Emil Bengtsson

Curriculum Vitae

✆ +47 47 966 224
✉ emil@emil0r.com
🖳 emil0r.com

Who I am

A builder and maker by nature. Creative, compassionate and thoughtful. Lover of technology, but am also aware of its limitations.

I am an experienced software engineer and architect with good hands-on people skills. As a developer I firmly believe in reducing complexity by striving for simplicity, cutting away accidental complexity and separating necessary domain complexity into smaller parts that are understandable by everyone involved.

The extent of a system is not just the technical aspects of it, but more importantly the desired effects of the system. A passed test, compilation or migration is just a step towards a fully functional system that everyone, including the end user, is pleased with. As such, communication and shared understanding is paramount.

Experience

2024–Present **Senior Software Engineer**, OIIKU, Oslo, Norway.
Work split between bug fixing, writing new functionality, architecture and devops.

2022–2023 **Founder**, GLACE TECH, Oslo, Norway.
Responsible for the technical side of projects, architecture, training, mentoring and technical sales.

2019–2022 **Chief Technology Officer**, INONIT, Oslo, Norway.
Roles included requirements gathering and architecture, technical sales, training and mentoring and responsibility of completion for projects.

2013–2019 **Senior Consultant**, INONIT, Oslo, Norway.
Senior consultant with roles including backend development, team lead, architect, mentoring, training and problem solving.

2014–2017 **Chief Technology Officer**, STARTSHOP, Oslo, Norway.
Responsible for all technical development and choice of technology for Startshop.no, a Norwegian cashback site. Large focus on integration with other platforms, scalability and technical flexibility.

2012–2013 **GUI developer**, NORMAN, Lysaker, Norway.
GUI and web development. Performed research into possible technologies. Development for large product line and did initial studies for their cloud initiative.

2007–2012 **Web developer**, 24HR, Malmö, Sweden.
Development of websites small and large. Involved in numerous roles including frontend, backend, databases, light-weight server administration and internal development.

2006–2007 **System developer**, ROCK BLUE MOUNTAIN, Ao Nang, Thailand.
Planned, analysed, implemented and launched a web-based system for internal bookings for a local tour operator.

Projects

2024-Present **Microservices ⇒ Monolith**, Oiiku AS, Oslo, Norway.

Rewriting the old microservices architecture to a monolith (-ish) architecture. Designed architecture together with the CTO, defined goals and carrying out implementation.

Strong focus on testability, simpleness and minimum dependencies. Test patterns using nullables combined with a FCIS (Functional Core, Imperative Shell) architecture and the dualistic nature of .cljc files allows for frontend testing of all logic, without invoking any browser depending tests, as well as end-to-end tests without invoking the entire system, as the infrastructure is substituted with nullables.

Tech: Clojure, Clojurescript, polylith, CI/CD pipeline, Docker Swarm, datomic, devops, replicant

2022-2023 **Oiiku**, Glace Tech, Oslo, Norway.

Modernized a 10+ year old microservice platform. Went through all microservices and updated the codebase to modern standards. Planned and executed a new architecture for the operation side of things, where a hard requirement was that it be run outside of the cloud on updated servers. Built a pipeline for Docker Swarm, adapted existing microservices to the new technology and deployed new production servers in roughly 3 months.

Continued development of the platform with bugfixes and new development.

Tech: Clojure, CI/CD pipeline, Docker Swarm, datomic, devops

2021-2022 **Songpark**, Inonit, Oslo, Norway.

Led the team to build a hardware based solution for internet based real time audio transfer for musicians. The goal of the project was to deliver a first prototype with hardware and software that worked together with the hardware with end-to-end transfer of 2-3 ms in a lab setting and a maximum transfer limit of 20ms for real time audio streaming over the internet, with the solution handling jitter and packet loss.

Designed the architecture of the solution, based partly on previous work from a sub-contractor. Acted primarily as a combined software and hardware technical project manager, helping out wherever it was needed and making sure the different parts of the solution all were moving along at a pace where they wouldn't block each other. Wrote some of the critical parts of the software layers, specifically with regards to communication between the different parts of the system.

Assisted on design issues for the logic in the FPGA on a regular basis, together with the main architect of the FPGA and the customer.

Wrote the PWA for the frontend.

Tech: Clojure, Clojurescript (re-frame+reagent), Python, MQTT, HW interfacing, FPGA, C

2020-2021 **Kompetansia**, Inonit, Oslo, Norway.

Built an EdTech app for schools in Norway to help with reading comprehension. Designed architecture and database for the app in dialogue with the customer. Led the team and the implementation of the app.

The app consists of a backend, a back office, a teacher app and a student app. The student app records the reading of the words from an assignment (given by the teacher), and sends it to the backend where it is stored. The recording is then sent to Google Cloud Speech2Text for a transcription, which is used as an indicator of how well the word was spoken by the student. The teacher then scores each student manually, which then allows the student to advance.

Tech: Clojure, PostgreSQL, Clojurescript (re-frame+reagent), Cordova

2020-2021 **Parametric Construction System**, Mestegruppen, Oslo, Norway.

Participated in a project for mapping and plan the construction of a parametric construction system. Researched and reported on possible solutions together with seasoned AEC architects.

Looked into integrations with relevant systems and file formats.

