

Katie Lauren Lucas

Introduction

I lead teams to rapidly build early-stage products; to gain market position evaluate new products and ideas, to support discovery. I design systems that are flexible, adaptable and are intended for re-use and expansion at scale.

I'm currently working in the space of large systems design, particularly around supporting machine learning operations: building pipelines delivering data to learning cycles, productising the use of learned models, building reliability and useability tooling for those systems.

I've been leading small teams of engineers (half a dozen) at various stages in their careers from interns to mid-level. I'm looking to grow this side of my work; younger developers are the future of the industry and the team is the building block of delivering at scale. I'm evolving a personal management style around staying hands on, respecting others' experience and collaborative problem solving with our focus relentlessly on delivering for our customer, internal or external.

A track record of high impact software development.

- For Roku, technical leadership of innovative research projects including porting RokuOS to new platforms, new kinds of streaming content production and device-level system design.
- For Fetch.AI, creating key software components of a planet-scale IoT network, machine learning infrastructure, supporting AI research work & core parts of cryptocurrency systems.
- For Google, writing software that manages the location and security of data in billion-user systems, in visualising security surfaces and (as a side effect!) optimising away millions of dollars of unnecessary annual expenditure.
- Delivered commercial software in dozens of languages: currently mostly Python, C++ and can move rapidly between technologies.

I'm looking for new challenges, new spaces to grow into, new things to learn and new people to learn with.

Other Information:

- B.Sc. 2.1 Hons, Computer Science, Warwick.
- British national, resident in Cambridge.

Feb 2023 - Current, *Director & Principal Engineer, Moody's Analytics Innovation*

- Lead engineer for "Digital Asset Monitor" — risk evaluation for Fiat-Backed Stablecoins. Successfully launched product, on-boarding major banks & fin.institutions.
- CX&I Innovation Platform software design; modular ML data processing pipelines.
- Technical oversight & supervision of genAI-based document parsing project.

May 2021 - Feb 2023, *Snr Software Eng., Roku Advanced Development (company downsizing)*

L6/staff engineer work in Roku's Advanced Development group (Roku doesn't have official 'staff' levels.) AD is a division of Roku researching the future of streaming television and home entertainment. We build early versions of systems that will be the products of the next few years.

- Consensus mechanisms for highly distributed CDN datastores.
- Experimental ports of RokuOS to new hardware platforms.
- New compute & stream technology to harden Roku infrastructure against failure.
- Structural refactorings of RokuOS system code to enhance corp-wide productivity.
- Prototypes of hybrid TV/server-side casual gaming engines.
- Supervising, mentoring training of other developers

July 2020 - May 2021, *Senior Engineer, Five.AI, (company pivoted to self-driving, acqd by Bosche)*

Leading a multi-disciplinary team of 4 developing an AI test framework. Owning the stack responsible for scheduling workloads, creating runtime environments, collecting and reporting analysis of test results. Primary focus has been on driving reliability of evaluation runs from around 80% successes into four-nines and feature development intervals reduced by an order of magnitude. Five has been acquired for their self-driving group by a large automotive supplier.

Apr 2018 - June 2020, Fetch.AI, (headhunted for new group at Five)

Fetch.AI was founded to provide an ecosystem for IoT & mobile devices to trade micro-datastreams. A high performance, low-overhead ledger backs their negotiations, search tools allow rapid evaluation of markets and a sophisticated multi-faceted search means they can browse available services.

- 2020, Lead Developer, Open Economic Framework & Distributed Machine Learning Framework. Responsible for OEF & DMLF – Toolkit for our machine learning researchers to distribute ML to edge-computing environments. Designed, developed & supported routing systems, data transfer, execution engines.
- 2018, Lead Developer, Open Economic Framework. Code to enable autonomous trade on Fetch.AI network, agent location & comms. Stack of server- and client-side software. Complex, multi-dimensional search and matching tools, negotiation protocols and APIs to other Fetch technology. With 3 developers, designed and implemented polyglot docker-based services for this.
- 2018, Lead Developer, Search. Designed & implemented the multi-dimensional search which allows agent to locate each other within our topic/geography/connectivity spaces.
- 2018, Senior Software Engineer. Code in C++ for Fetch's native blockchain. PoW engine, chain visualisation. Co-developed much of the network code.

2016 - 2018 Senior Engineer, Geospock, (headhunted by Fetch)

GeoSpock was an early stage start-up currently trying to raise funding to take a geographic big-data visualisation product to market. Led big-data ingestion: wrote processing in Hadoop MR to process incoming customer data in various formats into our proprietary storage engine. Filtering trillions of events to locate billions of valid & interesting geolocated records for access by the visualisation engine. Produced a 3 OoM saving on compute costs.

2015 - 2016 Senior Eng, Grapeshot, (Grapeshot focussing more heavily on PHP development)

Grapeshot sells webpage categorisation services to advertisers allowing them to tune advert delivery to ensure brand safety and premium placements. Contracted role involved creating several prototype projects along with development with and mentoring of the team working with Grapeshot's core linguistic analysis technology. They moved to focus on PHP development & were acquired by Oracle.

2013 - 2015 Software Engineer, Google: Privacy Infrastructure

Building tools for visualising privacy compliance data for other teams to monitor how well they're keeping privacy promises to their users. Primary developer for specialised reports tailored to the individual needs of internal customers. Automated Project Discovery & Reporting correlated builds & prod systems monitoring to generate project-centric privacy reporting without configuration. Raised the profile of the group across Google & encouraged adoption by other groups without onboarding load. Live dashboards allow monitoring of statistics: direct data access tools being used, the breadth of permissions granted to access teams' user data and connectivity to other privacy-sensitive systems. Visualisation tools to show teams how to reduce their privacy footprint, searching for max impact changes. Internal consulting, finding candidate teams for monitoring systems.

2012-2013 Site Reliability Engineer, Google: Apps

Responsible for the safety, security & reliability of services used daily by >1 billion users & which forms part of the vital infrastructure for major governments. Self-manage splitting time between developing mission critical monitoring tools, resolving service issues in real-time to an SLA & engineering solutions for problems delivering tera- and peta-scale computing environments. Primary developer for "homing" — system determining data-hosting locations for user data balancing access time, security needs, Google's requirements to balance user load globally. Now deployed. the code maintains hundreds of millions of user accounts. Code to rapidly build and deconstruct software stacks for the team's services to allow rapid automated migrations between Google's datacentres.

Roles to 2012:

- **ARM:** 3D rendering hardware demonstration software.
- **Citrix:** XenServer tooling to support native Linux booting.
- **Geomerics:** Startup in graphics industry, prototyping large network visualisation tools.
- **Hitachi:** Linux development for Smartboard education hardware/software.
- **Velocix / Nokia:** real-time OLAP/Monitoring, led billing system development.
- **Teleprecision:** CCTV-over-IP security monitoring/management tools.