Nicolas Buzeta

Computer Science Master's Student

Almahue 382, Vitacura, Chile

+56 9 9125 5822 | nicolas@buzeta.net | github.com/nicobuzeta | linkedin.com/in/nicolas-buzeta

Personal Profile

Enthusiastic junior backend developer with hands-on experience in building and scaling reliable services. Skilled in C++, TypeScript, and automating deployments to optimize performance and streamline development. Strong problem-solver with a passion for learning and contributing to efficient, maintainable, and scalable backend systems.

Education

Pontificia Universidad Católica de Chile *Santiago, Chile*

Masters in Computer Science *July 2024 - December 2025*

- 10th / 165 students - 4.0 GPA
- See bachelors for more information

Pontificia Universidad Católica de Chile *Santiago, Chile*

Bachelors in Software Engineering *January 2019 - July 2024*

- Top 1.5% - 3.9 GPA
- 3x TA for «Introduction to Programming», 2x TA for «Design and Analysis of Algorithms»
- Team leader for nonprofit «CPU», specialising in refurbishing computers for underserved communities
- 6x Research Assistant

Work Experience

Millennium Institute for Foundations of Data (Open Source) *Santiago, Chile*

Streaming CEP Query Evaluation - Software Engineer *March 2023 - Present*

- Co-authored the SIGMOD 2025 demo paper 'CORE+: A Complex Event Recognition Engine in C++', introducing a high-performance system for real-time complex event recognition.
- Contributed to the formal implementation of the CEQL query language, integrating an ANTLR4 parser to support expressive operators such as contiguous sequencing (:), iteration (:+), and interleaved conjunction (ALL).
- Designed and implemented key components of the CORE+ engine, including automata-based pattern matching, real-time event filtering, and quarantine logic for out-of-order event processing.
- Built out the client-server architecture enabling distributed and multi-threaded query execution, contrasting with traditional single-threaded CER engines.
- Developed and profiled C++ modules using tools like GDB and Tracy, achieving over a 5x speedup in key benchmarks.
- Established automated testing and CI/CD with Github Actions, Nix, and Catch2, achieving >90% code coverage and reducing merge errors by 90%.
- Led the deployment of a public web demo at core.ing.uc.cl, allowing users to experiment with live cryptocurrency event streams.
- Github - CORE
- **Technical Skills:** C++, Automata Theory, Profiling, Backend, Networking, Nix, Javascript

Broota *Santiago, Chile*

Full Stack Software Engineer *March 2024 - October 2025*

- Integrated ESLint and Prettier into the codebase with automated checking, significantly reducing errors at deployment time.
- Sped up page load times by 25%.
- Replaced manual deployment with an automated one, reducing deployment time from 2 days to 1 hour, with checks and automatic rollbacks.
- Implemented automatic SQL rollbacks using decorators on top of NestJS, significantly reducing code complexity on query-heavy endpoints.
- Spearheaded the migration of all services into a shared monorepo, enabling automated continuous integration and delivery across the frontend, backend, and associated services.
- Production site located at nalca.io.
- **Technical Skills:** Javascript, Typescript, NestJS, ReactJS, Monorepo, PNPM

GameLab Education *Santiago, Chile*

Backend Software Engineer - Intern *July 2022 - December 2022*

- Used MeteorJS for real-time communication between clients.
- Implemented optimizations for MongoDB queries, resulting in a 10% increase in player capacity.
- **Technical Skills:** NodeJS, MeteorJS, React, Backend, Frontend

Atacama Large Millimeter/submillimeter Array (ALMA) - Dr. John Carpenter *Santiago, Chile*

Machine Learning - Intern *July 2022 - August 2022*

- Developed a new pipeline for proposal classification using automated topic classification.
- Initial results reduced manual work by 40%.
- See acknowledgments section in the paper.
- **Technical Skills:** Python, NLTK, Spacy, Pandas, Dataiku

Pontificia Universidad Católica de Chile - Profesor Vicente Parot *Santiago, Chile*

Embedded Systems / Machine Learning *January 2022 - July 2022*

- Worked on image registration algorithms in C and CUDA.
- Created a physical prototype for image/video collection based on the Nvidia Jetson.
- Used neural networks to align and compare images/videos of patients for use in skin lesion detection.
- **Technical Skills:** C, GStreamer, CUDA, Linux, Nvidia Jetson

Projects

Pontificia Universidad Católica de Chile - Professor Rodrigo Toro *Santiago, Chile*

Masters Thesis *July 2024 - Present*

- Research on Binding ID phenomena
- Integrated research tracking into workflow using Wandb

Pontificia Universidad Católica de Chile *Santiago, Chile*

Social NLP Research - Professor Marcelo Mendoza *August 2024 - Februrary 2025*

- Contributed to an in-review paper titled 'Hate Explained: Evaluating NER-Enriched Text in Human and Machine Moderation of Hate Speech'
- Contributed to the development of a modular NLP pipeline for evaluating hate speech classifiers, mirroring structured approaches in systems like CORE+
- Participated in the design of a web-based moderation interface, providing real-time interpretability tools for moderators

Plastic Detection based on Infrared Light Reflectancy *Santiago, Chile*

Innovation UC *January 2024 - July 2024*

- Creation of model and physical prototype to detect types of plastic depending on infrared reflectance
- Achieved 95% classification accuracy across 5 plastic types
- **Technical Skills:** Python, Scikit-Learn, Autodesk Inventor, 3D Printing, Prototyping, ESP-32

Pontificia Universidad Católica de Chile - Professor Vicente Parot *Santiago, Chile*

Embedded Systems / Machine Learning *January 2022 - July 2022*

- Worked on image registration algorithms in C and CUDA
- Created physical prototype for image/video collection based on the Nvidia Jetson
- Used neural networks to align and compare images/videos of patients for use in skin lesion detection
- **Leveraged Skills:** C, GStreamer, CUDA, Linux, Nvidia Jetson

Publications

Conference Proceedings

Hate Explained: Evaluating NER-Enriched Text in Human and Machine Moderation of Hate Speech
Andrés Carvallo, Nicolás Buzeta
Proceedings of the The 9th Workshop on Online Abuse and Harms (WOAH)

CORE+: A Complex Event Recognition Engine in C++
Kyle Bossonney, Nicolás Buzeta, Vicente Calisto, Juan-Eduardo López, Cristian Riveros, Stijn Vansummeren
Companion of the 2025 International Conference on Management of Data, 2025, Berlin Germany

Skills

Fields	Backend, Networking, AI
Programming	(Advanced) Python, Typescript, Javascript, C++, C (Familiar) C#, Go
Hardware	Nvidia Jetson, Arduino, ESP32, Raspberry Pi
Miscellaneous	Linux, Shell (Fish), Neovim, Latex, Git
Soft Skills	Teamwork, Problem-solving, Documentation

Interests

PC Building	I enjoy the process of choosing and assembling computers, specifically desktop PCs. I find that the process is similar to that of assembling the components of a new project, where each part must be chosen correctly to ensure the most efficient usage of each one.
Cooking	I enjoy cooking and the challenges that come from it. Most of the time one is following a recipe, but problems are bound to occur. From missing ingredients to lack of personal flavor, these problems must be solved quickly but without ruining the composition of the dish. All these aspects make cooking an entertaining pass time for me

Languages

English	C2 / Native proficiency
Spanish	C2 / Native proficiency