

Michel Narozny, Ph.D.

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Date of birth: 27th April, 1975
Married, 1 child

OBJECTIVE

**R&D Scientist/Team Lead position
that utilizes my 10 years' experience in Digital Signal/Image Processing**

PROFESSIONAL EXPERIENCE

Head, Signal Processing Group, Tagattitude, France **Sept. 2006 – Present**

- Responsible for the design and development of the NSDT™ technology : a set of acoustic modems for the transmission of digital data over the aerial acoustic channel and the voice channel of cellular, PSTN, and VoIP networks.
Applications : mobile marketing, mobile payment, access control, strong authentication.
- Conducted general studies on :
 - the aerial acoustic channel (e.g., impact of reverberation and ambient noise on the quality of the communications).
 - the voice channel of cellular, PSTN, and VoIP networks (e.g., impact of speech compression, GSM handover, GSM in-band signalling, voice activity detection, and A-law to μ -law transcoding).
- Simulations in Matlab/Simulink of the communication channels involved in each product commercialized by Tagattitude.
- Responsible for porting the NSDT™ technology to various different platforms :
 - Mobile phones/Smartphones : J2ME (java), Android (java), iOS (objective-C/C/C++).
 - Linux server.
 - Embedded platforms : NXP microcontroller (fixed-point programming), embedded Linux.
- Developed web and embedded tools for measuring the Quality of Service (QoS).
- Responsible for integrating the NSDT™ technology into Tagattitude's commercial products (e.g., development of SDKs, integration in Point-of-Sale payment terminals).
- Follow-up of the Quality of Service provided to about 40 customers located all around the world.
- Management : Signal Processing Team Lead (two permanent members).

Research Assistant, IMS Research Group, Supélec, Metz, France **2002 – 2006**

- Conducted dissertation research on Independent Component Analysis (ICA) and data compression.
- Developed two new ICA-based algorithms for computing optimal transforms in image compression.
- Experimental results showed that the new transforms can achieve better visual image quality than the discrete cosine transform (DCT) used in JPEG and MPEG.
- Awarded 150,000 € by the European Space Agency (ESA) for a 1-year feasibility study on the application of my Ph.D. thesis to the on-board compression of hyperspectral satellite images.

R&D Sonar Engineer, Thales Underwater Systems Pty Ltd, Sydney, Australia **2000 – 2002**

- Designed and developed a comprehensive computer model for the signal/image processing chain of a 3-D acoustic mine imaging system (ultrasound frequency sonar allowing imaging of mines in turbid water).
- Definition of an optimal distribution for the array sensor which was essential for obtaining the best image quality.

EDUCATION

Ph.D. in Digital Signal Processing, with Highest Distinction, December 2005

University of Paris XI, Orsay, France

M.S. level postgraduate degree in Engineering (Ecole d'Ingénieur), June 2000

Ecole Centrale Marseille, Marseille, France

M.S. in Signal and Image Processing, with Very High Distinction, June 2000

University of Aix-Marseille III, Marseille, France

B.S. in Physics, June 1997

Henri Poincaré University, Nancy, France

SKILLS

Simulation : Matlab/ Simulink (10 years hands-on experience), Scilab.

Software development : Visual Studio, Eclipse, NetBeans, CrossStudio, Xcode, SVN, Mantis.

Mobile networks : Qualcomm eXtensible Diagnostic Monitor (QXDM).

VoIP : PJSIP (open source SIP stack).

Audio acquisition : Open Sound System (OSS) library (Linux), Mobile Media API/JSR 135 (J2ME), AudioToolbox framework (iOS), Android media package, audio driver development (microcontroller NXP).

Programming languages: C/C++, Java, Objective-C, PHP, MySQL, Javascript, HTML, multitasking programming (semaphores, interrupts, optimization of stack space for each task, etc.), floating-point and fixed-point programming, use of SIMD engines (MMX, NEON) for accelerating the signal processing algorithms.

Operating systems: Windows, Linux, Mac OS X.

Embedded programming: microcontroller NXP (LPC 2138), embedded Linux, mobile phones (J2ME), iOS, Android.

Concepts and theories: Independent Component Analysis (ICA), Blind Source Separation (BSS), transform coding (DCT, KLT), image/video compression (JPEG, JPEG2000, MPEG, H.264), speech compression (VAD, DTX, codecs FR, HR, EFR, AMR, QCELP, SMV, EVRC), statistical signal processing, digital filtering, matched filtering, digital communication (modulation, channel coding, interleaving, synchronization), aerial acoustics, underwater acoustic imaging.

Languages: French (native), English (fluent), German (intermediate)

MAJOR PUBLICATIONS

1. M. Narozny and M. Barret, "ICA-based algorithms for computing optimal 1-D linear block transforms in variable high-rate source coding", [Signal Processing Volume 88, Issue 2, February 2008, Pages 268-283](#).
2. M. Narozny and M. Barret. "ICA-based algorithms applied to image coding", [ICASSP'07, Honolulu, Hawaii, USA](#).
3. M. Narozny. "Implementation of a novel on-board hyperspectral data compression tool". Sept. 2006. Submitted to the European Space Agency (ESA) with LuxSpace, OHB AG, and Supélec in the context of an [Innovation Triangle Initiative \(ITI\)](#). The proposal was selected and ESA granted 150,000 € for a [1-year feasibility study](#).
4. A. Maguer, Y.Gao, R. Vesetas, M.Narozny and G.Manzie, 'AMI: A 3D mine imaging sonar for mine identification in turbid waters,' 8B.1, [UDT Europe](#) 2001.