| Marco Juliani | [portfolio](#) | [github](#) | [linkedin](#) | [gmail](#) | [twitter](#) |

Summary

Technologist combining software engineering expertise with architectural design thinking to solve problems. Unique blend of 5 years in software development and 5 years in architectural design, specializing in computational modeling and optimization. Interested in web development, spatial computing, parametric modelling, embeddings + LLM applications, machine learning, optimization algorithms, among others.

Professional Experience

10/2022 - 12/2024	NY	Senior Software Engineer	Outer Labs

- Developed **full-stack** prototypes as we iterated on product vision during the pre-seed phase of our real estate startup
- Played an important role in defining and future-proofing the **data model** and driving alignment across **engineering + product**
- Evaluated 10+ external data services and built **ETL pipelines** processing 1M records weekly for real estate **data ingestion**
- Led **RAG** experiments and built a **backend service** enabling engineering/product teams to prototype and evaluate **LLM workflows**
- Coordinated **API** and **data model** integration between 2 teams to remove undesirable dependencies
- Played key role in defining the **event loop** of new **space planning web application**
- Contributed to critical libraries across the app related to **rendering**, **state management**, **spatial algorithms**, and **geometric operations**

04/2021 - 10/2022	London	Software Developer	KOPE

- Led the development and client engagement to deliver a **modular building configurator** implementing complex **adjacency** and **stacking** rulesets specific to the client's proprietary system
- Contributed to **algorithm development** and overall implementation during strategic pilot engagements related to building enclosure systems
- Mentored younger engineers on **best practices** and **design patterns**

02/2020 - 04/2021	London	Computational Design Specialist	CallisonRTKL

- Authored custom **plugins** for Rhino + Grasshopper relating to the analysis and feasibility of building proposals
- Authored **parametric tooling** for the analysis of **multi-objective** tradeoffs of a commercial development
- Implemented a **logging system** for tracking usage of our internal tooling initiatives across the firm

Education

09/2018 - 05/2019	London	MSc Architectural Computation	UCL Bartlett

Computer-science-for-architects program where we:
- learned **object-oriented-programming**, familiarized ourselves with **Visual Studio** and **Git**
- leveraged **Unity** and **C#** as a prototyping and simulation environment
- implemented vanilla **L-Systems**, **Genetic Algorithms**, **Kohonen Nets**, **Artificial Neural Networks, Octrees**.

08/2008 - 05/2013	Tucson	Bachelor's of Architecture	University of Arizona

Skills

Frontend	Javascript, Typescript, React, HTML, CSS, MUI, Tailwind
Rendering + Browser	Canvas API, Three.js, R3F, Pixi.js, Canvas-Sketch, Chrome API
Maps + Geospatial	Mapbox, Google Maps Platform, PostGIS
API + Scripting	Node.js, Express.js, Nest.js, Python, Flask, Go, C#, GraphQL
Database + ORM + Object Storage	Postgres, Firebase, Firestore, GCS, MySQL, IndexDB, TypeORM, Drizzle, Yjs, Liveblocks
DevOps + Infrastructure	Gitlab, Azure DevOps, Github, GCP, AWS, Docker
Product Lifecycle	Agile, TDDs, Docusaurus, Slack, GSuite, Linear, Notion
Data & Tools	Data Models, Mermaid, ETL Pipelines, DuckDB, Visidata
LLMs & ML Libraries / Frameworks	RAG, Function-Calling, Haystack, LLama-Index, Pytorch, Numpy
Algorithms	GAs, L-Systems, Kohonen Nets, Neural Nets, Octrees
Computational Design	Rhinoceros, Grasshopper, Revit, Dynamo, Unity

Involvement

08/2024	Competition	Untabbed: *Gemini API Developer Competition*
04/2021	Publication	Rumoer 76: voxel-based building + apartment generator mentioned in *Generative Design With Hypar* article (pg. 43).
05/2020	iOS game	Grid-locked: foray into game development during lockdown
04/2020	Talk	Data Management & Display: *Elefront* and *Human UI*
01/2020	Plugin	PlanBee for Grasshopper: cell-based spatial analysis plugin.
08/2019	Tutoring	Bartlett: *Introduction to Programming* Workshop (1) (2)