Luca Ciucci

Software developer & R&D engineer

About me

I develop software for complex technical domains, spanning static analysis, scientific computing, 3D reconstruction, and systems programming.

Interests

- Core interests
- Languages & tools
- Systems
- Technical domains
- Electronics
- Mechanics

Contact Info

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Main Interests

- **Core interests**: The scientific foundations behind how I approach engineering problems. Physics, Mathematics, Programming
- **Languages & tools**: A broad toolkit, with current emphasis on systems and scientific software. Rust, C++ & C, Matlab, TypeScript & JavaScript, HTML & CSS, Typst, Python, Prolog, Fortran, LabView, LaTeX, Java, Pascal, PIC Basic
- **Systems**: Software close to the machine, from desktop applications to constrained devices. Desktop, Microcontrollers, Embedded
- **Technical domains**: Applied numerical methods and geometry for real-world measurement systems. [3D reconstruction](https://scanny3d.com), Quaternions, Differentials, Numerical optimization
- **Electronics**: Some basic knowledge, working mainly with prebuilt boards.
- **Mechanics**: Many manual tools, CNC machines, `G-code` and `CAM`, 3D printing.

Work Experience

Software Developer @ BUGSENG s.r.l. (2024-09-02 ~ present)

Contributing to ECLAIR, BUGSENG's **static analysis** platform for C/C++, with a focus on MISRA and **safety-critical standards** such as **MISRA C/C++**, **CERT**, and **AUTOSAR**.

Involved in core analysis components and tooling, primarily in `C++` and `Prolog`; scripting and automation in languages including `Python` and `Lua`; JavaScript frontends and websites; and `Java` IDE plugins. The work spans several domains and cross-functional teams.

Research and Development @ Scanny3D s.r.l.

Software and algorithm development, mainly for 3D reconstruction, together with practical electronics, mechanics, and 3D-printing work.

Publications & Contributions

[1] Roberto Bagnara, Ayoub Bourjilat, Luca Ciucci, Roy Jamil, and Nicola Vetrini, *Zephyr: An Ideal Platform for Introducing the Software Development Processes of Safety-Critical Embedded Systems*. 2025. [Online]. Available: https://www.zephyr-sceduconf.org/zise2025

[2] Luca Ciucci and Serena Bruzzesi, "High-performance computing for quantum field theory: a case for Rust in Monte Carlo simulations." June 06, 2025. [Online]. Available: https://scientificcomputing.rs/2025/talks/ciucci.html

[3] Roberto Bagnara, Nicola Vetrini, Luca Ciucci, Abramo Bagnara, and Federico Serafini, *C, Rust, C-rusted and MISRA for Safe and Secure Embedded Software*. WEKA FACHMEDIEN GmbH, 2025. [Online]. Available: https://hdl.handle.net/11381/3034341

[4] The MISRA Consortium, "MISRA C:2025 Addendum 6 - Review contributors (acknowledgement)," Mar. 2025. [Online]. Available: https://misra.org.uk/app/uploads/2025/03/MISRA-C-2025-ADD6.pdf

[5] P. Francavilla *et al.*, "A low-cost Cherenkov detector to be tested in CERN's T9 beam line," Mar. 20, 2018. [Online]. Available: https://doi.org/10.22323/1.314.0822

Education

17/9/2018 - present

University of Pisa
Started my studies in physics course L-30.

17/7/2017 - 21/7/2017

Ducati "Fisica in moto" summer school
Attended lessons on mechanics, physics laboratory, motorbike mechanical development, production, data analysis, and cooperative problem solving.

26/6/2017 - 1/7/2017

"Modern Physics for students" summer school
Attended physics courses with particular emphasis on introductions to classical and modern physics, with laboratory experiences in measurement and computing.

March 2017

IPPOG International masterclass 2017
Attended courses on high-energy particle accelerator physics at the LNF INFN laboratories, with particular interest in accelerator technologies and tracking detectors.

4/6/2018

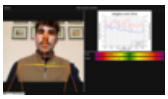
Cambridge English First Certificate
English level B2.

2013 - 2018

Scientific high school diploma
Scientific high school diploma, applied sciences section, with a 100/100 score at T.C.O. Fermo.

Educational projects

6/6/2023



"Learning by doing" competition winners
We created Body Tracking Web and the *VDU posture monitor* to help people improve their posture while working at a video terminal. We won the competition organized by Confindustria Marche and continued developing the project toward a real product.

17/12/2019

"ASML Intergalactic Coding Challenge" winner
Winner of the ASML Intergalactic Coding Challenge 2019.

20/9/2017 - 2/10/2017

CERN's days as BL4S winners
Two-week experience at CERN, performing tests on the T9 beam facility with our proposed and built Cherenkov detector. I was particularly involved in detector design, construction and testing, data analysis, and electronics.

- Project website
- Beamline for Schools 2017 edition
- INFN article

22/9/2016

LNF (INFN)
Performed experiments with the Cherenkov detector from the 2016 BL4S proposal on one of the Frascati INFN LINAC's beams at the BTF.

2017

"Olimpiadi della robotica"
Participated with the "pac-man" project, for which I built most of the robot and all the firmware.

2016

First BL4S proposal
Participated in the first group of the school project proposing a Cherenkov-effect detector for the 2016 CERN BL4S competition.