James Grant

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London + Remote

Values

- **Communication is key** for anything to succeed.
- **A sense of humour** goes a long way.
- **Never stop learning**, and raise those around you.
- **Machines are smart**. Tests, types, smart compilers. Use them.

Work

Independent Software Engineer - Self Employed   2023 - Present
- Wrote a virtual avatar app in Rust, where users can puppeteer a digital character. Uses machine learning to track the user's face and body. Supports emotes, premade animations, and networked messages.
- Wrote a fullstack task management app in Svelte and deployed to K8S. Tasks can be displayed as a Gannt chart, Kanban board, or Calendar.
- Deployed a paid network of Minecraft Servers, modified with Java.

Senior Software Engineer - Odin Vision   2023 - 2024
- Refactored real-time ML pipelines by splitting up monolithic services into microservices, increasing FPS performance on the client.
- Championed the restructuring of company ML libraries into a monorepo; enabling faster collaboration between Dev and ML teams, and reducing human errors during manual pre-deployment checks.
- Restructured Development repos and Dockerfiles, enabling changes to the Django app to be immediately reflected during development.
- Learnt how to manage K8S on GCP, and the related tools like Helm.

Independent Software Engineer - Self Employed   2022 - 2023
- Wrote, and sold, a budgeting app in Typescript. Allows users to record daily snapshots of their bank balance, and plot trends over time.
- Recorded, marketed, and sold courses on Computer Science and modern Software Engineering best practices.

Senior Software Engineer - Kidsloop   2021 - 2022
- Refactored the entire networking protocol of a full stack React app in Typescript, for a real-time video chat service. This fixed dozens of state management bugs which had been plaguing production for months.
- Refactored the WebRTC service by replacing it's state with the new networking protocol, increasing possible chat room sizes by 10x.
- Built a high throughput distributed data processing pipeline, in Rust.
- Built Rust libraries which compiled to both Python and Typescript.

Content Creator - Self Employed   2020 - Present
- Grew a successful Social Media presence of over 200,000 followers.
- Learnt creative skills like digital art, video editing, and live streaming.

Senior ML Software Engineer - Babylon Health   2019 - 2020
- Rewrote the Medical Large Language Model software pipeline, splitting up a huge stateful monolithic service into composable microservices.
- Built a deployment service, which enabled quick editing and testing of different LLM pipelines via a simple YAML specification.
- Wrote a Visual Programming Language to allow designers to create complex Amazon Alexa Skills, without code, shortening R&D cycles.
- Rewrote an internal HTTP library, fixing many concurrency bugs.
- Introduced type safe Python, which reduced many edge-case bugs.

Research Engineer - Emotech   2017 - 2018
- Built a Visual Programming Language to allow designers to create complex behaviour, without code, for a smart-home robot assistant, shortening R&D cycles from days/weeks to hours/minutes.
- Wrote dozens of Golang Microservices each responsible for a different part of the robot's functionality, optimised for low latency.
- Built a Natural Language Generation Engine, which augments the robot's speech with contextual information, and a hint of personality.
- Introduced Trello to my workmates, championing Agile practices, and improving communication and productivity across the company.

Skills

Programming Languages

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

Proficient Python, Rust, Go, JavaScript/TypeScript, Shell, 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, K8s, 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** Compiles a C-like language to ARM Assembly.
- **Raspberry Pi Emulator** Wrote an ARM assembler and VM, capable of emulating a Raspberry Pi, all in C.

Achievements
- Set up Imperial's first mental health awareness society and helped raise over £300,000 to improve Imperial's mental health services.
- Ran as the Imperial Dance Club's IT Officer, and built their website.

Personal Projects

I have over 150 personal projects, hosted at **github.com/JCGrant**. Here are some of my favourites:
- **Kubernetes Cluster** A K8S cluster, which I deploy all my apps to.
- **MC Haptics** A Bluetooth haptic feedback engine, built for Minecraft.
- **Multiplayer RPG** An MMO architecture with entity interpolation.
- **Chess RS** A chess engine written in Rust.
- **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.
- **glambda** Lambda calculus interpreter.
- **emojibot** AI chatbot which replies to natural language with emojis.
- **Postr** A Social Media with profiles, reposts, media, & comments.
- **ProcGen** Various experiements in procedural generation.
- **Apollo** Record live music loops with friends over the internet.

Interests + Hobbies

- Hackathons, Leetcode, Advent of Code, Project Euler, etc.
- Game development.
- Public speaking, Debating.
- Salsa dancing.
- Guitar, Piano, Singing.
- Un poco de Español.