MARAN MA

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SUMMARY

- Highly versatile innovator.
- Passion for applying technology to neuroscience.
- Proficient in logic design, embedded software, automation scripting, and data processing.
- Effective communicator with leadership experience.

EXPERIENCE

Jan2014–present Neuroengineering, McGill Neuroscience Montreal, QC

PhD Student

- Design and layout of BioMEMS for in vitro electrical stimulation/recording of neurons (CoventorWare, DALSA MIDIS process).
- Microfabrication of 3D structures for in vivo testing of biomimicry interfacing material.
- Develop processes and hardware to connect structures and material adhesive to neurons to multi-electrode-array systems.
- Support collaborative efforts between microelectronics and neuroscience lab, by customizing hardware/software and testing with cell cultures.

Mar2010–present WingedMachcine (2238366 Ontario Inc.) Waterloo, ON

President

- Guide business direction and perform R&D work.
- Led team of four in incorporation, establishment of share structure, and roles.
- Managed patent application, monetization, and outsourcing of development.
- Recruited new collaborators and directors.
- Lead inventor of family of patents "Systems, apparatus and methods for delivery of location-oriented information" (US8239132, US8914232)

Sep2009–Dec2014 Clinical Neuroscience Lab, Waterloo Kinesiology Waterloo, ON

Master's Student (part-time)

- Thesis project investigated the role of DLPFC in post-error adjustments: a EEG study with vibro-tactile stimuli explored modulations in early somatosensory ERPs that occur post error commission in a speeded-response task.
- Performed EEG collection on 22 human participants.
- Developed stimuli control software (LabVIEW) and scripts for behavioral and EEG processing (NeuroScan, MATLAB, EEGLAB)

May2008–Aug2013 Ignis Innovation Inc. Waterloo, ON

Display Engineering / Contractor

- Created method for panel non-uniformity compensation by optical measurement.
- Supported CTO's research vision through developing new drive schemes in FPGA, building/conducting lifetime experiments, investigating/troubleshooting video artifacts.
- Implemented frame-buffer, and variety of video timing modules (VHDL, Verilog, C).
- Researched and implemented colour correction for OLED panels, via automated measurements (Perl), gamma algorithms (MATLAB), FPGA LUT.

Sep2006–Dec2006 Interactive Circuits and Systems - GE Fanuc Ottawa, ON

Hardware Systems Engineering (Co-op)

- Expanded FPGA core on ICS572 software radio module (Xilinx Virtex II).
- Developed digital verification logic for DAC and ADC modules.
- Redesigned swing buffer and FIFO logic, working with product management director.

Jan2006–Apr2006 UWaterloo, AMOLED Display Research Lab Waterloo, ON

Prototype System Developer (Co-op)

- Built data acquisition hardware (8 test harnesses interfaced to oscilloscope via relay array, with automated data acquisition); modified test harness boards for current source and VI characterization.
- Created Excel macro to generate assembly code for PIC16F628, enables users to configure eight custom video sync. signals in spreadsheet.

May2005–Aug2005 Nuvation Research Corporation San Jose, CA

Firmware Engineering (Co-op)

- Developed embedded software for Digital Power Manager on ATmega64 (C).
- Extensive collaboration with customer (supplied design spec and test bench).

Jan2004–Apr2005 DALSA Inc. Waterloo, ON

Software/Embedded-Software Developer (Co-op & part-time)

- Created firmware for Pantera 4M60 CMOS camera on ATmega128 (C), including UI, power up sequencing, setting storage in E^2, and FPGA interfacing
- Developed and deployed Problem Tracking System, a web based database application for 3 departments (Linux, Apache, MySQL, modPerl).
- Created automated camera UI testbench (Perl), with configurable template and reporting.

1998–present InforShell Technologies Inc. Waterloo, ON

Technical writing

- Contribute to family software company.
- Create English web content.
- Design product packaging & marketing material.

EDUCATION

Candidate for PhD in Neuroengineering, Integrated Program in Neuroscience, McGill University, Montreal, Quebec, January 2014 – present

Candidate for Master of Science, Kinesiology, University of Waterloo, Waterloo, Ontario, September 2009 – December 2014. GPA: 80% (3.7).

Non-degree, University of Waterloo, Ontario, September 2008 – April 2009.

- KIN301 *Human Anatomy of the Central Nervous System* (81%)
- KIN357 *Motor Learning* (88%)
- SYDE556 *Simulating Neurobiological Systems* (82%) with Professor Chris Eliasmith (creator of

Neural Engineering Framework): "as I've said before, your work is of excellent quality."

Bachelor of Applied Science, Honours Electrical Engineering, Co-operative Program, University of Waterloo, Ontario, September 2003 – April 2008. GPA: 82% (3.7).

PUBLICATIONS/PATENTS

Ma, M., Cheng, J., Rajagopal, N., & Fang, Y. (2012, 2014). *U.S. Patent Nos. US8239132, US8914232*. Alexandria, VA: U.S. Patent and Trademark Office.

Ma, M., Thacker, J., Popovich, C., Singh, A., Brown, M., Ibey, R., & Staines, W. R. (2013, May). *Modulation of somatosensory cortex underlying post-error reduction of interference in tactile speeded response tasks.* Presentation at the AHS Graduate Student Research Conference, University of Waterloo, ON.

Chaji, G. R., Moradi, M., Dionne, M., Huras, J., Ma, M., Azizi, Y., Striakhilev, D., Alexander, S., & Nathan, A. (2012). Stable AMOLED Displays by Process Tuning and Backplane-OLED Compensation. *SID Symposium Digest of Technical Papers, 43*, 187–190.

ENGINEERING EXPERTISE

MATLAB; VHDL, Verilog; C; Perl; Visual Basic; LabVIEW

AWARDS

- NSERC Award, University of Waterloo, Jan/2006, research assistant scholarship.
- Creator of E&CE department logo (contest winner), University of Waterloo, Sep/2006.
- Gold Medal, Engineering (optical design, simulation & construction of astronomical telescope), Canada Wide Science Fair, May/2001; Award of Excellence (Best Entry), Waterloo Wellington Science and Engineering Fair, Apr/2001.

ACTIVITIES & INTERESTS

- Photographer (www.maranma.com), 2009–present.
- President/club executive, Photography Society, University of Waterloo, 2010–2011.
- Piano (RCM Level 9), 1989–2004.