

Samuel MARKS, PhD



MODUS OPERANDI

Split my life in three: family; medical charity; and business. The unrelated-to-medicine business funds the first two. Focus is on open-source scalable engineering. Recently awarded an in-kind **grant worth \$3.2M** for neural compute processor access from Google.

LINKS

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CAREER CLIFF NOTES

- ◇ As a contractor working on unrelated sensor network metric aggregation, showed the largest communications company in Australia how to **save \$100M**;
- ◇ Given the entire top floor of the JP Morgan building to go from nothing to a full product in the Natural Language Processing (NLP) industry (all my subcontractors, including postdoctoral computational linguists)... with the backing of a billionaire family. Company **acquired by calendly**;
- ◇ Built a stock market analytics platform (for a high-net-worth individual);
- ◇ Created deduplication algorithms and databases for helping one large bank—who bought another large bank—to join customer profiles (for a Venture Capital fund, who then proceeded to **raise \$60M** off this);
- ◇ Engineered a distributed system for a blockchain company (my 'stock' in their company has since **gone up > 16000%**).

APPROACH

Develop open-source: compilers; DevOps; and developer tooling. To speedup development; trivialise portability across platforms (OS; distribution; cloud); facilitate the speedy onboarding of new engineers; in summary: to accelerate the delivery of high quality software.

Engineer new compilers to translate OpenAPI ↔ {Rust; Swift; Kotlin Multiplatform; C; TypeScript; Python} in order to speedup the development of multi-tier multi-language applications (e.g., mobile apps; web frontends; REST API backends).

Engineer new DevOps / GitOps / MLOps tooling where Docker is optional. Support native: Windows; Linux; macOS; SunOS; HP/UX; z/OS; iOS; and Android. Written in shell—Bourne Shell, Bash, Windows Batch, Microsoft PowerShell—complimented by new package managers in C and Rust.

Research driven, holding a PhD and a fellowship at Harvard. I am a top contributor to Keras, the 2nd most popular Machine Learning framework. C++ contributions sent to both PyTorch and TensorFlow for optimising their vector allocations. I am a Google Developer Expert for Machine Learning / Artificial Intelligence (ML/AI GDE); Google also oftens gives me grants for their TPU Research Cloud.

EXPERIENCE

Mass. Eye and Ear Infirmary / Harvard Medical School. **2021+**

- ◇ Collaborating with ophthalmologists on initiating new medical diagnostic screening programmes that are wholly charitable, open-source, patent-free, and AI-driven; and analysing & modelling from historical data in preparation.

HEAD OF SOFTWARE ENGINEERING at *consultancy offscale.io* **2015+**

- ◇ Consulting for various high-net-worth individuals, the odd venture capital firm, and any random project introduced word-of-mouth to me. Ranges from just me, to as many as 20 engineers.

- ◇ Engineers open-source developer tools to speedup engineering of scalable software. Foci on: cross-platform, multi-ML, multicloud, and compilers to translate across codebases. github.com/offscale

- ◇ *NOTE: Firm purposefully avoids anything related to medicine so as to avoid actual—or perceived—conflicts of interest with charitable research.*

EDUCATION

FELLOWSHIP. *Harvard Medical School.* **2021+**

DOCTOR OF PHILOSOPHY (PHD). *University of Sydney.* **2015–2020**

BACHELOR OF SCIENCE. School of Computing. *Macquarie U.* **2010–2014**

- ◇ Covered a range of subjects supporting my passion for computer science.

OPEN-SOURCE

700+ repositories on GitHub, >300 of these original projects (not forks). Top-10 contributor to Google's Keras (2nd-most popular ML framework; with 13 million downloads per month; as of Feb 2025).