Miguel Laredo Barbadillo 2002

miguellaredobarbadillo@gmail.com (+34) 644 50 93 88
linkedin.com/in/miguel-laredo github.com/laredo02

Education

Universidad Politécnica de Madrid *(September 2025 – Present)*
PhD in Computer Science and Technologies

Universidad Complutense & Politécnica de Madrid *(September 2024 – September 2025)*
Master's degree in Formal Methods in Computer Science and Engineering

Universidad Politécnica de Madrid *(September 2020 – July 2024)*
Bachelor's degree in Computer Engineering

Experience

ETSI Sistemas Informáticos | *PhD in Computer Science and Technologies (September 2025 – Present)*
The topic of my thesis is formal verification of software, in particular, invariant generation and program synthesis. Co-directing multiple final degree projects originating from my own proposals.

Ventor Innovations | *Part-time Flight Test Supervision for UAS (February 2023 – January 2024)*
Aircraft digital video feed management using *uv4l*, *ffmpeg*, *GStreamer* and *Python*. Developed a first approximation to onboard real-time bird detection using convolutional neural networks in *PyTorch*, specifically single-shot detectors such as *YOLO*. Implemented real-time aircraft horizon awareness using classic segmentation methods and flight telemetry, using *OpenCV* in *C++*.

Club Amistad | *Ski instructor (January 2026)*
Ski instruction for groups, ensuring a fun and safe learning environment.

Playedu | *Teacher* (February – June 2022)
Conducted reinforcement lessons in Physics and Mathematics at Nuestra Señora de las Nieves School, teaching classes of 21 or more students aged 13 to 16.

Freelance | *Private Tutor* (2021 – Present)
Private tutoring for students, mainly in Mathematics, Physics, Technical Drawing, and Programming.

Projects

TTCMUA | *Curry-Howard-Lambek STLC and CCCs*
Link between *Type Theory* and *Category Theory*, exploring the *Curry-Howard-Lambek* correspondence and implementing key constructions in *Haskell*.

Ray-Net | *AI enhaced Real-Time Ray Tracing Engine*
Minimalistic Real-time Ray Tracing Engine enhaced by *FSRGAN* network to improve performance as part of my final degree project.

Licenses and Certificates

Algebra for Machine Learning and Data Science.
Linguaskill C1 Certificate.
Driver's License.

Skills, Languages and Interests

Soft Skills: Synergistic self-directed learner with an inquisitive mindset.
Languages: Spanish (Native), English (C1), French (A2).
Expertise: Programming languages, type theory, and formal methods.
Interests: Mathematics, endurance and winter sports, and origami.

Currently taking mathematics courses at UNED toward the Mathematics degree.