Dr. Robert Dobre

Model-Based Design engineer and R&D project lead. I take technical products, hardware and software, from concept to working system, in research, automotive and aviation.

Based near Graz, Austria. EU citizen. Best reached on LinkedIn.
linkedin.com/in/robert-dobre github.com/robert-dobre robert-dobre.github.io

Experience

Aviation Engineer, Flight Control (Autoflight / AFCS) Since Mar 2026

AXIS Flight Training Systems, Lebring

Manufacturer of FAA- and EASA-qualified Level D full flight simulators

- Develop the autoflight simulation models that reproduce each aircraft's autopilot on the full flight simulator, in MATLAB/Simulink, from manufacturer documentation to requirements, acceptance criteria and integration.
- Implement the control laws of the lateral autopilot modes to the manufacturer's design, tune them to the specified aircraft response, engineer the mode logic and validate the behavior against flight test data.
- Architected a modular MATLAB framework for automated performance evaluation and testing on the full flight simulator, with signal injection, automatic segmentation of recordings and characterization reports.
- Own root-cause analysis of complex issues across the autopilot and its interfacing aircraft systems, with fixes in shared components used by every simulator built on them.

Senior Software Engineer, Processes, Methods & Tools Dec 2023 to Mar 2026

Schaeffler, formerly Vitesco Technologies, Timisoara

Vitesco Technologies, Continental's former powertrain and electrification business, part of Schaeffler since 2024

One of the developers of the company-wide MATLAB/Simulink Model-Based Design environment, with ownership of its verification framework.

- Redesigned the reference signal matching in vectorized MATLAB, bringing evaluation of the most complex projects from up to 4 days down to a few hours.
- Integrated Simulink Test as a second engine across MiL, fixed point, Embedded Coder code generation, SiL and PiL, and reorganized the test resources to about a tenth of their size.
- Cut regression runtime about 4x with automatic parallel execution on multiple MATLAB instances.
- Moved the framework to Git, which took installation from overnight to 6 minutes, and defined the team's branching and review workflow.
- Co-delivered the company-wide Basic and Advanced trainings for engineers worldwide and redesigned the Basic curriculum.

Lecturer, Assistant Professor, Research Assistant Jan 2013 to Feb 2025

Politehnica University of Bucharest

Lecturer in the Department of Electronic Technology and Reliability (Feb 2020 to Feb 2025); earlier Assistant Professor (Nov 2014 to Sep 2019) and Research Assistant (Jan 2013 to Sep 2014) at the same faculty

- Won a national R&D grant of over EUR 100,000 for indoor localization with visible light communications (resulting paper) and led its technical work: designed the system and its reception and navigation algorithm, built all the hardware including the embedded transmitter, and coordinated the colleagues who implemented the algorithm.
- Directed a road safety research project with three papers in top-quartile journals: a first-author paper on low-complexity emergency siren detection (lead paper) and two co-authored papers on machine learning.
- Designed PCBs, built prototypes and wrote embedded firmware in C, from precision optics instrumentation to a solar-powered autonomous embedded system.
- Taught signal processing, optical communications, electronic measurement and embedded C for 10+ years and supervised BSc and MSc theses.

Research Engineer Dec 2017 to Nov 2018

BEIA Consult International, Bucharest

Key expert in seven international EUREKA R&D projects with industrial partners, in aviation security, hybrid visible light and RF communications, IoT for work safety and video services.

Selected work

MathWorks Hackathon: Signal Decryption Challenge

Built with MathWorks on top of my MATLAB learning module on FFT, spectrograms and notch filters. Teams decode DTMF passwords and hidden audio messages in MATLAB or Simulink.

Robust OCC System Optimized for Low-Frame-Rate Receivers

Sensors, 2022. First-author paper from the visible light localization grant: optical camera communication from LED lighting to a camera, built and tested as a laboratory prototype.

High-performance, low complexity yelp siren detection system

Alexandria Engineering Journal, 2024. First-author paper from the road safety project I directed: an emergency vehicle siren detector with accuracy comparable to leading methods at much lower computing and energy cost.

Skills

Model-Based Design	MATLAB, Simulink, Stateflow, Simulink Test, MATLAB Test, Embedded Coder; MiL, SiL, PiL, fixed point
Control	Control laws and mode logic, tuning to a specified response, validation against flight test data, system identification (RLS and affine projection)
Verification	Verification strategy from MiL to the full flight simulator, requirements and acceptance criteria, regression testing, root-cause analysis
Embedded	Embedded C, PCB design and prototyping, Atmel and TI MSP430 microcontrollers
Software	Python, Java, Git, Linux, AI coding agents in development and verification
Languages	Romanian (native), English (fluent), German (A2)

Education

PhD	Electronics and telecommunications engineering, Magna Cum Laude, Politehnica University of Bucharest, 2019, with a thesis on multimedia signal processing for forensic expertise, followed by postdoctoral research in multimedia security (2019 to 2021)
MSc	Multimedia technologies for audiovisual and communications content production, Politehnica University of Bucharest, 2014
BSc	Telecommunications engineering, Politehnica University of Bucharest, 2012
Certificate	Project Manager, national qualification, Romanian Ministry of Labour

Research

50+ papers (Google Scholar, Web of Science, ORCID), including first-author work in top-quartile journals. Topic Editor for MDPI Electronics. Best paper and poster awards at IARIA ICN, SGEM and IEEE SIITME. Two technical books, on electronic measurement and on embedded C programming. Key expert in 12 national and EUREKA R&D projects and coordinator of one more, all listed in my Brainmap profile, the research database of UEFISCDI, the Romanian research funding agency. Co-founder of an image authentication startup, Startup of the Year at Innovation Labs 2019.