Dr Peter M. Kelly

Location: Chiang Mai, Thailand
Email: peter@pmkelly.net
Web: https://pmkelly.net
Github: https://github.com/peterkelly

Education

PhD in Computer Science, University of Adelaide, Australia 2004 – 2010

Bachelor of Computer Science (Honours), University of Adelaide, Australia 2003

Bachelor of Information Technology, Flinders University, Australia 1997 – 1999

PhD thesis: *Applying Functional Programming Theory to the Design of Workflow Engines*

https://www.pmkelly.net/publications/thesis.pdf

Languages: Rust, Python, C/C++, TypeScript, Scheme, Objective C, Java, Assembly

Research interests: Programming languages, operating systems, distributed systems, type theory, formal verification, internet decentralisation

Employment history and open source contributions

Iglu — Chiang Mai, Thailand **2013 – present**

Employer of record in Thailand. Iglu provides the legal basis for me to work remotely from Thailand (handling work visas, taxes, healthcare coverage, etc.) but otherwise work on client projects is carried out in the same manner as a regular employee.

QDX — Singapore (remote) **2025 – 2026**

Contributed to the design & implementation of *Rex*, an open source, strongly-typed, pure, implicitly parallel functional programming language built for orchestration of HPC workflows, implemented in Rust. Development and operations of backend infrastructure for QDX's *Rush* platform for drug discovery and computational chemistry.

Since the recent cancellation of the Rush project, I am now continuing development of Rex as an independent open source project at https://rexlang.ai/.

TreasurySpring — London (remote) **2018 – 2024**

Design & implementation of *WorkScheme*, a proprietary functional programming language for defining business process workflows. Features include static typing, LSP support, fault tolerance, concurrency, message passing, external API integration, user-input tasks, and runtime state snapshots for persisting long-running processes. WorkScheme is implemented in Python, and is a core part of TreasurySpring's multi-billion dollar investment platform.

Bumrungrad Hospital — Bangkok (remote) **2016 – 2018**

Frontend development of healthcare applications for patient-doctor interactions, including both web and mobile apps.

SendIt — Bangkok (remote) **2016**

A Bangkok-based startup providing package delivery services aimed at the Asia-Pacific market. Developed parts of the iOS and Android mobile apps for drivers.

NeuStar — United States (remote) **2014 – 2016**

A major US-based provider of Internet infrastructure services. Worked on the development of tools and services for multi-vendor DNS capabilities designed for large-scale deployments.

The Corinthia Project — Apache Software Foundation **2014 – 2015**

Open source HTML5-based WYSIWYG editor designed for web, mobile, and desktop usage. Includes libraries for converting between common word processing file formats. Based on UX Write (see below), which I began in 2011.

UX Productivity — Chiang Mai, Thailand **2011 – 2013**

Developed UX Write, a commercial word processor for the iPad and iPhone. I undertook this project as an independent developer, and was responsible for all aspects of product design, implementation, and customer support.

Initiated the Corinthia open source project, based on core components of UX Write. Initially part of Apache Incubator but now operating independently: https://github.com/corinthia

Associate Lecturer, School of Computer Science, University of Adelaide **2008-2010**

Taught a wide range of courses from first year to masters level, covering introductory programming, data structures & algorithms, systems programming, and operating systems.

Developed AdelaideOS, a small, x86-based Unix-like operating system for teaching purposes: https://github.com/peterkelly/adelaideos

IBM India Research Lab – New Delhi, India **2006**

Short-term internship, researching and designing tools for performance modelling of web service-based applications. Gained experience with WebSphere technologies, queuing theory, and simulation tools.

YourAmigo – Adelaide, Australia **2001 – 2003**

Development work on an Internet/intranet search engine. Worked on development of the company's custom database engine and network-replication infrastructure (both in C), as well as Java-based graphical administration tools, on both Linux and Windows.

The KDE project **2000 – 2001**

Wrote parts of KHTML and KJS, the rendering engine and JavaScript interpreter underlying the Konqueror web browser. This work was subsequently used by Apple as the basis for WebKit & JavaScriptCore.

Interact New Media – Adelaide, Australia **2000 – 2001**

Design and development of database-driven websites.

Softalk Computing – Adelaide, Australia **1999 – 2000**

Development work internal client/server business applications for the South Australian government.

Aberfoyle Park High School – Adelaide, Australia **1998-1999**

Part-time system administration and technical support for the school's network of PCs and macs, plus web development work on the school's website.

Research Publications

Peter M. Kelly. Applying Functional Programming Theory to the Design of Workflow Engines. PhD Thesis, School of Computer Science, The University of Adelaide, January 2011.

Peter M. Kelly, Paul D. Coddington, and Andrew L. Wendelborn. Lambda Calculus as a Workflow Model. *Concurrency and Computation: Practice and Experience*, 21(16):1999-2017, July 2009.

Peter M. Kelly, Paul D. Coddington, and Andrew L. Wendelborn. A Distributed Virtual Machine for Parallel Graph Reduction. In *8th International Conference on Parallel and Distributed Computing Applications and Technologies (PDCAT '07)*, Adelaide, Australia, December 2007.

Peter M. Kelly, Paul D. Coddington, and Andrew L. Wendelborn. Compilation of XSLT into Dataflow Graphs for Web Service Composition. In *Sixth IEEE International Symposium on Cluster Computing and the Grid (CCGrid 2006)*, Singapore, May 2006.

Peter M. Kelly, Paul D. Coddington, and Andrew L. Wendelborn. A Simplified Approach to Web Service Development. In *4th Australasian Symposium on Grid Computing and e-Research (AusGrid 2006)*, Hobart, Australia, January 2006.

Peter M. Kelly, Paul D. Coddington, and Andrew L. Wendelborn. Distributed, parallel web service orchestration using XSLT. In *1st IEEE International Conference on e-Science and Grid Computing*, Melbourne, Australia, December 2005.

See https://www.pmkelly.net/publications/