

# FEDERICO BRUZZONE • CURRICULUM VITAE

## PERSONAL INFORMATION

Born in Magenta (MI), Italy on 7th of **March 2000**  
Resident of Via F. Turati 75/F, Arluno (MI), 20004  
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## CONTACT INFORMATION

[github.com/FedericoBruzzone](https://github.com/FedericoBruzzone)  
[@federicobruzzone](https://twitter.com/federicobruzzone)  
[in/federico-bruzzone](https://www.linkedin.com/in/federico-bruzzone)  
[@fedebruzzone7](https://x.com/fedebruzzone7)  
[u/FedericoBruzzone](https://www.youtube.com/u/FedericoBruzzone)

PhD Candidate in Computer Science. Programming Languages and Compilers enthusiast. Also, a Sound Engineer and Music Composer. For more information, visit my personal [website](#).

## SCIENTIFIC PUBLICATIONS

### INTERNATIONAL PEER-REVIEWED JOURNAL/CONFERENCE PUBLICATIONS

[1] F. Bruzzone, W. Cazzola, and L. Favalli, “Code Less to Code More: Streamlining Language Server Protocol and Type System Development for Language Families,” *Journal of Systems and Software*, p. 112554, Sept. 2025, doi: [10.1016/j.jss.2025.112554](https://doi.org/10.1016/j.jss.2025.112554). **Journal Ranked Q1 on Scimago** [bib] [pdf] [SpringerLink] [arXiv]

### PREPRINTS PUBLICATIONS

[2] F. Bruzzone, W. Cazzola, M. Brancaloni, and D. Pellegrino, “Sink or SWIM: Tackling Real-Time ASR at Scale,” 2026. **Preprint**  
[3] F. Bruzzone, W. Cazzola, and L. Favini, “Prioritizing Configuration Relevance via Compiler-Based Refined Feature Ranking,” 2026, [Online]. Available: <https://arxiv.org/abs/2601.16008> **Preprint** [bib] [pdf] [arXiv]

## EDUCATION

<b>2024-Present</b>	<b>PhD Candidate</b> in Computer Science at the <a href="#">ADAPT Lab</a> , University of Milan Under the supervision of <i>W. Cazzola</i> , my research focuses <b>compiler/IR construction</b> and <b>programming languages, analysis and transformation of optimizing compilers</b> as well as <b>type systems</b> and <b>support tools</b> (e.g., LSP).
<b>2022-2024</b>	MSc in Computer Science at University of Milan ( <i>110/110 cum laude</i> , <i>W. Cazzola</i> , 15/07/2024) Thesis: “ <b>Toward a Modular Approach for Type Systems and LSP Generation</b> ” .
<b>2019-2022</b>	BSc in Musical Computer Science at University of Milan (13/10/2022)
<b>2011-2019</b>	Piano and Music Composition at I.S.S.M. Novara Conservatory
<b>2014-2019</b>	Diploma in Computer Science and Telecommunications at E. Alessandrini

## RESEARCH ACTIVITIES

<b>2025-Present</b>	<b>Reviewer</b> for the Eur. Conf. on Object Oriented Programming ( <a href="#">ECOOP 2026</a> ), <i>ACM</i> , <b>A on CORE</b>
<b>2025-Present</b>	<b>Reviewer</b> for the Journal of Computer Languages ( <a href="#">COLA</a> ), <i>Elsevier</i> , <b>C on CORE</b>
<b>2025-Present</b>	<b>Reviewer</b> for the Journal of Software and Systems Modeling ( <a href="#">SoSyM</a> ), <i>Springer</i> , <b>Q1 on Scimago</b>
<b>2025-Present</b>	<b>Reviewer</b> for the Journal of Systems and Software ( <a href="#">JSS</a> ), <i>Elsevier</i> , <b>Q1 on Scimago</b>
<b>2024-Present</b>	<a href="#">MUSEMI</a> Session Chair, <b>Speaker</b> and <b>Co-organizer</b>
<b>2-6 Jun 2025</b>	<b>Participant</b> at <Programming> 2025 conference
<b>Apr-Jun 2025</b>	<b>Committee Member</b> at the Int. Conf. on Software Language Engineering ( <a href="#">SLE 2025</a> ), <i>ACM</i> , <b>B on CORE</b>
<b>2-7 Sep 2024</b>	<b>Student Volunteer</b> at the Int. Conf. on Functional Programming ( <a href="#">ICFP 2024</a> )
<b>2022-2024</b>	Research <b>Internship</b> at <a href="#">ADAPT Lab</a> , working on modular type systems and LSP generation for <a href="#">Neverlang</a>
<b>2021-2022</b>	Research <b>Internship</b> at <a href="#">LIM Lab</a> , working on the <a href="#">IEEE 1599</a> standard

## TEACHING ACTIVITIES

### THESIS SUPERVISION

<b>10/04/2025</b>	D. Pellegrino, <i>Scalable Multi-client Real-time Whisper</i> , BSc, <b>96</b>
<b>09/04/2025</b>	A. Longoni, <i>GUIDE: Graphical User Interface Development Environment</i> , MSc, <b>110L</b>
<b>09/04/2025</b>	L. Albani, <i>New Generalized Protocol For Software Product Line Extraction And Configuration</i> , MSc, <b>110L</b>
<b>09/04/2025</b>	G. Esposito, <i>Fr3D: A Framework for DAP-compatible DSL-oriented Debugging</i> , MSc, <b>110L</b>

