

PERSONAL INFORMATION

Cristian Aghion



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Nationality Romanian

WORK EXPERIENCE

2002 – current

Associate Professor PhD

“Gheorghe Asachi” Technical University of Iasi, Romania. Faculty of Electronics, Telecommunications and Information Technology.

2020 - current Head of Applied Electronics and Intelligent Systems Department

- Teaching and research responsibilities.
- Main research interests: Power electronics, Automotive electronics, Microcontrollers.
- Holds lectures and application classes on C programming, design power converters, fundamentals in automotive electronics.

2017 – 2020

Testing software

Continental Automotive Romania (part time job)

- Design / Develop / Document assigned software components
- Most tasks were in motor control area (sinusoidal BLDC)
- Understand and follow V-Cycle software development process

2005 – 2013

Circuit Design Engineer R&D

Asic Art/Silicon Service (part time job)

Circuit Design (Analog & Digital) Schematic, Layout and Post layout simulations for UMC, TSMC, ATMEL technology. Memory characterization single and multi – port, SRAM (for Artisan and Faraday), using MSIM Legend Design (MSL, MemChar, SpiceCut, MSIM). (<http://www.siliconservice.ro>). From may 2008 until January 2009 working in a Circuit design team for IBM using SKILL language.

EDUCATION AND TRAINING

2010-2012

Postdoctoral grant for a Research Contract type PD-PNII Human resources on “High-Efficiency Circuits Used in Systems Converting Wind Energy into Electricity”, code UEFISCDI 335, contract no. 48/28.07.2010, funding: 75 177 EUR.

2008

PhD degree in Power Electronics

“Gheorghe Asachi” Technical University of Iasi, Romania

2007

PhD. student – University of Malta, Faculty of Engineering, Department of electrical power and control engineering. The main objective was to design a DC/DC converter working in conversion of wind energy. The design supposes simulations and practical board. Control block for dc/dc converter was C8051F120 microcontroller. Maxim output power was around 800W – ideal for home applications. European Contract no: MEST-CT-2004-504243, coordonator - University of Nottingham, partners: University College Cork Ireland, University of Malta, Politecnico di Bari, University of Zilina. MARIE CURIE EUROPEAN FELLOWSHIPS UNIT, SDME 03/24, B-1049 Brussels, Belgium.

2001 – 2002

MSc degree, Electronic Engineering

Master of Science at “Gh. Asachi” Technical University, in “Power Converters”.

1995 – 2000

Diploma degree, Electronics and Telecommunications

“Gheorghe Asachi” Technical University of Iasi, Romania

PERSONAL SKILLS

Mother tongue(s) Romanian

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B1	B1	B1	B1	B1
French	A2	A2	A2	A2	A1

PROFESSIONAL EXPERIENCE

- ACIM and BLDC motor control using three-phase inverters (Intelligent Power Module: IRAMX16UP60A). Power (up to 600V) and control boards (with C8051F120 microcontroller) were developed in Power Electronics Lab. using Cadence Orcad Layout (schematic -> *.mnl file -> layout -> gerber files).
- Stepper motor control for unipolar and bipolar architecture. To create PCB design I made component libraries for schematic and layout.
- Microcontroller development boards for Atmel AT89C4051, Microchip PIC16F876A/877A, Motorola (Freescale) M68HC908MR16, to connect sensors (hall sensors to measure voltage and current, optical sensors, pressure sensors, capacitive sensors, etc), LCD's, RS232/485, etc.
- Prototype board for auto circuit system to record information's on a SD/MMC memory card (the project contain a microcontroller how receive information's from sensors: oil pressure, distance, GPS position, tank fuel level and record them on a Secure Digital memory via SPI communication).
- Memory characterization for RAM and ROM (1k x 32bit, 1k x 16bit, 16k x 32bit, 16k x16bit). (access time, hold time ...)
- PLL design – UMC 0.18u, 800MHz – PVT, (VCO, phase detector, charge-pump and filters)
- Custom circuit design using SKILL scripts on nanometer IBM technologies for Fab. testing; building design for DRC rule testing and calibration.
- Memories layout verification (DRC, LVS, PEX) UMC 0.18um and TSMC 0.18um
- BandGap reference circuit with output of $0.7\text{ V} \pm 2\%$ (-40...+125 C); $\sim(1.1 \dots 3.6)\text{V}$ supply voltage, Tower 0.18um Technology
- Digital chip level layout verifications (DRC, LVS, PEX) UMC 0.18um and TSMC 0.18um
- Leading a microcontroller team of 8 engineers since January 2011 up to 2013 year.
- I work with AC Induction Machine, controlled with simple PWM, sinusoidal PWM, 3-thd injection Harmonic PWM and DPWM (Discontinue PWM, solving GDPWM equations). I work with BLDC (trapezoidal) using PWM control with Hall sensor or Encoder(4096p), as information signals. I work also with step motor (unipolar & bipolar) and DC motors. To control BLDC and ACIM motors I use C8051F120 microcontroller (100MIPS/8bit) and was a period of time when I work for Silicon Laboratories (Austin, Texas) through Sytron Technologies Overseas Company, Iasi, Romania.
- Between 2003-2005 I had classes at Microcontroller course (at Electronics and Telecommunications Faculty of IASI, Romania). My papers are presented here: http://ep.etc.tuiasi.ro/index_mic_referate_lab.html Only the last 3 Labs. are with PIC architecture (based on PIC16F84).

