

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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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 and W. Cazzola, “Meta-Monomorphizing Specializations.” [Online]. Available: <https://arxiv.org/abs/2602.12973> — [\[bib\]](#) [\[pdf\]](#) [\[arXiv\]](#)
[3] F. Bruzzone, W. Cazzola, and L. Favalli, “From Separate Compilation to Sound Language Composition.” [Online]. Available: <https://arxiv.org/abs/2602.03777> — [\[bib\]](#) [\[pdf\]](#) [\[arXiv\]](#)
[4] F. Bruzzone, W. Cazzola, M. Brancaleoni, and D. Pellegrino, “Sink or SWIM: Tackling Real-Time ASR at Scale.” [Online]. Available: <https://arxiv.org/abs/2601.17097> — [\[bib\]](#) [\[pdf\]](#) [\[arXiv\]](#)
[5] F. Bruzzone, W. Cazzola, and L. Favini, “Prioritizing Configuration Relevance via Compiler-Based Refined Feature Ranking.” [Online]. Available: <https://arxiv.org/abs/2601.16008> — [\[bib\]](#) [\[pdf\]](#) [\[arXiv\]](#)

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

23/02/2026	D. Cerato, <i>Employing Metaprogramming: A Macro-Driven Strategy to Overcome Compiler-Imposed Limitations on Specialization</i> , BSc, 103
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
24/02/2025	L. Favini, <i>RustyEx: Intrumenting rustc to Extract Feature Dependency Graphs</i> , BSc, 102

GRADUATE COURSES

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

ADDITIONAL ACTIVITIES

2023-Present	Private Tutoring in Computer Science, Mathematics and Physics
Nov 2024	Collaborator at the Bebras 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 Bebras 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 LayoutError and emit Unknown (closed but merged)• Use the type-level constant value ty::Value where needed• Report the note when specified in diagnostic::on_unimplemented
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
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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
2020-2024	Scholarship for the BSc in Musical Computer Science, awarded by the University of Milan

TONGUES

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

Milan, 27/02/2026