

Dr. Cristian-Alexandru Alistarh

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SHORT BIO

Hardworking RF/radar systems engineer with industrial project experience and international recognition. Finished a PhD in **High Resolution Radar Systems**, covering a wide area of expertise including antenna array design, digital beamforming with compressive sensing, as well as system integration and calibration.

IMMIGRATION STATUS AND LANGUAGE SKILLS

Settlement Status

Granted **UK Indefinite Leave to Remain (ILR)** as well as **Settled Status**, and have currently applied for British Citizenship by Naturalisation.

Languages

Romanian (Mother tongue), English (Fluent), French (Intermediate)

EDUCATION

High Resolution Techniques for Radar Systems

PhD in Engineering, (2017 – 2022) at the University of Edinburgh and Heriot-Watt University, Edinburgh campus, UK.

Sensors and Imaging Systems

MSc in Physics (2015 – 2016) at the Universities of Glasgow and Edinburgh, UK.

Electronics Engineering and Computer Science

Masters of Engineering (2009 – 2015) at The University of Edinburgh, UK.

Mathematics and Informatics

High School Diploma (2004 – 2008) at "Spiru Haret" Regional College, Tulcea, Romania.

TEACHING

Associate Fellow of the Higher Education Academy (2021).

Teaching Assistant (2018- 2021)

Communication Devices and Systems (4th year), High Frequency Circuits (4th year), Antenna Engineering and Applications (5th year) at Heriot Watt University.

Demonstrator (2015, 2016)

Analogue Electronics Mixed Signal Lab (Year 3) at the University of Edinburgh.

GRANTS, HONORS & AWARDS

European Microwave Association (EUMA) Internship Award (2019-2020), 6-months placement with TNO, Netherlands (awarded to only 5 students across Europe each year)

Erasmus+ Grant (2020), awarded for the same placement with TNO

2x EPSRC Innovation Placement Awards (2019) at Heriot-Watt University, Edinburgh, UK

Institute for Signals, Sensors and Systems (ISSS) Award (2018) at Heriot-Watt University, Edinburgh, UK

1st place, Student Paper Competition (2018) at International Symposium on Antenna Technology and Applied Electromagnetics (ANTHEM), Canada

Principal's Travel Grant (2018) awarded by the Go Abroad Fund, The University of Edinburgh

Shortlisted for Best Antenna Design and Applications (2018) (top 5/1035 accepted papers) at European Conference on Antennas and Propagation (EUCAP), London

Doctoral Training Partnership (2017-2022) awarded by Engineering and Physical Sciences Research Council (EPSRC) and co-funded by Samsung Ltd.

Scottish Council Bursary (2015-2016) for Taught MSc in Sensors and Imaging Systems

Keycom Scholarship (2009-2015), annual award for UG degree

PAPERS

1. **Alistarh, Cristian A**; Podilchak, Symon K; Anitori, Laura; van Rossum, Wim; Bekers, Dave; Boekema, Rob; Sellathurai, Mathini; Thompson, John S, **Compressed Radar Sensing Using Non-Uniformly Spaced SIW Antenna Receiver**, IEEE Transactions in Antennas and Propagation, Forthcoming, 2022.

2. **Alistarh, Cristian A**; Sellathurai, Mathini, Podilchak, Symon; Thompson, John S; **Sectorized FMCW Radar by Modular System Design and MIMO Sub-Arrays for Automotive Applications**, IET Radar Conference, Edinburgh, 2022.

3. **Alistarh, Cristian A**; Podilchak, Symon; Thompson, John S; Sellathurai, Mathini, **Radar Accuracy Improvement by Pattern Multiplication for Automotive Radar Systems and other Sensing Scenarios**, IET Radar Conference, Edinburgh 2022.

4. **Alistarh, Cristian A**; Podilchak, Symon; Thompson, John S; Sellathurai, Mathini, **Highly Separated Automotive Radar Antennas**, 19th European Radar Conference (EuRAD) (Milan), September 2022.

5. Alsaleem, Fahd; Thompson, John S.; Laurenson, David I.; **Alistarh, Cristian A**; Podilchak, Symon

K., **Small-Size Blockage Propagation Modeling at 28 GHz for mmWave Communications System**, IEEE Transactions on Antennas and Propagation, Vol. 70 (Issue. 9), pp. 8578 - 8583, 2022, ISSN: 1558-2221.

