Dr Samantha Mitchell Finnigan

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Profile

I am a research software engineer with expertise in full-stack web development, visualisation, cloud technologies, embedded computing and Internet of Things. I have a strong background in programming and 8 years' experience producing software and hardware for use in research studies. I can work individually and as part of a team, and am keen to further widen my technical skills portfolio.

Professional Experience

Research Software Engineer – Advanced Research Computing, *Durham University* (September 2022–present)
Delivering solutions within a range of interdisciplinary projects, including the ManyFEWS Flood Early Warning System. Currently working towards providing unified deployment infrastructures for ARC projects, with services including Docker, Kubernetes and Azure as part of the Advanced Web Hosting project.

Research Software Engineer – RSE Team, *Newcastle University* (September 2020–August 2021)
Providing research software engineering services to investigate trust in financial machine learning and AI; and blockchain transparency solutions for chemical recycling. Responsibilities include working with project stakeholders to define and implement software systems, and delivering Software Carpentries workshops.

Research Fellow – TGRAINS project, *Northumbria University* (March 2019–August 2020)
Full-stack web development of the TGRAINS crop model visualisation tool, and qualitative research design, facilitation, and data analysis. Collaborated with other researchers to integrate system components.

Research Consultant – Consulting for *Axivity Ltd* and *Northumbria University* (January–March 2018)
Consultancy on the deployment of environmental sensors in social housing, and analysis of sensor data.

Research Assistant – SPHERE project, Open Lab, *Newcastle University* (June–December 2016)
Web design and development of smart home data visualisations in collaboration with Bristol University.

Research Assistant – SIDE project, Culture Lab, *Newcastle University* (2013–14)
Web development (PHP) for the OnSIDE North East community hub used in the Skype Seniors project.

Industrial Trainee (Software Development) – Hursley Laboratory, *IBM UK Ltd* (2011–12)
Development of automated software verification test (SVT) infrastructure for the IBM Java Virtual Machine.

Qualifications

PhD Computing Science (Human-Computer Interaction) Grad. July 2022
Human-Centred Smart Buildings: Reframing Smartness Through the Lens of Human-Building Interaction *Open Lab, Newcastle University*

Doctoral Thesis: Smart buildings backed by data and algorithms promise reduced energy use and increased value for businesses and occupants. My dissertation argued through three building technology case-studies that smart buildings and digital facilities management must centre the human over processes of automation.

BSc Computing Science (Hons) with Industrial Placement 1st Class Hons., June 2013
Undergraduate dissertation: *"Motivating Behaviour Change in Energy Consumption"* *Newcastle University*

Technical Skills

Programming languages	Python, JavaScript (ES6), TypeScript, Java, C, C++, Bash, PHP, Perl, HTML5/CSS3
Libraries (selected)	Vue.js; Node.js; jQuery; Angular; Chart.js; Flask; Pandas; Matplotlib; NumPy; SciPy

Web technologies	Nginx; Apache; Redis; MySQL; MongoDB; RabbitMQ; MQTT; STOMP; WordPress
Cloud technologies	Docker (and docker-compose); Amazon AWS; Google Cloud; DigitalOcean; Træfik
Embedded platforms	ESP8266; Arduino; Teensy; Raspberry Pi; microPython; use of SPI/I²C peripherals
Development tools	Git; Subversion; Continuous Integration (CI) using Bitbucket & GitHub; vim; Jupyter
Operating Systems	GNU Linux incl. Debian/Ubuntu (& on Raspberry Pi); Mac OSX; Microsoft Windows
Software Packages	JetBrains IDEs (PyCharm, WebStorm); Eclipse; LaTeX; Adobe CS; MS Office
Hardware Prototyping	3D printing (inc. Prusaslicer); Autodesk Fusion360; hobbyist PCB design/electronics

Professional Skills

- Experience undertaking complex software development projects; quick to learn new technologies
- Strong problem-solving and analytical skills, significant programming experience and knowledge
- Rigorous development practices including CI/CD and automated testing (test-driven development)
- Professional and taught experience of software development methodologies, e.g. agile / pair programming
- Ability to work with researchers from other disciplines to scope projects and define software requirements
- Experience working as part of a team of software developers, pair programming, and co-problem solving
- Planning and organising software projects, managing timescales, and delivering incremental prototypes
- Experience with public speaking; confident in delivering presentations, talks and lectures
- Teaching and demonstrating experience, delivering content and assisting students with coding tasks
- Have published high quality academic work at top-tier venues; produced thorough software documentation

Selected Peer-Reviewed Publications

[1] **Mitchell Finnigan, Samantha**. and Clear, Adrian K. 2020. "'No powers, man!': A Student Perspective on Designing University Smart Building Interactions", *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, CHI'20. ACM, Honolulu, HI, USA. https://doi.org/10.1145/3313831.3376174

[2] Clear, Adrian K, **Mitchell Finnigan, Samantha**, Olivier, Patrick, Comber, Rob. 2018. ThermoKiosk: Investigating Roles for Digital Surveys of Thermal Experience in Workplace Comfort Management. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, CHI'18. 382. ACM. https://doi.org/10.1145/3173574.3173956

[3] **Mitchell Finnigan, Sam**, Clear, Adrian K., Farr-Wharton, Geremy, Ladha, Karim, Comber, Rob. 2017. Augmenting Audits: Exploring the Role of Sensor Toolkits in Sustainable Buildings Management. *In Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies,* Ubicomp'17. 1, 2, 10. ACM. https://doi.org/10.1145/3090075

Professional and Academic Citizenship

Conference Presentations: ACM CHI 2020 (*April 2020, online*) [above 1]; ACM CHI 2018 (*April 2018, Montreal, Canada*) [2]; ACM CSCW 2017 (*Feb. 2017, Portland, USA*) [3]; ACM UbiComp 2017 (*Sep. 2017, Maui, USA*) [4];

Peer reviewing: 18 papers total, 2015-2021.

Volunteering: Software Carpentries workshop facilitator (2022). ACM Ubicomp student volunteer (2017).

Equality, Diversity & Inclusion: Newcastle University Rainbow@NCL LGBT+ Network steering group (2017-19, 2021-22); Gender, Trans and Non-Binary Working Group (2018-19); School of Computing ED&I committee (2017-18). Co-founder of the fempower.tech academic feminist HCI network (2016-present).

Teaching & Demonstrating: Advanced Interaction Design (2016); User Interface Techniques and Technologies (2015, 2016); Technologies for Digital Civics (2014); Undergraduate project supervisor (2014-2016)

Hackathons: Create4Dementia – 1st prize (May 2015); Digital Catapult Environmental Data Exchange EDXHack– Prize winner (Feb 2015); North Tyneside Railway Museum – Hack Facilitator (April 2016)

Open Source Software: author and contributor to >20 open source software projects (https://github.com/sjmf/)