# DENIS BILLI

**Senior Software Engineer & AI Engineer** · Rimini, Italy · denis@denisbilli.it
github.com/denisbilli · linkedin.com/in/denisbilli · denisbilli.it

Twenty years developing software for industry. I currently work at SCM Group on CNC machine software, operator interfaces and applied AI. Named on four patent filings (one granted), author of two independent research papers. M.Sc. in Computer Engineering, University of Bologna.

## HIGHLIGHTS

- **20+**: Years in the field (C++ / HMI / R&D focus)
- **4**: Patent filings (1 granted · machine control, safety & AI)
- **~60%**: HMI test time cut (Test suite re-engineering)
- **~10%**: Idle toolpath removed (3/4/5-axis optimisation)

## EXPERIENCE

### Senior Software Engineer · SCM Group S.p.A.

NOV 2017 – PRESENT · RIMINI, ITALY

Industrial AI and software development for CNC machinery. HMI systems, CAD/CAM software, ISO post-processors and machining logic for 3, 4 and 5-axis machines.

- Cut HMI test execution time by roughly 60% through test re-engineering.
- Removed roughly 10% of non-cutting toolpath movement on 3/4/5-axis machines.
- Four patent filings from this work, one granted in 2023 (neural-network motion optimisation).
- Built LLM-based assistants and ML prototypes for machine troubleshooting.
- Modernised long-lived C++/C#/Win32/Win64 HMI codebases.

*Awards: SCM Innovations Award 2025 · SCM Innovations Award 2022*

### Computer Programming Teacher · OB Service · La Città dei Maestri

FEB 2023 – PRESENT · RIMINI, ITALY

Teaches C++, C# and Python inside the "Mechatronics for Business" programme.

### Associate Founder · BMB.photo

OCT 2015 – PRESENT · BOLOGNA, ITALY

Co-founder of a wedding photography studio. Photographer, IT manager, administration and client relations.

### R&D Software Engineer · Marchesini Group S.p.A.

MAR 2014 – OCT 2017 · PIANORO, ITALY

Qt/C++ software for packaging machinery across Windows, Linux and Android. HMI engineering, shared libraries, concurrent programming and software architecture.

### Co-founder, R&D · Melograno's LLC

SEP 2013 – SEP 2015 · ATLANTA, USA (REMOTE FROM ITALY)

A hardware startup: protective cases for iPhone and iPad in a transparent, highly resistant polymer, back when phones were not yet water resistant. I ran R&D, which meant finding suppliers, and the IT side.

- The Kickstarter campaign launched and went badly; the company closed for lack of funds.

### J2EE Developer · ICT-Group S.r.l.

MAR 2013 — MAR 2014 · RUBIERA, ITALY

ERP design and development in C# and J2EE, on-site consultancy, Hibernate and T-SQL stored procedures on SQL Server.

### Freelance Software Developer & Graphic Designer · Self-employed

2005 — 2013 · BOLOGNA, ITALY

Client software in Visual Basic and C#, the Emilia-Romagna Italian Tennis Federation website in PHP, SQL Server administration, and visual design for the largest student association in Bologna.

## EDUCATION

### M.Sc. in Computer Engineering

ALMA MATER STUDIORUM, UNIVERSITÀ DI BOLOGNA · 2008 — 2013

Final grade 98. Student representative of the Computer Engineering faculty.

### Master's thesis project, Computer Science

MITTUNIVERSITETET (MID SWEDEN UNIVERSITY) · 2011 — 2012

Grade 30/30.

## SKILLS

- **Languages:** C++, C#, Python, TypeScript, Java, SQL
- **Frameworks & platforms:** Qt, .NET, Django, Celery, Win32/Win64, Linux, Docker
- **Domains:** CNC, HMI, CAD/CAM, Industrial automation, Machine simulation, Computational geometry
- **AI & ML:** LLM assistants, Agent workflows, ML prototyping, PyTorch, CLIP, Evaluation & bias analysis
- **Practices:** Software architecture, Legacy modernisation, QA automation, Diagnostics, DevOps

## PATENTS

- **Method for optimising the movement of a machine for working panels**, EP3907053B1, granted 2 August 2023
- **Plant and method for machining a semiproduct**, EP4782739A1, filed 16 December 2025 · pending
- **Collision detection method for a machine tool**, EP4354238A1, filed 11 October 2022 · pending

## PUBLICATIONS

- **The Illusion of Robustness: How Generator Imbalance Undermines AI-Image Detection**, Independent research, December 2025. github.com/denisbilli/spectral-generalization-paper
- **StoryHash: Lightweight Multi-Modal Fusion for Robust Video Retrieval**, Independent research, November 2025. github.com/denisbilli/storyhash-paper

## WRITING

Essays on AI inside real organisations, in Italian, at denisbilli.substack.com (since May 2026).

## LANGUAGES

- Italian (native)
- English (full professional)