6. **Alistarh, Cristian A**; Anitori, Laura; van Rossum, Wim; Podilchak, Symon K; Thompson, John S; Sellathurai, Mathini, **Compressed Sensing for MIMO Radar using SIW Antennas for High Resolution Detection Conference**, 18th European Radar Conference (EuRAD) 2021 (London), April 2022.

7. **Alistarh, Cristian A**; Podilchak, Symon K; Re, Pascual Hilario D; Thomas M, ; Sellathurai, Mathini; Pailhas, Yan; Petillot, Yvan; Mateo-Segura, Carolina; Goussetis, George; Thompson, John S; Lee, Jaesup, **Sub-modular FMCW MIMO Radar Design by Non-uniform Sparse Arrays**, IEEE Journal of Microwaves, Vol. 2, Issue 3, 2022.

8. Kuznetsov, Maksim V; Podilchak, Symon K; Poveda-Garcia, Miguel; Re, Pascual Hilario D; **Alistarh, Cristian A**; Goussetis, George; Gomez-Tornero, Jose Luis, **Compact Leaky-Wave SIW Antenna With Broadside Radiation and Dual-Band Operation for CubeSats**, IEEE Transactions on Antennas and Propagation, Vol. 20 (Issue. 11), pp. 2125 - 2129, 2021, ISSN: 1548-5757.

9. Re, Pascual Hilario D; Comite, David; Podilchak, Symon K; **Alistarh, Cristian A**; Goussetis, George; Sellathurai, Mathini; Thompson, John S; Lee, Jaesup, **FMCW Radar With Enhanced Resolution and Processing Time by Beam Switching**, IEEE Open Journal on Antennas and Propagation, Vol. 2 (No. 21076384), pp. 882 - 896, 2021, ISSN: 2637-6431 .

10. Alsaleem, Fahd; Thompson, John S; Laurenson, David I; Podilchak, Symon K; **Alistarh, Cristian A**, **Small-Size Blockage Measurements and Modeling for mmWave Communications Systems**, 2020 International Symposium on Personal, Indoor and Mobile Radio Communications, 2020.

11. **Alistarh, Cristian A**; Anitori, Laura; Podilchak, Symon K; Thompson, John; Re, Pascual Hilario D; Sellathurai, Mathini; Goussetis, George; Lee, Jaesup, **Millimeter-wave Automotive Radar using Extrapolation for Improved Angular Resolution**, 17th European Radar Conference (EuRAD), IEEE 2020.

12. Shafiq, Zain; **Alistarh, Cristian A**; Anagnostou, Dimitris E; Podilchak, Symon K, **Towards MIMO-Monopulse FMCW Radar for Automotive Applications using SIW Antennas**, IEEE Asia-Pacific Conference on Antennas and Propagation (APCAP2020 on-line) , 2020.

13. Re, Pascual Hilario; **Alistarh, Cristian A**; Podilchak, Symon; Goussetis, George; Thompson, John; Lee, Jaesup, **Millimeter-wave FMCW Radar Development using SIW Butler Matrix for Time Domain Beam Steering**, 2019 16th European Radar Conference (EuRAD), IEEE 2019.

14. **Alistarh, Cristian A**; Podilchak, Symon K; Goussetis, George; Thompson, John S; Lee, Jaesup, **Spectral Smoothing by Multiple Radar Pattern Multiplication for Improved Accuracy**, University of Waterloo, International Symposium on Antenna Technology and Applied Electromagnetics (ANTHEM) , Waterloo, Canada, 2018.

15. **Alistarh, Cristian A**; Hilario Re, Pascual ; Thomas M, ; Rotenberg, Samuel; Podilchak, Symon; Mateo-Segura, Carolina; Pailhas, Yan; Goussetis, George; Petillot, Yvan; John S, ; Lee, Jaesup, **Millimetre-Wave FMCW MIMO Radar System Development Using Broadband SIW Antennas**, 2018 12th European Conference on Antennas and Propagation (EUCAP)", 2018.

WORK EXPERIENCE

RF Engineer, Bennu.Ai

April- Oct 2022: I prototyped a radar system which is meant to automatically classify waste in order to facilitate automatic sorting for a smart bin while using AI algorithms. I was responsible for design and integration of the radar for the smart system.

