

NIELS BUGEL

Software Engineer @ CERN

I am a software developer passionate about software design, automation, and computer graphics. Currently, I am working at CERN as a software engineer in the CTA team. Most of all, I enjoy learning new things, sharing knowledge, and cleaning things up (believe it or not).

Meyrin, Switzerland

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LANGUAGES AND TECHNOLOGIES

- C++, Python, TypeScript, Bash
- Kubernetes, Helm, CI/CD, CUDA, OpenGL, Docker, Git
- English, Dutch, French (basic)

EMPLOYMENT

Computing Engineer	CERN	May 2024 – Current
<ul style="list-style-type: none">• C++ software engineer, CI developer, and operations support in the CERN Tape Archive team.		

Backend Software Engineer	Dataqueue	Feb 2024 – Apr 2024
<ul style="list-style-type: none">• Implemented the backend infrastructure for a real-time call analytics software platform.• The backend consists of a collection of microservices written in Python and Typescript, deployed using Kubernetes & Helm to a Google Kubernetes Engine cluster.		

Teaching Assistant	University of Groningen	Feb 2019 - Jul 2023
<ul style="list-style-type: none">• BSc courses: Object-Oriented Programming (x5; Coordinator), Advanced Object-Oriented Programming (x4; Coordinator), Signals and Systems (x2), Algorithms and Data Structures (x2), Advanced Algorithms and Data Structures (x2), Parallel Computing (x2), Computer Graphics, Operating Systems.• MSc courses: Advanced Computer Graphics, Advanced Parallel Programming, Image Processing (x2).• Student Mentor.		

Numerus Fixus Coordinator CS	University of Groningen	Oct 2019 – Jul 2023
<ul style="list-style-type: none">• Designed and wrote the selection procedure taken by over 400 students (yearly) for the CS Programme.• Coordinated a team of Teaching Assistants in grading the selection tests and portfolios.		

Full Stack Developer	University of Groningen	Oct 2020 – Aug 2022
<ul style="list-style-type: none">• Designed, built, and maintained MATIG: a web application for the automation of the matching procedure for several studies at the Faculty of Science and Engineering.• MATIG was built using React, Express, MongoDB, and Redis and deployed using Docker and Kubernetes.• Implemented a plagiarism scan feature in the university's online grading system Themis (Node.js).		

EDUCATION

Groningen, NL	University of Groningen	Sep 2020 – Jul 2023
<ul style="list-style-type: none">• MSc. in Computing Science, Data Science & Systems Complexity — cum laude (GPA: 9.0/10)		

Groningen, NL	University of Groningen	Sep 2017 – Jul 2020
<ul style="list-style-type: none">• BSc. in Computing Science — cum laude (GPA: 8.8/10)		

PUBLICATIONS

- “A point-normal interpolatory subdivision scheme preserving conics,” Computer Aided Geometric Design, Vol. 111, 2024. DOI: 10.1016/j.cagd.2024.102347

PROJECTS

NITRO

GitHub

- Created a node editor that allows for building complex non-destructive image processing pipelines.
- Focused on making the project modular and extendable.
- The project is open-source and comes with documentation.
- Built using C++, Qt, OpenCV, and OpenGL.

CONIS

GitHub

- Library and GUI framework that performs conic-preserving curve subdivision.
- Implements the method described in this paper.

Distributed GPU Convolution

GitHub

- Created a massively parallel implementation of generalized convolution operators for large image data sets in distributed systems.
- Used CUDA for an efficient GPU implementation, pthreads for CPU-parallelism to hide latency, and MPI to effectively utilize multiple computing nodes.

For a more complete list of personal projects, see my personal website.

ADDITIONAL EXPERIENCE AND AWARDS

- Attended the 2024 Cern School of Computing
- Guide at the CERN Data Centre
- Trainer at CERN for the Self-Rescue Mask course
- Best presentation award for the MSc courses:
 - *Introduction to Data Science*
 - *Student Colloquium* (x2)
 - *Information Systems*
- Student member of the following interview committees:
 - *Teachers for the Computing Science Programme*
 - *Tenure Track Assistant Professor in Visual Computing*
 - *Tenure Track Assistant Professor in Embedded Systems*
- Democratically elected as “funniest teaching assistant” somehow.