Filip Alexandru ROSU

Email: █████████████

Citizenship: Romanian, Canadian

QUALIFICATIONS

- Experience in researching and developing complex algorithms/methods/systems for radar and communication applications.
- Experienced technical writer. I have written multiple publications accepted in peer-reviewed journal papers; patent applications, and presentations for conferences, workshops, or for students.
- Experience in developing prototype hardware electronic circuits (Analog and Digital) using discrete components and Integrated Circuits for analog high frequency applications.
- Knowledge of test equipment as: Vector Network Analyzer, Digital Oscilloscopes, Spectrum Analyzers, Arbitrary Signal Generators, RF Signal Generators, Distortion Meters.
- Understanding Semiconductor physics, A/D, D/A, PLL, DDS, and Analog/Digital Modulation techniques.
- Experience in PCB layout design using CAD tools (Cadence ORCAD, AutoDesk EAGLE).

PROFESSIONAL EXPERIENCE

08.2022 – present **-** NXP Semiconductors www.nxp.com , Radar Algorithm Architect.

- Providing advanced radar solutions for assisted and autonomous driving. My responsibility is to help define the Premium R-SDK along with the Innovation, Product-Management - Marketing, and Software teams globally, and to ensure a swift algorithm handover between the Innovation and Software Teams.
- Tech lead for innovation and research activities within the Radar-SDK team.

03.2018 – 08.2022 - NXP Semiconductors www.nxp.com , Radar Signal Processing Engineer

- Main responsibilities include the research of complex radar algorithms and methods:

Constant False Alarm Rate / Statistical & Adaptive Thresholding. - Subspace-based Direction of arrival algorithms for both coherent and incoherent sensors. - MIMO and Massive-MIMO Techniques. - Advanced Near-Field and Far-Field Phased Array Calibration. - RF-mmwave Anechoic Chambers. - Compressive sensing and deterministic Sparse Processing for sparse phased arrays. - Non-linear Kalman Filtering and data association for tracking applications. Bayesian Filters. – Clustering. - Interference mitigation in time, frequency, code, space, statistical. - Range Cell migration and Doppler Ambiguity solvers for multi-target scenarios. - Synthetic Aperture Radar. - Ultra-near-range processing with surgical nearest point of contact estimation. - Radar signal Extrapolation and Interpolation using ARMA/OFDM.

- Other responsibilities:

Radar processing flow analysis, validation, and optimization - Radar processing flow software implementation – Working closely with software team to ensure optimal implementation.

- 9 Patent Applications filed since 2020.

04.2018 – present – University POLITEHNICA of Bucharest www.upb.ro , Researcher / Engineer

- Teaching: I have been invited yearly to teach labs and seminars for the Microwaves, Antennas and Propagation, Radar, and Digital Signal Processing courses.
- Research Project 1: I have developed algorithms and methodologies using the COBIS TomoSAR platform developed by my team, sponsored by the European Space Agency. My work consists mostly on multistatic Synthetic Aperture Radar (SAR), using spaceborne transmitter (Sentinel 1A/B satellite system), and ground-based receivers, for enhanced urban

remote sensing via SAR imaging. My work has been published in two high impact factor IEEE journal papers and presented at multiple IEEE conferences.

- Research Project 2: SiGe Push-Push VCO design for C-Band high resolution Radar applications. A novel varactor-free VCO design is presented, capable of achieving very high linearities for large bandwidths. Results published in a IEEE journal paper.
- Research Project 3: I have developed a deployable UAV wireless charging station. The DC-AC inverter was designed as a low-frequency dual-channel class-E amplifier, resulting in very high efficiencies at 600W of power transfer, at 10cm. The proposed aerodynamic double-coil design was patented. The results were published in an MDPI journal paper.

04.2017 - 03.2018 - NXP Semiconductors www.nxp.com , Internship
- Radar Signal Processing R&D

06.2015 - 09.2015 - INFINEON Technologies www.infineon.com , Internship
- Analog and Mixed Signal Device Modeling.

EDUCATION
2018 – Present Ph.D. in Electrical Engineering. Study on Multi-static Synthetic Aperture Radar.
        University POLITEHNICA of Bucharest (UPB), Faculty of Electronics and Telecommunications (ETTI). For results please see list of publications.

2016 – 2018   Master degree in Communication Integrated Circuits and Systems.
        UPB, ETTI.

2012 – 2016   B.S. Bachelor of Science in Electronics, Telecommunications and Information.
        UPB, ETTI. Final Project (self-designed low-cost FMCW radar) was later presented at conference and *Awarded as best student paper* at the International Conference on Communications (COMM), available on IEEE.

DOMAINS OF ACTIVITY
- Radar
- Signal Processing & ML
- RF & Microwave Design
- Wireless Power Transfer

SOFTWARE ENVIRONMENTS
AWR Microwave Office, MATLAB, Ansys Maxwell, Ansys Electronics, Circuit Maker, Keysight ADS, Eagle PCB Design, ORCAD Capture, Xilinx Vivado, Microsoft Office.

PROGRAMMING
C, VHDL, Verilog, Arduino.

PUBLICATIONS AND PATENTS
My full list of publications (including journal / conference papers, and patent applications) can be found at: https://scholar.google.com/citations?user=wSFmngUAAAAJ&hl=en

LANGUAGES: Romanian – Native Language, English – Advanced.

HOBBIES: Lego, Radio Amateur, Video Games.

INTERESTS: Contribute to state-of-the-art radar systems for autonomous driving and remote sensing by developing novel algorithms, methods, and system designs. Aerospace. Teaching.

REFERENCES: Available upon request