

# James KAY (2023)

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## PROFILE

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Software engineer and technical researcher with strong theoretical and architectural background and knowledge of many programming languages and technologies. Eighteen years' experience in the industry, working with a variety of teams and companies both local and remote. Specific areas of interest include tools and languages, formal methods, operating system architecture, and networking.

## EXPERIENCE

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**2023– Chief Technical Officer  
entailor**

A startup dedicated to breaking down the user/developer barrier and unlocking the full power of computers for everybody, not just initiates.

**2022–2023 Senior Research Engineer (Innovation)  
Hadean Supercomputing Inc.**

Strategic innovation, market research, R&D, architecture, and technical prototyping and validation using Rust. Investigated and reported on emerging trends and technologies including zero-knowledge proofs, on-chain computation, verifiable compute, trusted compute, decentralized identity, and secure hardware. Helped define and refine core Innovation department process. Architected and evangelized company directions that led to investor buy-in for the company. Interacted with externals to source ideas and test hypotheses.

**2016–2022 Research Engineer (Engineering)  
Hadean Supercomputing Inc.**

R&D, architecture, technical documentation, and systems and network programming in Rust and C++. Built most of an MVP for their flagship operating system, designed and implemented several core APIs, and spearheaded and supported an effort to automate dependency management, build isolation, and deployment using Nix. Collaborated with an external law firm to draft and file three patents for the company.

**2015–2016 University of Bath**

Tutored CM20218 *Foundations of Computation II*, teaching Haskell,  $\lambda$ -calculus, and programming-language semantics to undergraduate computer science and mathematics students.

**2014 Tweag I/O**

Designed and built software for high-performance, high-reliability distributed computing using Cloud Haskell.

**2011 FAT Promotions**

built and maintained websites and the in-house e-commerce system, using PHP, MySQL, PDO, JavaScript, HTML, and CSS.

**2009 Strategic Internet Consulting**

Built and maintained a variety of websites and Web applications, especially based on the Joomla! PHP content-management system. Was also in charge of setting up, maintaining, and automating two Linux-based servers and a Python-, git- and bash-based development and deployment infrastructure.

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## 2005–2006 The Viral Factory

Multiple engagements. Built a mid-sized Web application, first in a small team and then alone, using a variety of technologies: prominently, PHP, MySQL, and PostgreSQL.

## SKILLS

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**Research Skills:** Research and development; architecture; innovation; strategy; market research; technical research; patent development.

**Programming Languages:** Rust; C++; Haskell; Agda; Python; JavaScript; Java; Lua; C; Bourne shell and related (dash, bash, zsh).

**Operating Systems:** GNU/Linux (particularly NixOS, Arch, Gentoo, Fedora, Ubuntu, Debian); seL4 microkernel; Windows NT-series; Windows 9x-series.

**Soft Skills:** Teamwork; technical communication; documentation; development process.

## EDUCATION

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**University of Bath (2011–2016)** Integrated BSc (Hons) (2:1) and MComp (Hons) (Merit) Computer Science, including modules on algorithms, networking, interface design, computer algebra, software architecture, programming-language semantics, and category theory.

**Sussex Downs College (2009–2011)** Three A-levels: Computing ('A\*'), Mathematics ('B'), and Physics ('B').

**Worthing College (2006–2007)** Three AS-levels: Computing, Philosophy, and Psychology.

**Hove Park Language College (2006–2008)** Japanese Language GCSE ('A\*') and AS-level ('A').

**Cardinal Newman Catholic School (2001–2006)** Nine GCSEs: five 'A's (French Language, Spanish Language, Double Sciences, English Language), three 'B's (English Literature, Mathematics, Religious Studies), and one 'C' (Music); one GNVQ: ICT (Merit).

## PERSONAL

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**Interests:** Programming; programming-language design; program verification; linguistics; languages; physics; mathematics; contact juggling; archery.

**Languages:** English (native); Japanese (conversational); French (mostly reading); Spanish (mostly reading); Mandarin (learning).

## REFERENCES

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Available upon request.