

Carl Lange

Senior Software Engineer

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Summary

I am an experienced and effective full-stack engineer with more than a decade of experience, mainly in the fast-moving and innovative startup world and working mostly in small and agile teams.

From 2014 to 2018, I worked as the chief architect and lead developer for [Data.gov.ie](https://data.gov.ie), the Irish Government's Open Data Portal.

From 2018 to 2023, I worked at Hawa Dawa, a company in the air quality management space, in a wide-ranging individual contributor role.

Since 2023, I have been working for Bernard Technologies, an engineering company with a large IOT sensor network for managing and reporting traffic flow in cities.

My partner and I are also the first to hike every one of Ireland's National Waymarked Trails, a distance of over 4,000 kilometres. We run a YouTube channel to encourage and help people get outside, which has gained more than ten million minutes of watch time.

Skills

I am an experienced full-stack developer. I have built many services, apps, and prototypes from top to bottom, back to front. I have scaled up a kubernetes cluster and fixed a bug in a contact form on the same day. Much of my work has involved user-facing webapps and websites, though I have worked on the occasional mobile app. I frequently write tools and infrastructure to improve internal workflows.

I have expert knowledge of a large number of programming languages and paradigms, from Javascript to Mathematica, via Python, R, and Emacs lisp. My favourite language is Wolfram Language, but the one I use the most often is Typescript. I love learning new and different languages, paradigms, and technologies.

I have customer-facing communication experience, including feature gathering, managing expectations, and training.

I have experience leading a team of developers, including hiring, mentoring, and managing expectations.

Experience

Bernard Technologies – Freelance Senior Software Engineer

04/2023 - Current

Bernard Technologies acquired my previous company Hawa Dawa in 2023. Bernard Technologies has a large IOT sensor network for managing and reporting traffic flow in cities globally. My role here is similar to my role at Hawa Dawa - managing infrastructure and some frontend services in a small development team.

Hawa Dawa – Senior Expert in Software

10/2018 - 04/2023

I joined Hawa Dawa in 2018. Hawa Dawa is a company in the air quality management space, building inexpensive, high quality air chemistry sensors mainly for local government. During my years at the company, I worked on many different aspects of the business, and I became responsible for a large part of Hawa Dawa's software, including their infrastructure, devops, and client-facing frontend code, large-scale satellite data exploration, and wind and pollutant modeling.

I had several roles at Hawa Dawa over my time at the company, including acting Head of Software, and sometimes switching between full-time and freelance work.

When I joined Hawa Dawa, code was being developed by several developers on a single production server, deployment meant saving a file, and developers had no realistic way to run code locally. Merge conflicts meant downtime. I spearheaded the operation to improve this situation drastically, instigating pull requests and merge requirements, containerising codebases, creating a managed infrastructure with transparent monitoring, and collaborating with team members to create sensible workflow processes.

As part of this operation, I migrated the entire development infrastructure to Kubernetes on Azure.

I wrote the vast majority of the customer-facing frontend, creating a comfortable and functional user experience for various users to determine the air quality in their vicinity.

As one of the most experienced developers at the company, I mentored other team members and delivered in-house training, as well as on occasion acting as team lead or head of software.

I used many technologies at Hawa Dawa, including Kubernetes, Prometheus, Loki, and Grafana, PostgreSQL, React, Python, R, TypeScript, and many others - for some, championing their adoption within the company.

Trick16 – Founder

03/2021 - Current (On hiatus)

Trick16 is a creative technical consultancy that aims to make it easier for artists to create, by creating bespoke solutions for their workflow or project.

As the technical founder, my role is to interface with clients and write code. My co-founder originates projects and project manages.

Trick16 has been directly involved with artists' projects that have been exhibited internationally and ones that have never seen the light of day.

Derilinx – Lead Software Developer

12/2014 - 03/2018

I joined Derilinx in late 2014, first as a contractor, moving into a full-time position after about six months. I was the architect and lead software developer on the Irish Open Data Portal, data.gov.ie, as well as many other projects and products. I oversaw the development of data.gov.ie for nearly all my time at Derilinx, bringing it from its first page view to its 1,500,000th. During this time I also acted as architect and lead developer on many other data portals, both nationally and internationally.

Other projects included many deep dives into datasets made available to us, including an expansive project to analyse hundreds of thousands of BER ratings for homes, allowing for accurate and effective retrofitting recommendations to be made to home owners. For these projects (and others) I used a range of different data science techniques and technologies, leading to a wide exposure to the field. I also obtained in-depth understanding of very disparate, arcane domains of knowledge, and gained the ability to find this knowledge quickly.

I was the most senior employee for nearly all the time I worked at Derilinx, typically working on multiple projects at once, managing expectations internally and face-to-face with customers. I carried out job interviews, handled support requests, was on-call (approximately 24/7), managed a team, and travelled to give on-site training, as well as writing thousands of lines of code per week.

Fluid UI – Software Developer

04/2013 - 04/2014

I joined Fluid Software as a software developer, working on real-time collaboration and other product-focused projects. From there I transitioned into a project manager / developer operations role, building tools to optimise as many pipelines in the company as possible and managing several teams on a day-to-day basis.

Game Closure – Game & SDK Developer (Internship)

03/2012 - 03/2013

I built many features of the Game Closure DevKit and developed several internal demo games over the course of a year. This included working on the actual SDK and various internal and customer-facing tools. I contributed to the development of almost every part of the SDK, including build servers, phone-to-browser debugging, native code, documentation, and development of the game engine itself.

In the process of building the SDK, I also contributed to some open source projects, including [npm](https://npmjs.org), js.io, and [sweet.js](https://github.com/sweetjs/sweet.js) (macros for javascript). I left Game Closure at the completion of my visa.

Ericsson – Software Engineer (Internship)

05/2011 - 08/2011

Ericsson contacted me because of my work creating the Flax HTML5 game engine and offered me an internship. I learned and used similar technology (HTML5 and GWT) as with the Flax game engine. I worked on a project visualising data in browsers, using D3.js and other visualisation libraries.

Education

IT Carlow – Computer Games Development

2009 - 2012 (Incomplete)

I attended IT Carlow's best-in-class Computer Games Development course for three years. During my time here, I learned effective high-performance programming (in Python, C++, and C#), and gained a solid grounding in maths, physics, and 3D graphics.

I did not complete my degree, leaving during my third year to pursue career opportunities abroad.

I attended various competitions during my time at IT Carlow, including the Robocode AI Programming Competition 2010, ACM inter-collegiate programming competitions 2010 and 2011, and the Global Game Jam 2011.

IT Carlow is now known as South East Technological University.

Other Projects

Tough Soles – Walking every trail in Ireland

2017 - Current

Ireland has a large network of National Waymarked Trails - over 4000 kilometres long. In 2017 my partner and I set out to walk every single one back-to-back, publishing blog posts and youtube videos along the way to encourage others to experience the outdoors. I also published a popular set of creative-commons maps for each trail as openly-licensed paper maps were unavailable. We completed the last trail in 2019. This project is ongoing, and we continue to hike and create hiking-related content on a weekly basis.

Flax Project – HTML5 Game Engine

2010 - 2011

I was one of a two-person team building one of the very first HTML5 game engines, using Google Web Toolkit instead of bare Javascript.

Talking points

Let's chat! I'd love to talk about Emacs, your favourite home-grown tool, video editing, Mathematica, hiking, rock climbing, and cartography - or whatever's on top of Hacker News today!