

Michael Peyton Jones

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- Experienced research engineer, with a track record of developing and implementing novel business-relevant research.
- Lead software developer, capable of managing the evolution of complex, business-critical projects.
- Reliable team leader, with experience facilitating a team of peers, and balancing the requirements of long-term research and short-term business needs.
- Lifelong learner, comfortable with and experienced at mastering new domains.

Experience

Input Output HK

London

Technical Architect

September 2021-Present

Technical Architect for the Plutus team, working on smart contract support for the Cardano blockchain.

- Wrote and shepherded multiple popular design improvements to Cardano.
- Led the way in opening up the design of the system to the community through public design documents.
- Shifted the management of internal dependencies via versioned software in a package repository rather than an ad-hoc web of source pins.
- Author on two research papers.
- Acted as Product Owner, defining the team's goals and work.
- Continued technical work, including prototyping a major change to the Plutus Core language providing a 30% speedup.

Input Output HK

London

Software Engineering Lead

October 2019-September 2021

Team lead for the Plutus team, working on smart contract support for the Cardano blockchain.

- Shepherded the design of a complex, multi-year project from shortly after conception to integration into the Cardano mainnet.
- Managed team and product priorities, requirements, and roadmap.
- Grew the team, including splitting of a sister team to work on application support.
- Pushed for and helped define new roles for the company, including Developer Experience engineers.
- Major author on three research papers.
- Acted as technical point of contact for partners and business development.
- Continued technical work, including speeding up the Plutus Core evaluator by 40%.

Input Output HK

London

Compiler Engineer

July 2018-October 2019

Compiler Engineer on the Plutus team, working on smart contract support for the Cardano blockchain.

- Implemented a Haskell to Plutus Core compiler as a GHC compiler plugin.
- Designed and implemented an intermediary language for Plutus Core.
- Maintained and improved developer experience for the team, including significant amounts of Nix work.
- Spoke and wrote about our work at meetups and conferences.
- Major author on two research papers.

Semmler

Oxford

Research Engineer/Lead Software Developer

April 2013-July 2018

Research Engineer and Lead for the QL team, working on the QL logic programming language, compiler, and toolchain.

- Programming language design for QL, including designing and implemented a semantics for recursive aggregates, which allowed efficient computation of additional graph algorithms in QL.
- Compiler and optimizer engineering, including implementing multi-stage caching of compilation and optimization results, which improved compilation speed by orders of magnitude in common cases.
- Leadership and management, including managing the implementation of parallel query evaluation, which was a six month project but delivered on time.
- Research and intellectual property development, including developing, implementing, and publishing original research on incremental computation.
- Offensive security research and variant analysis with QL.
- Customer success and sales engineering.

Good Technology Project

Oxford

Co-founder

June 2016-December 2017

This was a research project and consultancy focussed on social impact in technology and entrepreneurship. Some examples of work that I did:

- Advised companies, institutions, and individual entrepreneurs on impact strategy.
- Developed qualitative and quantitative modelling techniques for assessing the potential impact of startups.
- Interviewed experts and conducted synoptic desk research to break down problem areas.

Publications

Chakravarty, Manuel MT, Nikos Karayannidis, et al. (2021). "Babel Fees via Limited Liabilities". In: *arXiv preprint arXiv:2106.01161*.

Chakravarty, Manuel MT, James Chapman, Kenneth MacKenzie, Orestis Melkonian, Michael Peyton Jones, et al. (2020). "The extended UTXO model".

In: *International Conference on Financial Cryptography and Data Security*. Springer, pp. 525–539.

Chakravarty, Manuel MT, James Chapman, Kenneth MacKenzie, Orestis Melkonián, Jann Müller, Michael Peyton Jones, Polina Vinogradova, and Philip Wadler (2020). “Native custom tokens in the extended UTXO model”. In: *International Symposium on Leveraging Applications of Formal Methods*. Springer, pp. 89–111.

Chakravarty, Manuel MT, James Chapman, Kenneth MacKenzie, Orestis Melkonián, Jann Müller, Michael Peyton Jones, Polina Vinogradova, Philip Wadler, and Joachim Zahnentferner (2020). “UTXOMA: UTXO with Multi-asset Support”. In: *International Symposium on Leveraging Applications of Formal Methods*. Springer, pp. 112–130.

Alvarez-Picallo, Mario et al. (2019). “Fixing incremental computation: Derivatives of fixpoints, and the recursive semantics of datalog”. In.

Jones, Michael Peyton et al. (2019). “Unraveling recursion: compiling an IR with recursion to System F”. In: *International Conference on Mathematics of Program Construction*. Springer, pp. 414–443.

Avgustinov, Pavel et al. (2016). “QL: Object-oriented Queries on Relational Data”. In: *LIPICs-Leibniz International Proceedings in Informatics*. Vol. 56. Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik.

Education

Oxford University	Oxford
<i>Mathematics and Philosophy</i>	2008-2012
MMathPhil - First Class	
<i>Jodrell Scholarship</i>	2011
For performance in Final Examinations	

Skills

Programming languages.....

Fluent: Haskell, Java, Nix

Proficient: Python, Scala

Conversant: Javascript, Typescript, Rust, C#, C/C++, Idris

Interests

I'm a choral singer, and I like reading, swing dancing, and playing squash, when I get the opportunity. I am a member of Giving What We Can, and I've pledged to

give 10% of my lifetime earnings to effective charities. I am one of the maintainers of the Haskell Language Server project.