List of relevant publications (2015-2020)

Cristian Aghion
November 5, 2020

Journal papers

1. Active Control Parameters Monitoring for Freight Trains, Using Wireless Sensor Network Platform and Internet of Things, Adrian Brezulianu, Cristian Aghion, Marius Hagan, Oana Geman, Iuliana Chiuchisan, Alexandra-Ligia Balan, Doru-Gabriel Balan, Valentina Emilia Balas, MDPI Processes 2020, 8, 639, <https://doi.org/10.3390/pr8060639>. IF 2.753 (Q2)
2. IoT Based Heart Activity Monitoring Using Inductive Sensors Brezulianu A., Geman O., Zbancioc M.D., Hagan M., Aghion C., Hemanth D.J., Hoang Son, MDPI Sensors 2019, 19(15), 3284; <https://doi.org/10.3390/s19153284>. IF 3.031 (Q1)
3. Efficient high frequency single-phase AC chopper, M. Lucanu, O. Ursaru, C. Aghion, N. Lucanu Rev. Roum. Sci. Techn.– Électrotechn. et Énerg., Vol. 64, 1, Bucarest, 2019, pp. 69–74. IF 0.763
4. Single-Phase Direct Boost AC-AC Converter, O. Ursaru, M. Lucanu, , C. Aghion, N. Lucanu

Advanced in Electrical and Computer Engineering Jurnal - Suceava, Romania - vol. 17 - No. 4/2017 - P. 43-48, DOI: 10.4316/AECE.2017.04006. (index:0.595)

5. Low Cost Solution For Ac Motor Control Applications, C. Aghion, M. Lucanu, O. Ursaru, Buletinul Institutului Politehnic Iași, Fasc.2, Volumul 62 (66), No.2, 2016, pp.21-30.
6. Single-Phase Ac-Ac Converter, Ursaru O., Aghion C. , Buletinul Institutului Politehnic Iași, Fasc.1, Volumul 62 (66), No.1, 2016, pp.51-53.
7. Single-Phase Buck Direct Ac-Ac Converter With Two Inductances And Improved Efficiency, M. Lucanu, O. Ursaru, C. Aghion, N.Lucanu, Buletinul Institutului Politehnic Iași, Fasc.2, Volumul 63 (67), No.1, 2017, pp.49-61.
8. Alternative Solution For Majority Function Used By Microchip For Brushless Direct Current Sensorless Motor Control, E.Bivol, C. Aghion, O. Ursaru, Buletinul Institutului Politehnic Iași, Fasc.2, Volumul 63 (67), No.2, 2017, pp.83-92.

Conference papers

1. OLED display control system, Cristian Aghion, Mihai Lucanu, Marius Hagan, Ovidiu Ursaru International Symposium on Signals Circuits and Systems – ISSCS 2019, Iasi, Romania, July 11-12, 2019. INSPEC Accession Number: 18924484, DOI: 10.1109/ISSCS.2019.8801813.
2. Single-Phase Boost A.C.-A.C. Converter, Cristian Aghion, Mihai Lucanu, Ovidiu Ursaru, Maris Hagan, International Symposium for Design and Technology in Electronic Packaging - SIITME, 24 edition, 25-28 October 2018, Iasi, Romania, pp.50-51.
3. Increased-Efficiency Single-Phase Direct Boost A.C.-A.C. Converter C. Aghion, M. Lucanu, O. Ursaru, N. Lucanu, International Symposium on Signals Circuits and Systems – ISSCS 2017, Iasi, Romania, July 13-14, 2017, 978-1-5386-0674-2/17, 2017, IEEE.
4. MANAGEMENTUL ENERGETIC ÎN CONSUMUL HIBRID AL UNEI CLĂDIRI Adrian Brezulanu, Cristian Aghion, Marius Hagan, Simpozionul „Contorizarea Inteligentă- Smart Metering”, 11 – 13 noiembrie 2015, Hotel RAMADA, Sibiu.

Patents

1. ELECTRONIC CONTROL SYSTEM OF FUEL SUPPLY WITHOUT RETURN CIRCUIT Inventor(s): PETRU IRIMIA [RO]; CRISTIAN AGHION [RO], Also published as: RO126052 (B1).
2. CONTOR CU EFECT COANDA DE DETERMINARE A DEBITULUI UNUI FLUID, Authors: Hagan Marius-Gheorghe, Aghion Cristian. Also published as: RO130128 (B1) .

[Entire list of publications is presented here](#)