David Cunha

Electrical Engineer

david@davidcunha.xyz dcunha@fe.up.pt davidncunha

Professional Profile

I am an Electrical Engineer currently working in digital ASIC design. My main areas of interest are integrated photonics, RF and microwave engineering and signal processing for telecommunications. I am an avid learner and driven to work at the frontiers of technology.

Academic Qualifications

David Cunha completed the Integrated Master's degree in Electrical and Computers Engineering at the Faculty of Engineering of the University of Porto [1] in 2021, with a final grade of 16 out of 20. He specialised in telecommunication technologies and defended his Master's thesis entitled *Silicon Photonics Optical Beamformer for Broadband Phased Array Antennas* supervised by Professor Henrique Manuel de Castro Faria Salgado and co-supervised by Dr. Bilal Hussain, with a final grade of 19 out of 20.

In September 2019, David took part on a mobility program funded by the EU (Erasmus+) at the University of Twente [2], in the Netherlands, where he studied for a semester.

Grants and Awards

In 2021, David was awarded the *CTM Award for Best Master Thesis 2021*, granted by the Centre for Telecommunications and Multimedia at INESC TEC Porto[3] - a major portuguese research institute - for the best Master's dissertation in the areas of Telecommunications and Multimedia.

He has been granted PhD funding from FCT (*Fundação para a Ciência e Tecnologia*[4]), starting October 2024 and lasting 48 months.

Projects and Professional Experience

FEUP **October 2020 - Present:** *Assistant Invited Lecturer*

Along with his studies, he worked as a tutor at the faculty's *Consultório de Física, Matemática e Programação*, helping bachelor students with their Mathematics, Physics and Programming courses.

In 2018, he participated in the Rexus/Bexus programme [5], which consists of a competition organised by the European Space Agency for Rocket and Balloon experiments developed by university students.

From October 2020 until April 2021, David worked as a research assistant for the Smart Ops project [6], which stemmed from a partnership between academia and industry that aims at developing a smart monitoring system for large-scale equipment used in bridge construction.

From April to July 2022, he was invited as assistant lecturer, teaching Mecânica e Ondas *(Mechanics and Waves)*, a first year course of the Electrical and Computers Engineering Bachelor's.

Since March 2024, he has been teaching Ondas Electromagnéticas *(Electromagnetic Waves)* as an assistant invited lecturer.

University of Twente **August 2019 - February 2020:**

While in the Netherlands, he became a member of the Erasmus Student Network and had the opportunity to work at the activities committee.

INESC TEC **Sep 2021 - Dec 2021:** *Researcher*

From September 2021 to December 2021, he worked as a research fellow at the Centre for Telecommunications and Multimedia of INESC TEC, developing an indoor location system based on Bluetooth Low Energy technology, as part of the SLID-Stock Live Identification project [7].

PICadvanced **Jan 2022 - Feb 2023:** *Photonics Engineer*

From January 2022 to February 2023, he worked at PICadvanced [8] as a photonics engineer, charged with design and simulation of photonic integrated circuits for telecommunication and space applications. His main focus was the PHOAM project: Photonic Assisted Multibeam Phased Array Antenna, a joint project between PicAdvanced, Instituto de Telecomunicações, Sinuta and the European Space Agency. The main goal of this project consists in the development of a multi-beam antenna, capable of handling Ka-band signals to communicate with low orbit satellite (LEO) constellations.

Furthermore, he was involved in PIC development for PON technologies, both in Silicon and Indium Phosphide fabrication technologies.

Synopsys **Mar 2023 - Present:** *ASIC Digital Design Sr. Engineer*

Since March 2023, David has been a part of Synopsys, one of the world's largest companies for Electronic Design Automation software and IP. He works as an ASIC digital design engineer, focused on firmware development and FPGA assisted chip testing.

Technical Skills

- ✔ C programming language
- ✔ Ansys Lumerical (FDTD, MODE and Interconnect)
- ✔ Synopsys Optodesigner
- ✔ Verilog
- ✔ Matlab/Octave
- ✔ Python
- ✔ Linux

Language skills

David is fluent in Portuguese and English, having earned a Cambridge Advanced English Certificate with an A grade and corresponding C2 level, according to the European Framework of Languages. He also has an A2 level certificate in French, granted by the Alliance Française, and an A1 level certificate in Dutch, granted by the University of Twente.

Other Interests

Music is an important part of his life, as he studied piano and music theory for 7 years. He also sings at *Schola Invicta Traditio*, an amateur choir dedicated to Gregorian Chant and Polyphonic works from Medieval and Renaissance authors. Judo is another passion of his and he has been a member of Clube de

Judo do Porto [9] and the Portuguese Judo Federation since 2011. Other than family, engineering work, music and sports, David was a member of the Portuguese Scout Corps (Corpo Nacional de Escutas [10]) for over 18 years.

References

[1] "Faculdade de engenharia da universidade do porto," https://fe.up.pt/ [Accessed: August 21, 2024].

[2] "University of twente," https://www.utwente.nl/en/ [Accessed: August 21, 2024].

[3] "Centre for telecommunications and multimedia, inesc tec," https://www.inesctec.pt/en/centres/ctm [Accessed: August 21, 2024].

[4] "Fundação para a ciência e tecnologia," https://https://www.fct.pt/ [Accessed: August 21, 2024].

[5] "Rexus/bexus programme," https://rexusbexus.net/ [Accessed: August 21, 2024].

[6] "Smartops: Smart monitoring system for large equipment used in bridge construction," https://smartops.berd.eu/en/ [Accessed: August 21, 2024].

[7] "Slid project documentation," https://wavecom.pt/wp-content/uploads/2019/12/SLID-45388.pdf [Accessed: August 21, 2024].

[8] "Picadvanced," https://picadvanced.com/ [Accessed: August 21, 2024].

[9] "Clube de judo do porto," http://clubejudoporto.weebly.com/ [Accessed: August 21, 2024].

[10] "Corpo nacional de escutas," https://escutismo.pt/ [Accessed: August 21, 2024].