

NIELS BUGEL

Computing Engineer, Data Storage @ CERN

I'm a full-stack software developer with a passion for high-performance computing, computer graphics, and visualization. I was heavily involved in the CS programme at my university and worked in numerous different teams there. Most of all, I enjoy learning new things. Currently I am working at CERN as part of the CTA team.

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LANGUAGES AND TECHNOLOGIES

- C++, C, Python, TypeScript, JavaScript, Java
- CUDA, OpenGL, Qt, React, Node.js, Flask, Docker, Kubernetes, JUnit, CI/CD, SQL, Bash, Git
- English, Dutch, French (basic)

EMPLOYMENT

Computing Engineer	CERN	May 2024 – Current
<ul style="list-style-type: none">• Software engineer in the CTA 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 that streamlines the organization and automates the matching procedure for several studies at the Faculty of Science and Engineering, resulting in a significant reduction in teaching assistant workload.• Built MATIG using React, Express.js, MongoDB, and Redis and deployed it 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)		

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.

CERN CMS Event Visualizer

[GitHub](#)

- Built a web application for the visualization of particle collision events.
- Created a back end in Flask that uses the CERN Open Data API to retrieve collision event information.
- Used the event data to visualize particle trajectories using React and Three.js.

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 projects, see my personal website.

ADDITIONAL EXPERIENCE AND AWARDS

- Submitted a paper to the CAGD journal (currently under review).
- Best presentation award for the 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.