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Swiss and french citizen

Software Engineer, Digital Signal Processing
PhD in Science
micro- and nanotechnology

Armed with experience in research and development projects, I am looking for a position offering stimulating technical challenges, along with opportunities to build strong relationships with a dynamic team.

Professionnal record

Jan 2013– Jun 2014 (18 months)	**Intermec Scanner Technology Center - Toulouse, France** *Software engineer* Image processing aiming at improving 1D and 2D barcode decoding libraries ▷ *Algorithms for high dynamic range images.* ▷ *Setup of a blackbox testing solution.*
Feb 2012– Nov 2012 (10 months)	**NTU (Nanyang Technological University) - Singapore** *Research scientist in the Radar Centre of Temasek Laboratories* Algorithms for high-resolution SAR imaging from highly unstable platforms ▷ *Motion compensation and autofocus algorithms in the unstable SAR imaging context.* ▷ *High robustness to undesired motion through custom SAR imaging chain.*
Dec 2009– Nov 2011 (2 years)	**TéSA (Telecommunications for Space and Aeronautics) - Toulouse** *Research scientist in the Signal Processing unit* Signal processing algorithms for radar data measured with embedded automotive sensors. ▷ *High resolution applications of synthetic aperture radar and digital beamforming algorithms.* ▷ *Required compliance with stringent automotive industry requirements.*
2005–2009 (4 years)	**Institute of microtechnology (Univ. of Neuchâtel - EPFL)** *Research-assistant in the pattern recognition laboratory (PARLAB).* Contributing to various research projects in the lab, involvment in teaching for the pattern recognition and microprocessors lectures. ▷ *Research projects in collaboration with industry (CTI).* ▷ *Mentoring students for semester and diploma projects.*
2005 (6 months)	**Logitech Inc. - Fremont, California** *Intern in the system engineering department of the webcam division.* Working on a project aiming to improve audio quality in webcam conversations. ▷ *Audio signal processing.* ▷ *Constraints for mass produced devices.*
2004 (3 months)	**Paul Scherrer Institute - Villigen, Suisse** *Intern at the laboratory of micro et nano-technology (LMN).* Optimization of a setup producing large structures with sub-micron resolutions. ▷ *Work in clean room environment.* ▷ *Laser interference lithography.*

Education

2005–2009	**PhD in Microtechnology** *Contributions to image processing algorithms for advanced 3D vision devices.* IMT-PARLAB (Univ. of Neuchâtel - EPFL).
2000–2005	**Master of Science in Micro- and Nanotechnology** *cum laude* University of Neuchâtel.
1997–2000	**Scientific high school diploma** *magna cum laude.* Lycée Denis-de-Rougemont, Neuchâtel.

IT skills

Oper. systems :	MS Windows (7, 8, XP), Linux (Ubuntu, Debian), Mac OS X
Programming :	Matlab, C, C++, Python, C#, Java, LabView
Development :	MS Visual Studio, Eclipse, Xcode, git, hg, SVN, , ClearCase, CVS

Languages

French :	Mother tongue.
English :	fluent.
German :	read, basic redaction, general conversation.

Research interests

Image processing : 3D images acquisition, fast filtering for reduction of measurement errors, registration of multiple 3D views, segmentation.

Low power signal processing : Selection of appropriate architecture, complying with application requirements in the most efficient manner, for embedded systems with low power constraints or image processing systems with real-time requirements.

Radar signal processing : Definition of radar architecture, waveform selection, low level processing for extraction of basic information (distance, velocity), array processing methods (Digital Beam Forming, Synthetic Aperture Radar) for positioning applications.

Selected research projects

2012	**Unstable SAR project**
(10 months)	Low weight radar carriers tend to have unstable trajectories leading to non-optimal SAR image focusing, even after motion compensation. This research project investigated efficient SAR focusing strategies allowing to mitigate the effects of undesired motion. *Post-doc, collaboration with Temasek Laboratories at NTU and DSO.*
2009-2011	**id4car ARPOD project**
(24 months)	Automotive radar systems embedded in automotive vehicles enhance the level of protection for all road users. DBF and SAR algorithms were developed for 77GHz FMCW radar prototypes, and feasibility was demonstrated for two new applications in parking assistance and pedestrian detection. *Post-doc, collaboration with François Vincent, ISAE Toulouse.*
2010	**FP7 MOSARIM project**
(8 months)	State-of-the-art review of interference mitigation techniques in the context of embedded automotive radars and preliminary evaluation of selected CDMA methods through Matlab simulations.
2005–2009	**Contrib. to image processing algorithms for advanced 3D vision devices**
(4 years)	Research work focused on 3D vision for microassembly and on real-time 3D vision with time-of-flight (TOF) methods. Various algorithms for reduction of measurement errors have been developped. Eventually, a network of TOF cameras was implemented, for application in surveillance systems. *PhD thesis - Thesis director : Heinz Hügli (IMT-PARLAB, Univ. of Neuchâtel).*
2006-2007	**CTI PersPass project**
(12 months)	The aim of project PersPass was to develop more flexible access-control systems, taking advantage of 3D cameras. A demonstration setup was realized during the project. Various access-control systems based on 3D vision have since been commercialized by the project's industrial partner.
2005-2006	**CTI MiniVision project**
(12 months)	The Minivision project aimed to develop a miniature 3D vision system with high resolution, and potential for embedment. The target application was visual servoing for a micro-assembly robot based on parallel architecture, allowing for high assembly throughput. A prototype of miniature depth-from-focus microscope was realized, and its depth resolution was characterized.
2005	**Software beam forming for low cost microphone array**
(6 months)	Study of noise reduction methods involving microphone arrays, within boundaries imposed by Logitech Inc. for hands-free audio-video conversation. *Master's thesis - Mentors : Jean-Michel Chardon (Logitech Inc., Fremont, CA) and Giuseppina Biundo (IMT-ESPLAB, Univ. of Neuchâtel). Grade : 5/6*
2004	**Realization of periodic line patterns by laser interference lithography**
(3 months)	Short project : optimization of a laser interference lithography setup for producing gratings with sub-micron resolution on large areas. *Internship - Mentor : Harun Solak (LMN, Paul Scherrer Institute, Villigen)*

Hobbies and interests

Mountains :	Hiking (on foot, or with snowshoes), jogging, skiing. Planning GR20
Reading :	Nonspecialist science books (Hawking, Greene), Science-fiction (Herbert, Asimov), spy novels (Clancy), biographies (Feynmann, Einstein)
Miscellaneous :	Cinema, cooking.