of mixing processes.
- 2006-2011** Head coach / coach / assistant coach *Various squash clubs*

### 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.

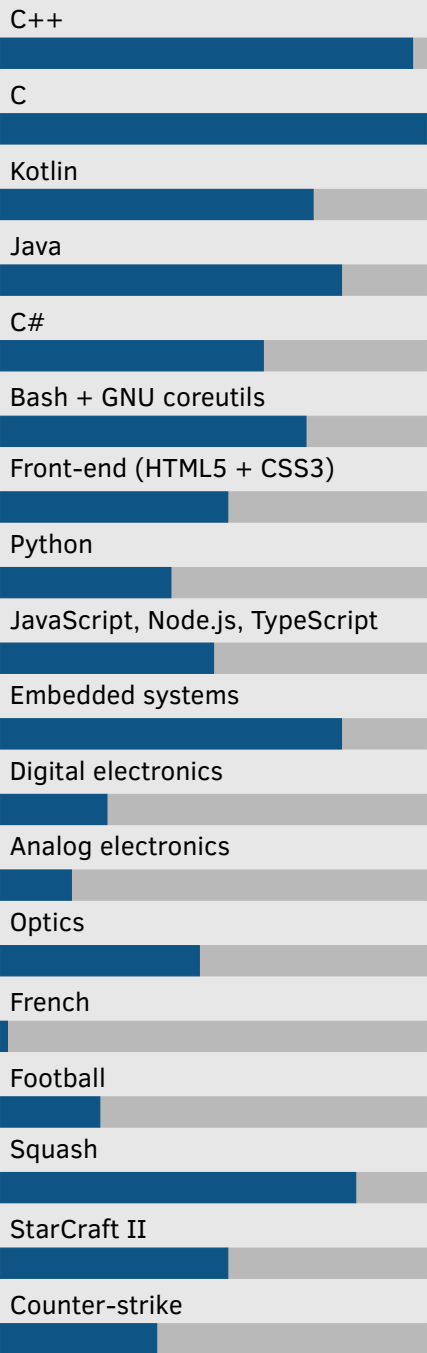


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## Skills



## 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 physicsMerit in:
  - ▶ Semiconductor quantum structures,
  - ▶ Laser technology
  - ▶ Laser photomedicine
  - ▶ Lasers and photonics
  - ▶ Soft-matter physicsI 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 technologyUpper 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
  - ▶ Korfbal
  - ▶ Tenpin bowling
- 2000-2007** High school / Sixth form Lancaster Royal Grammar School  
Advanced (A) level in:
  - ▶ Maths
  - ▶ Further Maths
  - ▶ Physics
  - ▶ Chemistry
  - ▶ Critical thinkingVarious awards including:
  - ▶ Community Sports Leadership award
  - ▶ "Distinction" in British Informatics Olympiad
  - ▶ Consistent "Gold" awards in Mathematics Olympiad