

TOM GREENWOOD

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SUMMARY

I am an experienced software developer, with a background in mathematics. In recent years I have specialised in 3D, where I have in-depth knowledge of graphics techniques and tools. I have also worked in data science, devops, data engineering and full-stack web-development. I am comfortable on Windows, Linux and Mac.

I have particular experience in

Frontend	Backend	Infrastructure
THREE.js C/C++ C# Opengl/webgl/webgpu Graphics/Shaders Typescript	Python, Golang, C# ML + Statistics Building Web Apis SQL Graph DBs (dgraph, Neo4j)	Kubernetes + Docker Kafka CI/CD AWS + GCP Git

Other tools I have used

- Rust
- Emscripten
- Unreal Engine
- Unity
- ROS (robotics)

EXPERIENCE

August 2025 -> Present: Freelance contracting through my company 6pence.

- Project: Enhancing digital twin capabilities in three.js. Extending Twinlabs' digital twin viewer to support multi-floor structures. This involved parsing external formats, extending the company's data model and integrating with existing functionality like selection and filtering in the 3D scene.

April 2025 -> August 2025: Renishaw - Senior Software Engineer

- Working in C#, on an analytics and visualisation tool for additive manufacturing (3D printing).
- Visual Studio, .NET Framework, WPF apps on Windows.
- Test-driven development.
- Making changes to image rendering with the in-house C++ rendering engine.
- Mentoring graduate-scheme and apprenticeship engineers.
- Built a small DX11 renderer in C++.

April 2024 -> April 2025: Twinlabs.ai - Senior 3D Developer

- Responsible for the 3D frontend, built in react-three-fiber.
- Reduced the frame-rendering time for the existing app from 25-40ms down to 5-9ms, through a wide range of performance improvements.
- Added complex user interactivity to the 3D scene
- Built a 'level-editor' with functionalities such as drawing areas, walls, drag-n-drop assets into the scene, drag-n-drop editing of the scene and more.

- Created an animated particle system for wind visualisation
- Custom materials, vertex shaders and procedural materials.
- Mesh simplification innovation project with c++

February 2024 -> April 2024: Personal Projects

- 6pence.xyz is my company site for experimenting with C++, wasm, graphics and building 3D things.
- Arduino embedded projects.
- 3D Renderer in WebGPU and Rust (wgpu). Implemented normal mapping, phong-shading, mesh instancing, camera controls.

January 2022 -> February 2024: Vaarst - Frontend Engineer

- Interactive 3D applications using React, Typescript and THREE.js
- Custom post-processing effects
- Volumetric rendering shader for underwater light effects
- ROS Robotics framework on Linux.
- Writing custom shaders for eye-dome lighting, HSV colouring, performance optimization
- Customising NASA 3DTiles loader client for loading and rendering of very large 3D models with tile-based 3D file formats (EPT, 3DTiles)
- Multithreaded frontend using webworkers to ensure smooth rendering while streaming assets
- Raycasting
- Unreal Engine C++ for a digital twin application. Slate/UMG widgets, mesh instancing. Actor composition and UI all in C++
- Flask and Django API backend
- AWS Cognito Auth for React + Django app

December 2020 -> January 2022: Ovo Energy, Bristol - Software Engineer

- Built a data discovery tool which allowed Ovo analysts to search across diverse data sources within Ovo. Taking the idea from concept to production.
- Django ORM and Graphene backend to build custom GraphQL API on Postgres DB with full text search.
- React frontend with strict Typescript. I built a custom react-router setup to generate unique urls for search terms and form filters.
- Infrastructure-as-code via CircleCI with terraform and helm to deploy stack on Google Cloud GKE Kubernetes with full SSL and authentication on all endpoints.
- Implemented Google authentication for frontend and backend.

July 2019 -> December 2020: BT - Software Engineering Professional

- Built a micro-services based event detection system for Border Gateway Protocol anomalies. Taking the idea from concept to production.
- My architecture for the project uses a custom built Kafka Streams-like distributed analytic engine, using patricia tries.
- I wrote several REST APIs for the project, including a multi-region API, with fully automated deployment, which uses a highly concurrent programming model to deliver >200,000 trace routes per day from different parts of the world.
- This involved re-architecting an earlier iteration of the project and leading to significantly reduced latency and costs as well as increased scalability and fault tolerance.
- Designed the DevOps for the project, CI/CD pipelines with 20+ jobs and multiple environments.

- Built a router-peering analysis tool. The tool has a backend which ingests a stream of routing messages, breaks down the paths, pushes the peerings into Neo4j and runs graph analytics algorithms such as pagerank and community detection.

June 2018 -> July 2019: Artesia Consulting - Data Scientist

- Modelling (MLR models, logistic regression, decision trees, neural networks) using R packages and TensorFlow.
- Audio signal processing with FFT and k-means clustering.
- Optimisation of core parts of data analytics code with c++ using Rcpp.
- Building apps with Shiny to provide interactive results of machine learning to clients.
- Visualisation using plotly, ggplot2, ggraph, igraph and ggmap and d3.

Previous roles including director of an investment research company and teaching art

EDUCATION

July 2014 : Royal Society of British Artists (RBA) Rome Scholarship

- I was awarded the 2014 Rome scholarship by the RBA, which involved spending one month at the British School at Rome.

September 2006 -> September 2007 UCL, London, Msc, Environmental Systems Engineering

- Dissertation on discrete mathematical modelling on complex ecosystem dynamics. Using MatLab to implement changes to an existing cellular automata model of multiple populations in a changing environment.

2003->2006 University of Bristol, Bristol, BSC (Hons) Mathematics

First year grade: 1, Second year grade: 2.1, Final grade: 2.1

A-levels

- A2 - Maths: A, Further Maths: A + advanced extension award, Physics: A + advanced extension award merit
- AS - Economics: A, English: B, Philosophy: A

GCSEs

- 5 A*s (including Maths), 4 As (including English) and 1 B

ADDITIONAL SKILLS

Languages: Terrible French.

Driving: Full UK driving licence.

REFERENCES

References are available on request.