Thomas Feuillen

PhD student, Radar Signal Processing

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Current Affiliation

2015–Present **PhD student, Teaching Assistant**, *ICTEAM, UCLouvain*, Thesis: **The use of Compressive Sensing in Radar Signal Processing**, supervised by Luc Vandendorpe and Laurent Jacques.

Education

Master thesis ***Design of a new modulation for a multi-antenna Doppler radar for vehicle tracking***.
Thomas Feuillen, *Thomas Pairon, Christophe Craeye, Luc Vandendorpe & Icoms Detection*.

2013–2015 **Master in Electromechanical Engineering**, *École Polytechnique de Louvain - EPL*, UCLouvain, specialised in mechatronic, option in automation and control.

2010–2013 **Bachelor in engineering science**, *École Polytechnique de Louvain - EPL*, UCLouvain, major in electricity, minor in mechanic.

Experience & Award

2019 **Best Paper Award**, in IEEE RFID-TA 2019, *"An Ultra-wideband Batteryless Positioning System for Space Applications"*, 2nd place Honorary mention.

2019 **Scientific Stay**, in Edinburgh University in the team of Mike Davies for 3 months.

2016 **LOST, ESA project**, UWB localisation with passive emitters and UHF,
Joint work between UCLouvain, UNIBO (Italy) and European Space Agency, 2016-2017.

2014–Summer **R&D internship**, *Icoms Detection*, Louvain-la-Neuve, Belgium.
Development of a new radar product.

2013–2014 **Vice-champion of Belgium**, *EUROBOT*, Belgium.
European competition of Robotics, as part of a project of the master in mechatronic in EPL.

Publications

Journal D. Dardari, N. Decarli, A. Guerra, M. Fantuzzi, D. Masotti, A. Costanzo, D. Fabbri, A. Romani, M. Drouguet, **T. Feuillen**, C. Raucy, L. Vandendorpe, C. Craeye. *"An Ultra-low Power Ultra-wide Bandwidth Positioning System"* IEEE Journal of Radio Frequency Identification, 2020

Journal **T. Feuillen**, M. E. Davies, L. Vandendorpe & L. Jacques. *"(l1, l2)-RIP and Projected Back-Projection Reconstruction for Phase-Only Measurements"* IEEE Signal Processing Letters, 2020

Journal **T. Feuillen**, T. Pairon, C. Craeye, & L. Vandendorpe. *"Localization of Rotating Targets Using a Monochromatic Continuous-Wave Radar."* IEEE Antennas and Wireless Propagation Letters, 2017

Conference G. Monnoyer, **T. Feuillen**, L. Jacques, L. Vandendorpe. *"Sparsity-driven moving target detection in distributed multistatic FMCW radars"*, presented at 2019 IEEE CAMSAP

Conference M. Drouguet, **T. Feuillen**, C. Raucy, L. Vandendorpe, C. Craeye, D. Dardari, N. Decarli, D. Fabbri, A. Guerra, M. Fantuzzi, D. Masotti, A. Costanzo & A. Romani, *"An Ultra-wideband Battery-less Positioning System for Space Applications"*, presented at 2019 IEEE RFID-TA

Conference **T. Feuillen**, C. Xu, J. Louveaux, L. Vandendorpe, L. Jacques *"Quantity over Quality: Dithered Quantization for Compressive Radar Systems"*, invited paper at RadarConf 2019

Conference	**T. Feuillen**, C. Xu, L. Vandendorpe, L. Jacques *"1-bit Localization Scheme for Radar using Dithered Quantized Compressed Sensing"*, presented at COSERA 2018, arXiv:1806.05408
Conference	**T. Feuillen**, A. Mallat, & L. Vandendorpe. *"Stepped frequency radar for automotive application: Range-Doppler coupling and distortions analysis."* Military Communications Conference, MILCOM 2016 IEEE
Workshop	**T. Feuillen**, M.E. Davies, L. Vandendorpe, L. Jacques *"One Bit to Rule Them All : Binarizing the Reconstruction in 1-bit Compressive Sensing"*, accepted at ITWIST 2020
Workshop	**T. Feuillen**, L. Vandendorpe, L. Jacques *"An extreme bit-rate reduction scheme for 2D radar localization"*, presented at ITWIST 2018

Reviewer

Journal	AWPL 2020, TSP 2020
Conference	RadarConf 2018, ITWIST 2018-2020, EUSIPCO 2020

Scientific Training

Summer School	International Radar Summer school 2017, ITWIST2018, ESOA course on Digital Radar at KIT 2018, RadarConf summer school 2019
Other	European Space Agency course Echoes in Space MOOC on Radar Remote Sensing

Teaching

Telecommunication	AM, FM, QPSK, OFDM, at bachelor and master level, exercise and laboratory sessions using USRPs.
Electricity	Basics of analogical circuits, at bachelor level, exercise sessions and laboratories.
Radar	Ultra-Wide-Band, FMCW radar, Beamforming, at bachelor level, project with lectures and laboratories.
Signal Proc	Fourier theory, Filtering, at bachelor level, exercise sessions.
Embedded Electronics	Project using programmable UAVs and sensors, at master level, lectures, exercises sessions and laboratories.

Master Thesis Supervision

2019-2020	*Formation of high resolution images via Synthetic Aperture Radar embedded on satellite*, Cyril Wain, in collaboration with AerospaceLab.
2018-2019	*Analysis of a channel of communication for on-board Drone transmission with SDR processing*, Dylan Feron.
2018-2019	*Sparsity-driven moving target detection in distributed multistatic FMCW radars*, Gilles Monnoyer de Galland de Carnières.
2018-2019	*Synthetic aperture radar at small scale*, Adrien Delhaye & Marie-Pierre van Oldeneel tot Oldenzeel.
2016-2017	*Radar target classification based on micro-Doppler signature analysis*, Jean Léger.

Skills

Software

Language	C, Matlab, Python
Environment	Eclipse, Labview, Mbed, Jupyter
OS	Linux, Windows

Hardware

RF	Basic knowledge of antenna theory, RF components, radar measurements, anechoic chamber

System	Systems synchronization and interface, real-time processing

Language

French	Mother tongue
English	Full professional proficiency
Spanish	Elementary proficiency
German	Notions

Hobbies

Guitar, Movies, Discovering new cultures and languages, Traveling, Books and Trekking