Research Associate, Heriot-Watt University in collaboration with Earswitch, UK and DSTL

April- Sep 2022: I have prototyped a novel hearing aid device which allows transmission of sound with the help of ultrasound waves and demodulating them into the ear, meant for use in military applications such as preventing hearing impairment from an explosion and directional transmission of sound.

Guest Doctoral Candidate, TNO, Netherlands

March - Sep 2020: The 6-month industrial placement consisted of a series of trials with several signal processing techniques compressive sensing techniques, monopulse beamforming, delay and sum beamforming, and multiple input-multiple-output beamforming.

Researcher, University of Edinburgh & CENSIS

Jun - Oct 2016: The project was a collaboration between University and industry (CENSIS) on designing a wireless system for allowing building access with a smartphone based on Bluetooth and NFC technology. The project was further pursued by the Edinburgh University Research Society.

Android / Web Developer, Keycom PLC

Jun - Aug 2015: Developed an Android TV app for with Android Studio. This included programming a Python script for routers to automatically load system configurations. Also, used coded in Slim Framework to develop a registration app for the companys entry system.

Embedded Software Engineer, ECE Associates

Jul - Aug 2014: Developed an application upon an existing Bluetooth protocol. This interfaced the Texas Instruments MSP430F5438 Experimenter Board with a pair-able device. The project used CC256x modules with Bluetooth v.4.0. At the end of the

project, the processors decoded transmitted data to execute remote tasks in C.

Characterization Engineer

Cambridge Silicon Radio (now Qualcomm), UK

Jun – Sep 2013: Characterised parameters for a 28nm Bluetooth Receiver designed from a 40nm process. The research revealed valuable information about CSR's transition to smaller technology nodes. Test benches were developed with MATLAB and MP Lab.

Analogue RF/IC Engineer

Cambridge Silicon Radio (now Qualcomm), UK

June – Aug 2012: I have used Cadence Virtuoso v.6.0 to create simulations for analyzing LNAs and Mixers of a Bluetooth Receiver. Both fabricated in 40nm and 28nm CMOS technology. I also developed Monte Carlo simulations to determine any offsets due to transistor mismatches. Following this work, a 28nm Bluetooth receiver was tapped out in December 2012.

Software Engineer

Keycom PLC, Stafford, UK

Jun – Aug 2011: Responsible for developing a messaging system running on CISCO IP landlines. SMS relay system configured with UNIX server. Used PHP programming to wrap CISCO IP Phone XML objects. Server querying realized with MySQL.

COURSES

2018-2021 - **LEADs (Heriot-Watt University)** - how to prepare for teaching and mentoring university students.

2014 - **Learning How to Learn: Powerful mental tools to help you master tough subjects** (University of San Diego, California) - Virtual certificate

2008 - **Cisco CCNA Explorer** - Learning about SQL databases and database relationships.

SKILLS

- MATLAB/ Simulink (10 years experience)
- CST Microwave Studio, Keysight ADS
- CADENCE modelling and design/ Monte Carlo Simulations
- Eagle Circuit Board Design, IAR Programming
- C/C++ Functional Programming
- Java Object Oriented Programming
- Python Programming, Arduino Programming
- Low Level RISC Programming languages, Verilog / VHDL
- LaTeX / Overleaf

MEMBERSHIPS

2014 - present: IEEE Member

2015 - present : IEEE Electronics and Devices Society member.

2018 - present : IEEE Microwave Theory and Technologies (MTT) Society member.

2018 - present : IEEE Antennas and Propagation Society member.

2018 - present : *Secretary* of IEEE Joint Scottish Chapter for Microwave Theory and Technologies (MTT) and Antennas and Propagation Societies

PERSONAL INTERESTS

I am really passionate about restoring cars, and I have managed to self-teach myself how to do a timing chain on a Mini Cooper and rebuilding the engine on another car when it had a blown head gasket, which meant taking the engine out, repairing it with a machine shop and putting it back in again making sure all tolerances were as required whilst completing an adaption clearance procedure. I always like a challenge and car mechanics has been one of them of which I am very proud of.

REFEREES

Dr. Symon K. Podilchak

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The University of Edinburgh.

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Communications,

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Head Signal Processing and
Communications Research Group
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