

Krijn Doekemeijer

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Finished a MSc in Computer Science at *Vu/UvA Amsterdam*, interested in work related to *Storage Systems and Big Data*.

EDUCATION

Vrije Universiteit Amsterdam and Universiteit van Amsterdam <i>Joint Masters degree in Computer Science, Big Data Engineering track. GA 8.9</i>	Amsterdam, The Netherlands <i>Sep. 2020 – Aug. 2022</i>
Utrecht University <i>Bachelors degree in Computer Science and Game Technology. GA 8.6</i>	Utrecht, The Netherlands <i>Sep. 2017 – May 2020</i>
Farel College <i>Three years TTO, followed by three years VWO + NT. GA 7.7</i>	Amersfoort, The Netherlands <i>Aug. 2011 – May. 2017</i>

RESEARCH AND PUBLICATIONS

TropoDB: Design, Implementation and Evaluation of an Optimised KV-Store for NVMe Zoned Namespace Devices <i>Master thesis</i>	February 2022 –
<ul style="list-style-type: none">TropoDB is the design, implementation and evaluation of an LSM-tree-based key-value store for NVMe Zoned Namespace Devices. See TropoDB.pdf and github.com/Krien/TropoDB for more information. It received a 9.5 as grade.	
Key-Value Stores on Flash Storage Devices: A Survey <i>Literature study</i>	January 2022 –
<ul style="list-style-type: none">A survey on how key-value stores are at the moment designed for flash storage devices, how they can be optimised for flash storage devices and what role flash will play for key-value stores in the future. See arxiv.org/abs/2205.07975 for more information.	

EXPERIENCE

PhD student CS in the AtLarge team <i>VU Amsterdam</i>	December 2022 – <i>Amsterdam The Netherlands</i>
Developer for the Customer Experience (CX) team <i>Kaartje2Go, Working Talent</i>	Oktober 2020 – November 2021 <i>Zwolle, The Netherlands</i>
<ul style="list-style-type: none">At Kaartje2Go I was mainly involved in setting up the Analytics pipeline, telemetry tooling and A/B test tooling. I was also involved in Machine learning tasks (genetic algorithms), DevOps tasks (AWS, CI/CD), and backend and frontend web development.	
Derailed <i>NS, ProRail, Utrecht University (bachelor thesis)</i>	September 2019 – January 2020 <i>Utrecht, The Netherlands</i>
<ul style="list-style-type: none">In team Derailed we developed a serious game in C# with the <i>MonoGame</i> framework. This was done in a well-rounded team of 10 students. I was in charge of creating the entire UI framework from the ground up, the software architecture and design (also UML), and helped with setting up the rendering tooling. Lastly, I aided in designing a graphical/logical simulation of the Dutch train network.	

PROJECTS

TropoDB <i>C, C++, CMake, ZNS SSDs, Key-value store</i>	February 2022 –
<ul style="list-style-type: none">For my master thesis I implemented a key-value store directly on top of ZNS SSDs, known as <i>TropoDB</i>. This implementation is a modification of the state-of-the-art key-value store RocksDB. It does not use a file system and uses the <i>SZD</i> API to interface with the storage instead. <i>SZD</i> I made myself as well. See github.com/Krien/TropoDB.	
Simple ZNS Device (SZD) <i>C, C++, CMake, ZNS SSDs, SPDK</i>	February 2022 –
<ul style="list-style-type: none"><i>SZD</i> is an API built around the SPDK storage engine for ZNS SSDs. It uses an opinionated subset of SPDK, adds C++ support and comes with various default data structures (batteries included). <i>SZD</i> should simplify ZNS development. See github.com/Krien/SimpleZNSDevice.	
File system for ZNS SSDs <i>C, C++, CMake, ZNS SSDs</i>	November 2021 – December 2021

- For the university course “Storage Systems”, I worked on building a file system on top of a *Flash Translation Layer* (FTL) made for ZNS devices. This file system was then tested and benchmarked with the key-value store RocksDB.

Flash Translation Layer (FTL) for ZNS SSDs | *C, C++, CMake, ZNS SSDs* November 2021 – November 2021

- For the university course “Storage Systems”, I worked on building a *Flash Translation Layer* (FTL) directly on top of a ZNS device with the help of libnvme. Most of the project was written in C, with a bit of C++.

COVID-19 Twitter visualisation | *Python, Machine learning, NLP* November 2020 – December 2020

- For the university course “Web Data Processing”, I worked with an enthusiastic team on a visualisation of the most important topics on Twitter during the COVID-19 pandemic for each country. For me, this mainly involved the topic modelling aspects (NLP, ML, Python).

COVID-19 Pollution map | *Spark, Python, Big Data* September 2020 – Oktober 2020

- For the university course “Large Scale Data Engineering”, I worked with a team on a large scale data processing pipeline and visualisation tool of air pollution during the COVID-19 Pandemic. I focused on the data processing pipeline parts with Python, Apache Spark and DataBricks.

Haskell Shoot `em up | *Haskell, game development* Oktober 2018 – November 2018

- I developed a Shoot `em up game with Haskell and Gloss (graphics library) for the course “Functional programming”. See github.com/Krien/Haskell.ShootEmUp.

Noxium | *Unity, C#, game development* November 2017 – Februari 2018

- Developing a 3d beat `em up game in the game engine Unity with a team of 4. For this project, I created the AI, UI and I/O logic, menu and various multiplayer aspects of the game.

SKILLS

Programming languages: Experience in C, C++, C#, Python, JavaScript, TypeScript, PHP, Haskell and R. Knowledgeable about various other languages such as RUST, Matlab, a few Lisp dialects and APL. Proficient in the “DSLs” Bash, HTML, SQL, LaTeX and CMake

Languages: Fluent in English and Dutch; can comprehend a little German

Frameworks/Libraries: Among others SPDK, BPF, RocksDB, LevelDB, LightGBM, TensorFlow, NLTK, MPI, Google Analytics suite, MonoGame, Gloss, SDL, OpenGL, React, Cake, Symfony, Flask, Bokeh

Developer Tools: Git, Docker, build tools, QEMU, AWS, Kubernetes, Apache Spark, DataBricks, Linux, Windows, Unity, WSL, BPFTrace, perf, fio

General skills: Machine learning, CI/CD, virtualisation, software testing, software architecture, game development, scrum/agile