James Grant

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Work

Senior Software Engineer - Kidsloop 2021 - Present

- Refactored the entire networking stack, and introduced a new state management solution for a live Web Conferencing application.
- Refactored the WebRTC service by removing it's state, using the new networking stack, increasing possible class sizes by 10x.
- Contributed to a highly distributed data processing pipeline, in Rust.
- Built a tool which takes Rust libraries and compiled them to Python and Typescript (used by other teams at the company).

Senior ML Software Engineer - Babylon Health 2019 - 2020

- Wrote a Natural Language Understanding pipeline, in type safe Python. Each pipeline constructed entirely from a YAML file.
- Introduced type safe Python to my coworkers which helped reduce edge case bugs and aided generally in service architecture design.
- Rewrote an HTTP library, used company wide, fixing many bugs.
- Wrote a Visual Programming Language to allow designers to create complex Alexa Skills, shortening design iteration time.
- Gave lectures on Haskell, Golang, TypeScript, and React.js. This helped foster better code quality throughout our teams codebases.

Research Engineer - Emotech 2017 - 2018

- Wrote a Visual Programming Language (Inga) to allow designers to create complex behaviour for a smart-home robot assistant (Olly).
- This language shortened "research -> design -> dev" cycles from days/weeks to hours, sometimes minutes.
- Contributed to, and helped design, a distributed system of dozens of Golang microservices (both embedded and cloud-based).
- Wrote a Natural Language Generation Engine, which augments sentences with contextual information, and a hint of personality.
- Introduced Trello to my workmates, championing Agile practices, and improving communication and productivity across the company.
- Gave lectures on Haskell, React.js, and Functional Programming.

Computer Vision Research Engineer Intern - Imperial College 2017

- Wrote real-time person tracker, which runs on an Android phone.

Financial Services Intern - Accenture 2016

- Wrote a web app which took complex spreadsheets of reinsurance data, and visualises them in an interactive manner for stakeholders.
- Gained a strong understanding of the securities market, and various trading and risk management strategies.

Vice President - Imperial College Mental Health Society 2015 - 2017

- Set up Imperial's first mental health awareness society.
- Collected and presented data from students, resulting in Imperial pledging over £300,000 to improve it's mental health services.
- Responsible for coordinating events, giving presentations, recruiting members, and creating and maintaining the website.

IT Officer - Imperial College Dance Club 2014 - 2017

- Wrote a mobile app which could be used to verify paid members, using an extension I wrote for the Imperial Society API.
- Introduced Slack and Trello to the team, improving productivity.
- Rewrote the club website backend, to allow for less technical society members to login and update it's content.

Web Developer Intern - Twofour 2011 & 2012

- Built a Facebook-esque social network; complete with profiles, a newsfeed, friendships, image galleries, comments, and likes.

Values

- **Communication is key** for anything to succeed.
- **A sense of humour** goes a long way.
- **Never stop learning**, and raise those around you.
- **Testing code** must be done early and often, and should be simple.
- **Functional Programming = <3**.

Skills

Programming Languages

I consider myself somewhat of a polyglot. I'm passionate about learning new programming languages, and keeping up to date with new paradigms

- **Proficient** Python, Go, Rust, JavaScript/TypeScript, Bash, Java, SQL, C/C++, OpenGL, HTML/CSS, Haskell, Lisp+Scheme, Elixir
- **Familiar** OCaml, Erlang, R, MATLAB, C#, PHP, Ruby, BrainFuck

Computing Tools and Utilities

- All OSs, CLIs, Git, Vim, VSCode, Docker, AWS, GCP, Cloudflare

Education

Imperial College London 2013 - 2017

MEng in Computing and Artificial Intelligence.

- **Genetic Generation of Architectural Design (Thesis)** Orchestrated a swarm of servers, to concurrently communicate with one another and run distributed Genetic Algorithms.
- **Autonomous Drone** Wrote an ML model, in C++, to allow a drone to autonomously fly through a programmed route.
- **CoIDE** A web based IDE. Supports concurrent editing of Python, HTML, and JS, with live runtimes. Think Google Docs, but for code.
- **Doodlr** Allows multiple users to paint together in real-time. Supports complex Photoshop-esque tools and image manipulation.
- **PintOS** A fully featured Operating System, in C.
- **WACC Compiler** Written in Go. Compiles a C-like language to ARM Assembly.
- **Raspberry Pi Emulator** Wrote an ARM assembler and Raspberry Pi emulator, in C.

Personal Projects

I have over 100 personal projects, hosted at github.com/JCGrant.
Here are some of my favourites:

- **Multiplayer RPG** An MMO architecture with entity interpolation.
- **Chess RS** A chess engine written in Rust.
- **Apollo** Record live music loops with friends over the internet.
- **emojibot** AI chatbot which replies to natural language with emojis.
- **glambda** Lambda calculus interpreter.
- **Twitch Paints Art** Livestreamed canvas. Users can paint via chat.
- **Kilo** A text editor, written in C. Includes syntax HL and searching.
- **Blox** A proxy allowing Minecraft plugins to be written in Go.

Personal

- Hackathons, Project Euler, and other programming challenges.
- Game development.
- Public speaking, Debating.
- Salsa dancing.
- Guitar, Piano, Singing.