# Nebojsa Koturovic


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N/A in Digital
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## Work experience

- **"Wartsila Voyage"** - `C++ Sofrware Engineer` (Belgrade, Serbia) *July 2024 —*

  I've been developing new components using cutting-edge technologies and maintaining and improving existing components of Navi-Trainer simulator, a product which is actively used in thousands of maritime academies around the globe for training and certification of watch/chief officers, and captains on all types of vessels.

- **"Orange Cloud"** - `C++/Go Engineer` (Belgrade, Serbia) *September 2022 — May 2024*

  I was outsourced and worked as a contractor for StackPath, a US-based company that offers Cloud/Edge Compute products. Initially, I started as a `C++` developer and worked on their CDN platform, after which I transitioned to the Edge-Compute team and worked on back-end services as a `Go` developer for almost a year. I had the chance to work on various tasks related to Kubernetes and neighboring technologies.

- **"Tyllo"** - `C++ Developer` (Belgrade, Serbia) *September 2021 — September 2022*

  For the entire employment period, I was part of the headend division at United Cloud. As a member of the streaming team responsible for developing a cutting-edge transcoding solution. My job consisted of various development tasks, as well as research and support work for the surrounding software infrastructure.

## Education

- **"Faculty of Sciences"** - Computer Science - University of Novi Sad, Serbia (exp) *2024 — 2026*
- **"Faculty of Mathematics"** - Informatics - University of Belgrade, Serbia (3/4 yrs) *2015 — 2020*

## Programming languages

`C++` ★★★★★
`C, Rust, Go` ★★★★☆
`Zig, Python, JS, Lua, Haskell` ★★★☆☆

## Technologies

`Linux, Windows, Git, Bash, Docker, Kubernetes, Pulumi, LLVM, SQL, Qt, OpenGL, CMake, Nix, Conan, Web, NeoVim, LaTeX`

## Talks

**Metadata exhibition** - A short talk primarily on topic of how struct metadata is exposed in different languages.
**Link:** https://youtu.be/KZYYSruaL5o?t=4424 *C++ Serbia*
**Audio:** English *27 Dec 2023*

**C++ dependency management with Nix** - The first part of the talk covers different approaches for managing project dependencies in `C++` projects while emphasizing both the good and bad sides of these approaches. In the second part, the focus shifts to a relatively novel approach of leveraging `Nix` for `C++` dependency management, and using it to acquire libraries and other packages that a project may depend on.

**Link:** https://youtu.be/Y2Aq8pMsLz4 *C++ Serbia*
**Audio:** Serbian *23 Feb 2023*

## Team projects

**Photowall** - Web platform for sharing digital images consisted of client-side SPA written in Angular framework and secure performant C++ server. I was in charge of developing blazingly fast server-side application written in C++ that includes public REST API, a built-in data-flow framework, models, constraints, database access and permission resolution. It was built in a generic way on top of boost::hana with advanced metaprogramming techniques.

**Technologies:** C++, Hana, Restinio, Sqlite, JWT
**Link:** https://gitlab.com/matfpveb/projekti/2019-2020/11-photowall *Mar 2020 - Aug 2020*

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**Photon** - Application with Qt based GUI where users can apply a predefined set of effects to the image of choice. My role was developing rs-img library that stands as a connecting bridge between the front and back end of the application, providing a convenient DSL for manipulating images added by the end-users. The library also provides an easy and modular way for swapping and chosing from different backends such as OpenCV or ImageMagick wrapped with PImpl idiom. Besides rs-img library, I've created the undo functionality, and participated in other tasks.

**Technologies:** C++, OpenCV, Qt
**Link:** https://github.com/nkoturovic/RS009-photon *Dec 2019 - Jan 2020*

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**Pluton** - Minimal text-based file manager capable of performing a basic set of operations such as file creation and deletion and navigation. On this project, I designed and implemented text-based user interface with TermOx library, expanded the existing widgets with new functionality, and participating in the development of core/system of the file manager engine, and help developing algorithms around immutable data structures with the Immer library.

**Technologies:** C++, TermOx, Immer, Range-v3
**Link:** https://github.com/mrdakj/Pluton *Mar 2018 - May 2018*

## Personal projects

**Ctollvm** - Compiler for the subset of C programming language, which can be used to translate C source to native machine code. One of the key features are readable error messages with source code references. It includes lexing, parsing, ast generation, semantic analysis, and code generation phases. Relying on GNU tools, such as flex and bison for parsing C code, a hand-crafted class hierarchy for ast representation, and LLVM library for code generation.

**Technologies:** C++, Flex, Bison, LLVM
**Link:** https://github.com/nkoturovic/compiler-project *Jul 2019 - Sep 2019*

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**SenseFX** - The program gives an immersive first-person game-like 3D virtual experience. It renders a set of rooms based on the directory structure of the user's physical drive and places him inside. The user has the ability to move between rooms (directories) and interact with 3D objects. Everything is rendered in real-time using OpenGL.

**Technologies:** C++, OpenGL
**Link:** https://github.com/nkoturovic/sensefx *Dec 2017 - Jan 2018*

## About me

My passion for software and technology goes beyond my professional work, it is true not just at the present moment but in the past as well. I used to experiment with software long before I decided to make a living out of it. Over the course of four years in the industry, I have worked with numerous technologies and met many amazing people.