Built a software architecture that would be flexible, scalable and still be viable ten to twenty years into the future.

Tech: Javascript, C#, postgresql

2018 **Songpark**, INONIT, Oslo, Norway.

Built a prototype for playing music over the internet. Used Raspberry Pi and existing software modules for python to put together a working prototype of 3 boxes, all playing together with less than 20 milliseconds of lag under ideal conditions.

Each Raspberry Pi was controlled via hardware peripherals (buttons and knobs), interfacing with a python program running in the background of the Raspberry Pi. Using a web based interface, you could then hook up to a jam session with other people and then play together.

Tech:Python, javascript

2018-2019 **infinitor**, INONIT, Oslo, Norway.

RnD for an IoT (Internet of Things) initiative by inonit. The project went in three phases. The first phase researched the IoT field, specifically hardware, databases and microcontrollers. In the second phase a quick and dirty prototype was built. The third phase saw an implementation of software, hardware and an architecture suited for small to medium sized applications of IoT.

Second phase was implemented with in memory db, python (flask) on the backend, MQTT, javascript and C.

Third phase was implemented with Clojure, Clojurescript, C, MQTT and postgres. The core of the system (called Core) in addition implemented an Entity Component System (ECS) which allowed for easily turning functionality on and off for any entity within the system. All messages sent over the system were specced, with shared code between the Clojure and Clojurescript implementations.

Tech: Python, javascript, Clojure, Clojurescript (both node.js and browser), postgres, MQTT, core.async

2017-2018 **Marketwell**, INONIT, Oslo, Norway.

Led the backend development for Marketwell, a marketplace for the hair and skin care industry. The app ties together hair salons, cash register systems and providers into one unified information system allowing the salons to easily monitor their own progress and track their stock supplies.

Consulted multiple times with the client on requirements and architectural design during the entire development process. Clarifications and design decisions were documented and forwarded to the rest of the team.

Tech: Python (Django + Django Rest Framework), Clojurescript (reagent + re-frame), REST

2016 **Affiliate library**, STARTSHOP, Oslo, Norway.

Refactored all code touching various affiliate networks into one library to be consumed by all code bases for Startshop. The library provided a unified way of dealing with affiliate networks, sending and retrieving data and abstracted away where the data came from.

Heavy usage of testing covering state transformations, transducer functionality and individual tests against every single affiliate network.

Tech: Clojure, Prismatic Schema, core.async, transducers, midje (testing)

2015 **Information System**, SARA, Harare, Zimbabwe, *Consultancy project*.

Implemented an information system for SARA (Southern African Railways Association), handling the information about all international cargo shipping between different countries/railway companies.

The goal of the project was to share crucial commercial information between railway companies in a secure and transparent way.

Tech: Clojure, PostgreSQL, Enlive, ez-database

2013–2014	**TestMerchant**, Nets Norway AS, Oslo, Norway, *Consultancy project*.
	Implemented a test tool of critical importance for the new javascript based BankID 2.0 client, consisting of a configurable Merchant for the BankID system, giving both the happy path and configurable sad paths.
	Consulted stakeholders and domain experts on requirements during the initial stages of the project and provided feedback during the entire development process. The project was based on a legacy implementation. The existing implementation was heavily refactored to support multiple platforms such as iOS/Android apps, the Java client and the new javascript client. Introduced a flexible configuration management interface for manipulating the test tool at all stages during a test phase.
	The merchant was designed with a separation of concerns in mind. The interface for configuring the merchant was broken off into its own separate piece, allowing for ease of use for both manual testers through the manual GUI and automated tests through the REST API.
	The goal of the project was to produce a merchant that implemented full functionality, while allowing the testers to simulate scenarios for the merchant that can occur in a production environment.
	Tech: Java, Python & javascript
2012–2017	**reverie/CMS**, Senior developer.
	Implemented my own Content Management System for websites as a way to learn Clojure. The project aimed to fix the shortcomings with the offerings of web CMSs at the time; and so reverie is heavily focused on flexibility for both the web developer and the web master while also placing emphasis on extendability and performance. reverie/CMS offers a flexible layout engine, a powerful object system, an automatic admin interface for modules, a large number of tools to help the web developer with his work, a caching system, a rendering mechanism for allowing different template engines to work on the same data (hiccup, Enlive, Semper) and an authorization system.
	Tech: Clojure, javascript, HTML/CSS & PostgreSQL

Education

2005–2006	**Advanced Database Management**, *EC Utbildning*, Helsingborg, *Sweden*.
2001–2004	**Game programming**, *PowerHouse*, Kramfors, *Sweden*.

Software skills

Languages	Clojure, Clojurescript, Python, javascript, SQL, PHP, C#, Java, Lua, C++
Standards	HTML, CSS, XML, JSON, HTTP, EDN
Concepts	3D/2D, OOP, functional programming, regex, spec, encryption
Databases	PostgreSQL, MySQL, MSSQL, XTDB, Datomic

Code

ez-form (github.com/emil0r/ez-form). Web form library for Clojure/Clojurescript

reverie (github.com/emil0r/reverie). My own CMS

ez-image (github.com/emil0r/ez-image). Image library

Language proficiency

Swedish	Native speaker
English	Bilingual
Norwegian	Working proficiency
German	Elementary

References

Upon request