Paul Crane

Hands-on software architect interested in solving hard problems, delivering value, and pushing technical boundaries.

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Employment

Principal Architect

Diffblue, March 2019 - present

- Architected Java Agent instrumentation, dynamic, and static analysis components for safety across multiple Java LTS versions.
- Led build system integration overhaul, enabling rapid expansion to new tools.
- Designed and implemented patent-pending algorithm for program state relevancy analysis in Java.
- Presented technical innovations at Devoxx UK 2025.

Lecturer (fixed term)

Computer Science Department, University of Otago, January 2018 - November 2018

- Taught courses on Effective Programming, Object-Oriented Programming and User Interfaces, Linux Network Management, and Advanced Databases to undergraduate and postgraduate classes of up to 150 students.
- Formal teaching evaluations were "pretty outstanding [...] with a very good response rate" (Prof. Michael Albert, Head of Department).

Software Engineer (Contract)

Downer Group, March 2017 - December 2017

- Prototyped a digital signage system for remote display clients across New Zealand secured with public key infrastructure.

Technical Skills

Java, Python, Unit Testing, Agile Methodologies, Code Reviews, Architecture design
Go, Docker, Git, CI/CD, Django, Flask, SQL, REST APIs, MQTT

Research Projects

- **ITEA GENIUS** (2025-present): Experiments on LLMs for automated unit test generation.
- **Real-time Neuro-feedback** (2017): Implemented neuro-feedback task and data analysis programs to study depression reduction.

- **Energy Monitoring at University of Otago** (2016): Developed prototype system to collect and collate energy measurements from diverse systems for high-precision monitoring.
- **Accelerometer Gloves** (2013-2014): Developed Arduino firmware and data visualisation for hand movement research.

Education

PhD

Computer Science, University of Otago, 2017

An Indoor Localisation System Based on Ubiquitous Technology

M.Sc. (Thesis Only) with Credit

Information Science, University of Otago, 2011

Beacon - A Rapidly Deployable Cellphone Network

Patents

P. Crane, J. Kloos, and R. Brenguier. *System and Method for Program State Relevancy Assessment*. (U.S. Patent No 19/056,623). Filed February 2024.

Presentations

P. Crane. "Agentic AI-driven unit test generation you can trust" [Conference Presentation]. *Devoxx UK*, London, UK, May 2025.

Publications

P. Crane, Z. Huang, and H. Zhang. "CRAFT: Reducing the Effort for Indoor Localisation". In: *28th Annual International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC)*. IEEE, Montreal, Canada, October 2017, DOI: 10.1109/PIMRC.2017.8292211.

P. Crane, Z. Huang, and H. Zhang. "Emender: Signal Filter for Trilateration based Indoor Localisation". In: *27th Annual International Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC)*. IEEE, 2016, pages 1-6, DOI: 10.1109/PIMRC.2016.7794742.

P. Crane, Z. Huang, and H. Zhang. "SIB: Noise Reduction in Fingerprint-based Indoor Localisation using Multiple Transmission Powers". In: *Proceedings of the 13th International Conference on Mobile and Ubiquitous Multimedia*. ACM, 2014, pages 208-211, DOI: 10.1145/2677972.2678000.