

# Jean-Marc Valin, Ph.D.

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## Profile

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I hold a Ph.D. in Electrical Engineering with eight years academic and industrial experience in signal processing and its applications. Over the past ten years, I have been involved in multiple open source projects, including the Speex and CELT codecs, which are now used in dozens of products and applications, shipped to millions of customers. I enjoy environments that provide me with challenging problems and where I can perform applied research in parallel with development.

## Education

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<b>Ph.D. Electrical Engineering, University of Sherbrooke</b>	2002-2005
Mobile robotics lab (LABORIUS) Thesis: "Auditory System For a Mobile Robot" Internship: Kyoto University, Speech Media Processing Lab, Fall 2004	
<b>M.A.Sc. Electrical Engineering, University of Sherbrooke</b>	2000-2001
Speech and audio research group Project: bandwidth extension of narrowband speech	
<b>B.Eng. Electrical Engineering, University of Sherbrooke</b>	1995-1999
Co-op program Exchange program: University of Connecticut, Fall 1997	

## Work Experience

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<b>Octasic Inc., Montreal</b>	Since 2008
<b>Software Lead Architect</b> <ul style="list-style-type: none"><li>• Designing efficient DSP algorithms for line echo cancellation, packet loss concealment and speech bandwidth expansion</li><li>• Managing the instruction set architecture (ISA) for Octasic's second-generation DSP architecture and updating the ALU and instruction decoder design</li><li>• Acting as "internal consultant" for a wide range of signal processing problems</li><li>• Optimizing DSP code for several speech codecs</li></ul>	
<b>CSIRO ICT Centre, Sydney (Australia)</b>	2005-2008
<b>Postdoctoral fellow, Networking Technologies Lab</b> <ul style="list-style-type: none"><li>• Designing an ultra low-delay audio compression algorithm</li><li>• Creating an efficient stereo acoustic echo cancellation algorithm</li><li>• Writing a SIP-based high-quality audio/video communication application</li><li>• Designing a 3D sound source localization system based on a microphone array</li></ul>	
<b>Consulting services</b>	2003-2008
<b>Consultant for projects related to the Speex speech codec</b> <ul style="list-style-type: none"><li>• Customizing Speex for the Unreal Tournament 2004 video game</li><li>• Optimizing Speex for the ARM and Blackfin architectures</li><li>• Designing and optimizing a noise suppression algorithm</li></ul>	
<b>University of Sherbrooke</b>	2002
<b>Lecturer</b> <ul style="list-style-type: none"><li>• Teaching a 3<sup>rd</sup> year electrical engineering course on digital signal processing</li></ul>	

**Infospace Speech Solutions (Locus Dialogue), Montreal** 2001  
**Acoustic Modelling Designer (speech recognition)**

- Improving voice activity detection's (VAD's) robustness to noise
- Speeding up the company's speech recognition engine by a factor of three

## Skills

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Expertise: acoustic and line echo cancellation, speech and audio coding, speech enhancement, noise suppression, speech recognition, fixed-point signal processing, DSP implementation, DSP architectures

Programming languages: C, C++, Matlab/Octave

CPU/DSP architectures: x86, ARM, Blackfin, Octasic Vocallo

## Other Professional Activities

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**Internet Engineering Task Force (IETF)** Since 2008

**Co-author of the Opus audio codec**

- Standardizing technology from the SILK and CELT audio codecs

**Co-chair of a Birds of a Feather (BoF) session**

- Contributing to the creation of the IETF codec Working Group

**CELT** Since 2007

*An open source low-delay audio codec providing high-quality full-band speech and audio (44.1/48 kHz) at bit-rates ranging from 32 to 256 kbit/s*

**Project leader and main author**

- Designing a new class of low-delay coding algorithms

**Speex** Since 2002

*An open source multi-rate speech codec optimized for voice over IP (VoIP)*

**Project leader and main author**

- Designing a free CELP-based speech coding algorithm
- Converting the codec to fixed-point arithmetic
- Writing a speech enhancement module

**Scientific journals and conferences** Since 2001

**Author**

- Author of 10 journal papers and 37 conference papers (see <http://jmvalin.ca/>)

**Reviewer**

- Journals including Transactions on Audio, Speech and Language Processing
- Conferences including ICASSP

## Scholarships and Awards

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FQRNT Postdoctoral Scholarship B3	2006
NSERC ES B Postgraduate Scholarship (Ph.D.)	2002
FQRNT Doctoral Scholarship B2 (Ph.D.)	2002
NSERC ES A Postgraduate Scholarship (M.A.Sc.)	2000
Silver medal at the International Physics Olympiads (Canberra, Australia)	1995
First place at the Canadian Physics Olympiads (Montreal)	1995