Anders Hauge **Nissen**

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Profile

I am an experienced software engineer with a passion for solving tough technical challenges and writing creative code.

I am currently employed at Trelleborg Marine Systems Denmark where I have worked since March 2013. Prior to that, I was at DBA, part of eBay, working on developing their new .NET platform.

At Trelleborg I have been developing new innovative solutions for the maritime industry. Our main products are high-precision position devices and SafePilot, an iPad app providing industry-leading navigation and docking aids. Additionally, we have various cloud-based support systems. Our solutions are used by nautical pilots worldwide to make critical operations safer and more efficient.

As such, reliability, performance and easy of use are key focus areas. We are a small team of 5-6 software engineers mandating responsibility and flexibility as required skills. We are primarily working with C++ but also use Objective-C, TypeScript, Go and various other languages and a wide range of different technologies. We handle many low-level areas such as rendering, multi-threading, networking, serialization, encryption, as well as complex algorithms, optimization, UI, and software architecture, all wrapped in a large cross-platform codebase.

In my leisure time I always have multiple ongoing coding projects. In the past I have made games for desktop, web, and mobile. I also have a great interest in programming language theory, design and implementation. The last few years I have been working on my own implementation of a high-level general-purpose gradual typed programming language with a focus on simplicity and easy of use. Additionally, I have made a cross-platform game engine that uses my language for logic and allows hot-reloading code changes for rapid development.

I live in a small village on the western outskirts of Aarhus with my fiancee and our two children.

Work Experience

Trelleborg Marine Systems Denmark   *Aarhus, Denmark*

SOFTWARE ENGINEER   *Mar 2013 – Present*

Projects I've worked on (projects marked with ★ are built exclusively by me)

- *Planet*: Low-level cross-platform engine for handling nautical charts. Supports importing and efficiently rendering encrypted nautical charts. C++ codebase.
- *SafePilot*: iPadOS application providing sophisticated industry-leading navigation aid to nautical pilots and captains. Monitor other vessels and their data, plan and carry out a range of different types of operations while getting a wide range of real-time measurements. Presented in a clear and non-obtrusive interface. C++ codebase with UI-logic in Objective-C.
- *SafePilot Shore Viewer★*: Windows/macOS application for harbor-based vessel traffic surveillance and administrating resources for, and deploying to, SafePilot clients. C++ codebase using the Qt framework.
- *DataServer*: Server application handling real-time streaming data. Containerized backend written in C++.
- *PortServer★*: Server application handling users, file synchronization and report generation. Containerized backend written in JavaScript using Node. Static frontend.
- *LicenseManager★*: Server application handling customer accounts, account groups, and licenses. Backend written in JavaScript using Node. Frontend using AngularJS.
- *SmartDAS★*: Visual docking aid system. Containerized backend in JavaScript using Node.js. Frontend in TypeScript using React. Using MQTT as two-way communication protocol.
- *SmartBollard★*: Visual bollard load monitoring system. Firmware in Squirrel. Backend in Go. Frontend in JavaScript. Using MQTT as communication protocol.

DBA / eBay   *Aarhus, Denmark*

.NET DEVELOPER   *May 2011 – Mar 2013*

- Migrate from old ASP-based platform to a new ASP .NET MVC-platform.
- Maintain the platform as well as developing it further using innovative approaches.
- Increase the quality of the codebase through tests and a structured development process.

Faculty of Computer Science at Aarhus University *Aarhus, Denmark*
Sep 2010 – Nov 2010
- Design and implement a computer game with physical interaction. The game was used in the Master's course *3D Prototyping* at the IT-bachelor education at Aarhus University.
- Design, build, implement, test and document a solution for a draft for the most difficult exercise at the World Robot Olympiad 2011.
- Continue work on my Master's Thesis project (concerning modelling of behavior of artificial agents in games) to allow it to be used as an educational tool for elementary and high school students.

Education

Master in Computer Science *Aarhus, Denmark*
Department of Computer Science, Aarhus University *Jul 2008 – Sep 2010*
Master's thesis: *An Accessible Behavior Tree Framework for Implementing and Designing Game AI*.

Bachelor's in Computer Science *Aarhus, Denmark*
Department of Computer Science, Aarhus University *Aug 2005 – Jul 2008*
Bachelor project: Java compiler project.

Extracurricular Activity

Bartender *Aarhus, Denmark*
Department of Computer Science, Aarhus University *2008 - 2011*
Volunteering as bartender at the Friday bar for Computer Science and IT.

Tutor *Aarhus, Denmark*
Faculty of Natural Sciences at Aarhus University *2006 - 2009*
Volunteering as tutor for first-year students at *Mat/Fys-Tutorgruppen*.

Mentor *Aarhus, Denmark*
Faculty of Natural Sciences at Aarhus University *2006 - 2007*
Mentor for exchange students.

Hobby Projects

Cosy *Dec 2019 - Present*
Programming Language *andersnissen.com/cosy*
A high-level imperative programming language and runtime designed to be simple and pleasant to use. It has lambda functions, gradual typing, null safety, string interpolation, user-friendly error messages, built-in formatter and more. It can be used with a stand-alone compiler or embedded as a scripting language. Can run as a tree-traversal interpreter or a bytecode virtual machine. The compiler can output bytecode, JavaScript and Markdown documentation.

Crafty *Jun 2021 - Present*
Game Engine using Cosy
Cross-platform game engine system using Cosy as scripting language. Supports hot reloading of scripts.

Stoneset *Jan 2017 - Jul 2019*
Game for Android, iOS and web
Puzzle game for Android, iOS and web. Features a global daily scoreboard with 18,500+ games played.

Game of Games *Jul 2014 - Nov 2014*
Game for Android
Arcade game for Android. 4,500+ installations on Google Play.