## GRADUATE COURSES

2025-2026	Programming 1 (Art. 45), <b>BSc</b> in CS, University of Milan, <i>L. Capra</i> (coordinator W. Cazzola)
2025-2026	Mathematical Logic (Art. 45), <b>BSc</b> in CS, University of Milan, <i>S. Aguzzoli</i>
2024-2025	Mathematical Logic, <b>BSc</b> in CS, University of Milan, <i>S. Aguzzoli</i>
2023-2024	Computer Science, <b>BSc</b> in Comm. and Society, University of Milan, <i>A. Momigliano</i>
2023-2024	Programmin 1, <b>BSc</b> in CS, University of Milan, <i>A. Trentini</i> (coordinator P. Boldi)
2023-2024	Programming in Python, <b>MSc</b> in Chemistry, University of Milan, <i>M. Monga</i>

## ADDITIONAL ACTIVITIES

2023-Present	<b>Private Tutoring</b> in Computer Science, Mathematics and Physics
Nov 2024	<b>Collaborator</b> at the <a href="#">Bebras Challenge</a> , <a href="#">ALaDDIn Lab</a>
Jan-Jun 2024	<b>Organizer</b> of the BSc Computer Science Laboratories, <a href="#">ALaDDIn Lab</a>
Jan-Jun 2024	<b>Collaborator</b> of the Workshops for schools, <a href="#">ALaDDIn Lab</a>
Nov 2023	<b>Collaborator</b> at the <a href="#">Bebras Challenge</a> , <a href="#">ALaDDIn Lab</a>

## PUBLIC CONTRIBUTIONS (SELECTED)

2026-Present	Maintainer of the <a href="#">LLVM Pass Template</a> , a C++ template project to quickly create new LLVM passes. This project allows developers to quickly bootstrap, test, and benchmark new out-of-tree LLVM passes with minimal effort — that is, without the need to build LLVM from sources.
2025-Present	Maintainer of the <a href="#">Papers on Compiler Optimizations: Analysis and Transformations</a> , a curated list of scientific publications on compiler optimizations and related topics. This repository curates a chronologically sorted list of influential papers on compiler optimization, from the seminal works of 1952 through the advanced techniques of 1994.
2024-Present	Contributions to the <b>Rust</b> compiler, focusing on type systems, diagnostics, and layout computations — by fixing some Internal Compiler Errors (ICEs) and implementing new features. <ul style="list-style-type: none"> <li>• <a href="#">Add TooGeneric variant to LayoutError and emit Unknown</a> (closed but <a href="#">merged</a>)</li> <li>• <a href="#">Use the type-level constant value ty::Value where needed</a></li> <li>• <a href="#">Report the note when specified in diagnostic::on_unimplemented</a></li> </ul>
2025-Present	<b>Maintainer</b> of the <a href="#">Tide Compiler</a> , an backend-agnostic IR and compiler framework written in <b>Rust</b> . <b>Tide</b> aims to be a modular and extensible framework for building compilers and language tools, prioritizing simplicity and ease of use. From its quasi-SSA IR to its flexible backend architecture, Tide provides a solid foundation for developing compilers for various programming languages.
2025-Present	Contributions to the <b>Rustworkx</b> graph library, focusing on implementing the Closeness Centrality algorithm for weighted graphs (following Newman’s method) and integrating it into the Python bindings. <ul style="list-style-type: none"> <li>• <a href="#">Generalizing Closeness centrality to weighted networks using Newman method</a> (issue 1384)</li> </ul>
2024-Present	<b>Maintainer</b> of the cross-platform <a href="#">tgt</a> project and <a href="#">tdlib-rs</a> TDLib bindings written in <b>Rust</b> . <a href="#">Tgt</a> is a TUI (Terminal User Interface) client for Telegram, built using the <a href="#">tdlib-rs</a> library, which provides safe and idiomatic Rust bindings to the official TDLib (Telegram Database Library) C++ library. Thanks to CI/CD pipelines, we ensure (i) that the projects build and work correctly on Linux, macOS, and Windows, (ii) automatic releases on GitHub and crates.io, and (iii) automatic documentation generation.

## TECHNICAL SKILLS

Languages	<b>Rust, Python, C/C++, Go</b> , OCaml, Java, Scala, Kotlin, Erlang, Lua, Dart, PHP, HTML/CSS, SQL, Bash, TeX
Systems/Tooling	<b>Git, CI/CD, Docker, GDB, Valgrind</b> , Build Systems (e.g., CMake, Cargo, Pip), Cross-language <b>Linking</b> , Static/Dynamic Libraries, and <b>FFI</b> (e.g., C bindgen)
Area of Expertise	<b>Compiler Construction</b> and <b>Optimizations</b> , Programming Languages, <b>IR Design</b> and <b>Implementation</b> , Type Systems, Language Support Tools (e.g., LSP), Static Analysis, Parsing Techniques and Parser Generators (e.g., ANTLR), <b>Rustc</b> Internals, <b>LLVM</b>

## MUSICAL ACTIVITIES

2021-Present	<b>Sound Engineer and Music Producer</b> , in collaboration with <a href="#">Believe</a> and as a <a href="#">SIAE</a> member.
2006-Present	<b>Pianist and Music Composer</b> , composing original pieces and arrangements for piano and various ensembles
2019-Present	<b>Piano and Music Teacher</b> , teaching piano and music theory and composition to students of all ages and levels

## GRANTS AND FELLOWSHIPS

2024	<a href="#">56th Top Github Public Contributor</a> in Italy out of 958
2023-2024	Scholarship for the MSc in Computer Science, awarded by the University of Milan

**2020-2024**      Scholarship for the BSc in Musical Computer Science, awarded by the University of Milan

## TONGUES

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<b>Italian</b>	Mother tongue
<b>English</b>	Level CEFR B2 (SLAM at University of Milan)
<b>Spanish</b>	Base (A1-A2)

Milan, 25/01/2026