Riley Evans

Software Engineer • Cambridge

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Summary

A functional software engineer, with interests in strongly typed languages such as Haskell and OCaml. Experience designing micro service architectures and building infrastructure to support them with Kubernetes and Terraform. Able to learn and adapt to new technologies quickly.

Work Experience

Five AI

Cambridge, U.K.

Software Engineer — *Sep. 2021 - Present*

- Implemented a redesign of a key simulation component responsible for running over 10000 simulations a day. Introduced static typing with pyright and increased test coverage from 15% to 80%.
- Optimised the in-car visualisations to allow lidar visualisations to be shown at 4.5x higher resolution.
- Contributed to a redesign of tooling responsible for launching self-driving stacks, to remove duplication of tools across multiple libraries.
- Encouraged and implemented the use of static type checking in multiple Python libraries.

University of Bristol

Bristol, U.K.

Teaching Assistant — *Sep. 2019 - June. 2021*

- Lead Teaching Assistant for the 2nd year module Computer Systems A. Helped the lecturers to redesign the Concurrent Computing module to include distributed systems. Assisted in labs teaching students how to use Golang to build concurrent and distributed systems. Built an auto-marker for students submissions using Luigi.
- Taught 2nd year students about compilers and semantics with Haskell for Language Engineering.
- Assisted in 3rd year labs for High Performance Computing, teaching students about different techniques such as MPI, OpenMP and OpenCL.

Five AI

(remote) Bristol, U.K.

Software Engineer Intern — *June. 2020 - Sep. 2020*

- Created a front-end dashboard with React and Material UI to help triage events.
- Developed a map component that plots GPS coordinates for key events and disengagements.
- Used WebAssembly tools to encode RAW images to a webm video in the browser.
- Added a disk usage monitor to the vehicle launch control software, by creating a new Python API.

CricViz

London, U.K.

Intern — *July. 2019 - Sep. 2019*

- Developed XGBoost models to detect repeated patterns in real-time during a live match. For example “Jason Roy is the second English batsman to hit 3 6s in a row in an ODI against Australia”.
- Constructed an SQL query able to search sequential rows in the database for patterns occurring in a column.
- Compared real-time ball tracking data against historic values for each player to detect key statistics. For example “Jofra Archer just bowled the fastest over by an English bowler”.
- Built a Slack bot to send interesting statistics to the team chat when important games were being played.

Jaguar Land Rover

Coventry, U.K.

Technical Analyst — *June. 2018 - Sep. 2018*

- Used the Python library Luigi to prototype a new data pipeline for generating engineering parts reports. This involved creating a system to move data from the current systems into the Google BigQuery. The new data pipeline increased the reliability of reports being generated.
- Created SQL queries to help search for redundant and old data from the current systems, to improve database performance.
- Created a Git repository of frequently used tools within the team, this allowed the team to share their work easily, reducing the amount of duplicated programs created for similar tasks.

Projects

Money Manager

Personal Project — *Jan. 2022 - Present*

- Envisaged and designed a microservices system to manage budgets using Open Banking APIs.
- Implemented in Haskell using Servant to build REST APIs with Persistent to manage PostgreSQL databases.
- Constructed Kubernetes infrastructure with Terraform to allow for continuous deployment of services.
- Implemented Haskell client libraries for Starling Bank and TrueLayer.

CircuitFlow - A Haskell Dataflow Programming DSL

Thesis - University of Bristol *Jan. 2021 - June. 2021*

- Used Monoidal Resource Theories as a basis for constructing data workflows.
- Leveraged the latest dependently typed programming features in Haskell, such as DataKinds and Type Families, to create a strongly typed implementation.
- Implemented several examples, including a build tool for lhs2TeX to compile the thesis.
- Built a GitHub Actions CI to verify unit tests and continuously deploy the latest documentation to Github Pages.

Crazy Parking

Group Project - University of Bristol *Sep. 2019 - March. 2020*

- Worked in a group of 6 students to create a networked driving game, with plans to support many players.
- Implemented the game control loop, allowing different game components to be easily connected into the event system.
- Developed a method of transferring C# Events between the server and clients.

University of Bristol Library App

Software Product Engineering - University of Bristol *Sep. 2018 - May. 2019*

- Worked in a group of 4 students to produce an Android application for the university library.
- Met regularly with the library staff to update them on progress and to get feedback on how to improve our product.
- Communicating with the team through Slack, which enabled us to work remotely with ease.
- Created a feature that was able to read RFID tags in books to allow users to take books out on loan from a mobile application. This included reverse engineering Biblitheca's RFID standard.
- Worked with library APIs to access user data.

Publications

CircuitFlow: A Domain Specific Language for Dataflow Programming

Riley Evans, Samantha Frohlich, Meng Wang

The 24th International Symposium on Practical Aspects of Declarative Languages (PADL) 2022

Education

University of Bristol *Bristol, U.K.*

Computer Science MEng (1st Class) *Sep. 2017 - June. 2021*

- Averaged 75% across all years.
- Some standout assessments are: Thesis (91%); Advanced HPC OpenCL Coursework (90%); Applied Cryptography Coursework (92%); Advanced Topics in Programming Languages (80%); Language Engineering (85%);
- Took the Cloud Computing & Big Data unit and created a scalable submission marker on AWS, using S3, SQS and ECS.

Tudor Grange Academy Solihull *Birmingham, U.K.*

A Levels & GCSEs *Sep. 2015 - June. 2017*

- A Levels: Mathematics (A*); Further Mathematics (A*); Computer Science (A*); Physics (A);
- 13 GCSEs including English (A) & Mathematics (A*)

Skills

Programming Haskell, Python, Golang, TypeScript, C, C++
DevOps Git, Kubernetes, Terraform, CircleCI, Docker, AWS, GitHub Actions
Databases PostgreSQL, Google BigQuery, Redis

Awards & Qualifications

2019 **NetCraft Prize for Outstanding 2nd Year Results**, University of Bristol *Bristol, U.K.*
2018 **ECB ACO Scorer Level 1**, *Bristol, U.K.*
2017 **Further Mathematics Award**, Tudor Grange Academy Solihull *Birmingham, U.K.*
2017 **DofE Gold**, Ongoing *Birmingham, U.K.*

Extracurricular Activity

Faculty of Engineering Outreach *Bristol, U.K*

Outreach Ambassador *Sep. 2018 - March. 2020*

- Helped to run Digimakers, an event to get 7-18 year olds interested in Engineering.
- Assisted in running an event to sign up new ambassadors.
- Led a Python code breakers activity.