

FEDERICO BRUZZONE • CURRICULUM VITAE

PERSONAL INFORMATION

Born in Magenta (MI), Italy on 7th of **March 2000**
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CONTACT INFORMATION

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⌚ [@federicobruzzone](https://twitter.com/@federicobruzzone)
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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. Brancaleoni, 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

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

RESEARCH ACTIVITIES

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

TEACHING ACTIVITIES

THESIS SUPERVISION

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

GRADUATE COURSES

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

ADDITIONAL ACTIVITIES

2023-Present	Private Tutoring in Computer Science, Mathematics and Physics
Nov 2024	Collaborator at the Bebas Challenge , ALaDDIn Lab
Jan-Jun 2024	Organizer of the BSc Computer Science Laboratories, ALaDDIn Lab
Jan-Jun 2024	Collaborator of the Workshops for schools, ALaDDIn Lab
Nov 2023	Collaborator at the Bebas Challenge , ALaDDIn Lab

PUBLIC CONTRIBUTIONS (SELECTED)

2026-Present	Maintainer of the LLVM Pass Template , 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 Papers on Compiler Optimizations: Analysis and Transformations , 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 Rust 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"> • Add TooGeneric variant to <code>LayoutError</code> and emit Unknown (closed but merged) • Use the type-level constant value <code>ty::Value</code> where needed • Report the note when specified in <code>diagnostic::on_unimplemented</code>
2025-Present	Maintainer of the Tide Compiler , an backend-agnostic IR and compiler framework written in Rust . Tide 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 Rustworkx 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"> • Generalizing Closeness centrality to weighted networks using Newman method (issue 1384)
2024-Present	Maintainer of the cross-platform tgt project and tdlib-rs TDLib bindings written in Rust . Tgt is a TUI (Terminal User Interface) client for Telegram, built using the tdlib-rs 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	Rust , Python , C/C++ , Go , OCaml, Java, Scala, Kotlin, Erlang, Lua, Dart, PHP, HTML/CSS, SQL, Bash, TeX
Systems/Tooling	Git , CI/CD , Docker , GDB , Valgrind , Build Systems (e.g., CMake, Cargo, Pip), Cross-language Linking , Static/Dynamic Libraries, and FFI (e.g., C bindgen)
Area of Expertise	Compiler Construction and Optimizations , Programming Languages, IR Design and Implementation , Type Systems, Language Support Tools (e.g., LSP), Static Analysis, Parsing Techniques and Parser Generators (e.g., ANTLR), Rustc Internals, LLVM

MUSICAL ACTIVITIES

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

GRANTS AND FELLOWSHIPS

2024	56th Top Github Public Contributor in Italy out of 958
2023-2024	Scholarship for the MSc in Computer Science, awarded by the University of Milan

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

Milan, 25/01/2026