



## Alessandro Gemelli

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### About me

I was born in Pavia, Italy in 1994. I received the Bachelor's degree in Industrial Engineering in April 2017 and the Master's degree in Electric Engineering in November 2020 from University of Pavia. In 2021, I worked as an FPGA Designer at AKKA Technologies in Milan and later in the same year I began the Ph.D in microelectronics at the Integrated MicroSystems and Sensors (IMS<sup>2</sup>) laboratory of the Department of Electrical, Computer and Biomedical Engineering, University of Pavia, where I am currently at the third and last year of this journey. My main research interests include both analog and digital electronics. The main project of my Ph.D is focused on power management for audio application employing boost converters. In the meantime, I have also worked on side projects addressed to space applications involving RTL coding.

### Education

- Oct 2021 – Now **Ph.D. in Microelectronics**  
University of Pavia, Italy.  
Thesis title: *Design of an ultra low power SIMO Boost Converter for audio applications.*
- 2017 – 2020 **Master's Degree in Electric Engineering**  
University of Pavia, Italy.  
Thesis title: *Design and verification of the SPI interface integrated into the "ORION" multi-channel ASIC for the capture of X and  $\gamma$  events from remote space using an array of Silicon Drift Detectors and Scintillator.*
- 2013 – 2017 **Bachelor Degree in Industrial Engineering**  
University of Pavia, Italy.  
Thesis title: *Metalworking process using high-power fiber optic lasers.*

### Employment History


- Mar – Sept 2021 **FPGA Designer**  
AKKA Technologies, Milan, Italy.  
During this period I was able to gain experience working on three different projects in the space/defense field, mainly designing FPGAs in VHDL, Verilog and two synthesizers, Xilinx Vivado and Intel Quartus Prime.

### Research Publications



#### Journal Articles

- A. Gemelli**, M. Tambussi, S. Fusetto, A. Aprile, E. Moisello, E. Bonizzoni, and P. Malcovati, "Recent trends in structures and interfaces of mems transducers for audio applications: A review," *Micromachines*, vol. 14, no. 4, 2023, ISSN: 2072-666X. [DOI: 10.3390/mi14040847](https://doi.org/10.3390/mi14040847).




## Conference Proceedings

- 1 **A. Gemelli**, F. Rezzi, M. Grassi, E. Bonizzoni, and P. Malcovati, "Adaptive constant on-time control technique application in boost converters," in *2023 18th Conference on Ph.D Research in Microelectronics and Electronics (PRIME)*, 2023, pp. 201–204.  DOI: 10.1109/PRIME58259.2023.10161813.
- 2 M. Grassi, **A. Gemelli**, P. Malcovati, F. Mele, I. Dedolli, M. Gandola, G. Bertuccio, E. Marchesini, E. Virgilli, R. Campana, F. Fuschino, C. Labanti, and L. Amati, "Experimental characterization of the orion ASIC: The read-out circuit for x-ray detection of the theseus mission spectrometer," in *2022 IEEE International Instrumentation and Measurement Technology Conference (I2MTC)*, 2022, pp. 1–6.  DOI: 10.1109/I2MTC48687.2022.9806486.
- 3 F. Fuschino, R. Campana, C. Labanti, L. Amati, E. Virgilli, L. Terenzi, P. Bellutti, G. Bertuccio, G. Borghi, F. Ficorella, M. Gandola, M. Grassi, G. L. Rosa, P. Lorenzi, P. Malcovati, F. Mele, P. Orleański, A. Picciotto, A. Rachevski, I. Rashevskaya, A. Santangelo, P. Sarra, G. Sottile, C. Tenzer, A. Vacchi, G. Zampa, N. Zampa, N. Zorzi, P. Hedderman, M. Winkler, **A. Gemelli**, I. Kuvvetli, S. M. Pedersen, D. Tcherniak, and L. C. B. Jensen, "The XGIS instrument on-board THESEUS: the detection plane and on-board electronics," in *Space Telescopes and Instrumentation 2020: Ultraviolet to Gamma Ray*, J.-W. A. den Herder, S. Nikzad, and K. Nakazawa, Eds., International Society for Optics and Photonics, vol. 11444, SPIE, 2020, 114448R.  DOI: 10.1117/12.2561002.


## Languages

- Italian  Native.
- English  Strong reading, writing and speaking competencies.

## Skills

- Coding  C, MATLAB, ModelSim, Verilog-A, VHDL, Verilog,  $\text{\LaTeX}$ .
- Computer Aided Design  Cadence, Simplis, Xilinx Vivado, Intel Quartus Prime.
- OS and Software  Windows, Linux, Microsoft 365.

## Mentoring Activity

- Master's Theses  Francesco Romano, "Design of an Envelope Tracking Circuit for Piezoelectric MEMS-based Earbuds"

## Memberships

- 2022 – Now  Institute of Electrical and Electronics Engineers (IEEE) Student Member.