Vadim Smolyakov

70 Pacific Street
Cambridge, MA
02139-4204

Phone: 617.452.4399
E-mail: vss@mit.edu
http://web.mit.edu/vss/www/

OBJECTIVE To obtain an engineering research / design position in digital communications.

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA 2012 – Present
PhD Electrical Engineering and Computer Science

University of Toronto, Toronto, ON 2009 – 2011
MASc Electrical Engineering: Electronics
Research: Baseband Signal Processing and VLSI Architecture for Digital Communications
Thesis: "A Fault-Tolerant Strategy for Embedded-Memory SoC OFDM Receivers"
Advisor: Prof. Glenn Gulak

University of Toronto, Toronto, ON 2004 – 2009
BASc (Honors) Engineering Science: Electrical Engineering Major
Research: Digital Signal Processing Algorithms and VLSI Architecture for Seizure Prediction
Thesis: "A Study of Seizure Prediction Based on EEG Phase Synchronization"
Advisor: Prof. Roman Genov
Senior Year GPA: 4.0/4.0

SUMMARY

- Experience with the design and implementation of digital communication systems on a chip
- Signal processing algorithms, VLSI architecture, digital and analog integrated circuit design
- Proficient with C/C++, Matlab, Verilog HDL, SPICE, System C, Python, Unix.
- Knowledge of Synopsys, Cadence, and Mentor EDA tools
- 2 journal publications, 5 refereed conference papers, 2 pending U.S. patents
- Fast learner, responsible, hard working
- Excellent interpersonal, communication and leadership skills

INDUSTRIAL EXPERIENCE

Digital Baseband Design Engineer, Qualcomm Inc., Santa Clara, CA Jan 2012 – Aug 2012

- Designed a QR decomposition core for an 802.11ac MU-MIMO receiver
- Designed digital filters and datapath arithmetic circuits

Communication Systems Engineer, MaxLinear Inc., Carlsbad, CA Jan 2011 – June 2011

- Analyzed the impact of embedded memory faults on BER of an OFDM receiver
- Developed a new fault-tolerant strategy for embedded-memory SoC OFDM receivers

ASIC Engineer, Qualcomm Inc. (Silicon Optix Inc.), Toronto, ON May 2007 – Aug 2008

- Verified the functionality of a video processing SoC at block and chip levels by means of simulations, emulations and FPGA prototyping of the chip
- Designed a digital loop filter to synchronize the phase of input and output video PLL

- Prototyped a CPU complex on an FPGA to verify I2C interface and embedded software
- Assisted in prototyping of the SoC on a multiple Xilinx FPGA platform (presented at CES'08).

RESEARCH EXPERIENCE

Research Assistant, Prof. Glenn Gulak, University of Toronto June 2009 – Sep 2011

- Prototyped an LTE MIMO receiver: K-Best soft-decision detector, QR channel matrix decomposition, and a CTC decoder (published at ISCAS'10 and ACSSC'10)
- Designed and implemented a multi-standard LDPC decoder
- Fabricated a WiMAX MIMO detector IC in IBM 0.13um CMOS technology
- Developed and documented a digital design flow for IBM 0.13um CMOS with Artisan standard cell libraries.

Research Assistant, Prof. Roman Genov, University of Toronto Sep 2008 – May 2009

- Developed an early seizure prediction algorithm based on phase synchronization of two neural EEG signals and verified the algorithm on human EEG data
- Proposed an architecture for a low-power VLSI processor as part of a closed-loop implantable micro-system for adaptive neural stimulation (published at BioCAS'09 and EMBS'11).

Research Assistant, Prof. Alex Prodic, University of Toronto May 2006 – Sep 2006

- Designed a new digital control scheme for high-frequency, low-power, dc-dc Switch Mode Power Supplies (SMPS)
- Captured the DSP controller in Verilog HDL and created a prototype on an Altera FPGA
- Implemented the low-power controller and the SMPS on a PCB (published at APEC'07).

LEADERSHIP EXPERIENCE

Instructor, University of Toronto July 2010

- Developed course curriculum, lectures, and laboratories
- Taught a diverse group of 20 international and national students

International Solid-State Circuits Conference (ISSCC), San Francisco, CA Feb 2010

- Elected to record and transcribe paper sessions, tutorials and short courses for distribution through IEEE

Undergraduate Engineering Research Day Conference, University of Toronto Aug 2009

- Head of the Judging Committee and a Judge of Podium Presentations.

ACHIEVEMENTS AND AWARDS

Irwin M. Jacobs and Joan K. Jacobs Fellowship
NSERC Post Graduate Scholarship
Ontario Graduate Scholarship
Ted Rogers and Loretta Rogers Scholar Award
Excellence Award in Natural Sciences and Engineering
University of Toronto Scholar Award
Governor General's Medal

REFERENCES AVAILABLE UPON REQUEST