Zhiyang Ong

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EDUCATION

Ph.D. in Electrical Engineering December 2020
Texas A&M University (TAMU), College Station, TX

Ph.D. coursework in Electronics Engineering, Design Automation (EDA) emphasis Fall 2013
National University of Taiwan (NTU), Taipei, Taiwan
Relevant Coursework: Logic Synthesis and Verification; The Design and Analysis of Algorithms; & Discrete Optimization.

Ph.D. coursework in Computer Science, EDA emphasis January 2011–February 2012
University of Verona (UNIVR), Verona, VR, Italy
Relevant Coursework: Nondeterministic Finite State machines – Analysis and Synthesis; Special Topics in Artificial Intelligence – Theorem Proving for Program Analysis/Synthesis; Embedded Systems Design; & Design Automation of Embedded Systems.

Master of Science in Electrical Engineering, EDA and VLSI Design emphasis May 2008
University of Southern California (USC), Los Angeles, CA

Bachelor of Engineering (Electrical and Electronic), Honors August 2005
The University of Adelaide (AU), Adelaide, SA, Australia

RELEVANT PROJECT EXPERIENCE

Object detection for drones, using embedded deep learning & CUDA-based GPGPU computing (In Progress)
Co-developed MATLAB scripts to perform pattern recognition on a genomic expression data set
Co-debugged "buggy" *PULPino* and PULPissimo SoCs; our team found multiple hardware security bugs
Developed gate-level logic simulator for combinational VLSI circuits, using *C++*
Co-implemented *C++*/*Ruby* model checking software, using counterexample-guided abstraction refinement
Implemented a parser in *C++* to convert test patterns in *STIL* format into tabular form
Implemented PODEM algorithm in *C++* to generate test patterns for combinational circuits
Co-developed *MATLAB* scripts for exploring performance/delay trade-offs of SRAM architectures/floorplans
Developed *Python*-based reference management software for BibTeX databases

RELEVANT WORK EXPERIENCE

Texas A&M University, College Station, TX
Teaching Assistant, Department of Electrical and Computer Engineering January - April 2019
- Instruct and supervise laboratory sessions for the course, "Principles of Electrical Engineering"

Research Assistant, Department of Electrical and Computer Engineering January - April 2014
- Developed building blocks for a neuromorphic processor in *Verilog*

University of Trento, Trento, Italy November 2009 – February 2010
Research Intern, Department of Information Engineering and Computer Science
- Co-developed a technique in *C++* for *MathSAT* to filter off axiom instantiation for bit-vector arrays
- Developed benchmarks for satisfiability modulo theories (SMT) in the *MathSAT* and *SMT-LIB* formats

The Office for Residential Education, USC, Los Angeles, CA August 2006 – October 2006
Resident Assistant, USC's Parkside International Residential College
- Organized activities to foster community, personal, and professional development
- Provided counseling and advice to address personal, social, and academic needs of residents
- Promoted and encouraged student-faculty interaction, and built good student-faculty rapport

Symantec Corporation, Santa Monica, CA May 2006 – July 2006
Software Quality Assurance Intern, Macintosh team, Consumer Products Solutions division
- Developed scripts in *Ruby* for analyses of test results from software test automation
- Developed a *MySQL* database for software test data, & a *PHP* web page to access the data
- Developed scripts for GUI test automation via the execution of test suites in *Eggplant*

Bioinformatics Institute, Singapore December 2004 – February 2005
Research Intern, Biomedical Imaging Group
- Published an abstract in a symposium on Computer Assisted Radiology and Surgery
- Researched methods to construct cross–sectional images from Digital Subtraction Angiograms

Institute of Microelectronics, Singapore December 2003 – February 2004
System Administration Intern, Integrated Circuits & Systems Laboratory
- Wrote *UNIX* shell scripts to perform system administration tasks
- Conducted basic *UNIX* course, and authored its course material
- Prepared a set of frequently asked questions for *UNIX* and the *vi* text editor

COMPUTER SKILLS

EDA Tools:	Synopsys Avanwaves, CosmosScope, Design Compiler, HSPICE, NanoSim, and PrimeTime; Cadence Virtuoso and NC-Verilog; Electric; ModelSim; & Xilinx ISE
Programming Languages :	C++, Python, Ruby, Java, GNU Octave, MATLAB, Perl, FORTRAN 90, C, C#, & assembly language (Motorola 68000, DLX, & MIPS)
Other Computer Languages :	LaTeX, Verilog, SPICE, SystemC-AMS, SystemC, UNIX Shell Scripts, VHDL, UML, Tcl, AWK, SQL, SenseTalk, OCL, PHP, Markdown, & HTML
Operating Systems:	GNU/Linux, macOS, Oracle/Sun Solaris, & Microsoft Windows
Other Software & Libraries :	Git, Mercurial, Make, Doxygen, GDB, MySQL, JSON, Rational Rose, sed, NumPy, SciPy, scikit-learn, pandas, Anaconda Distribution, & Boost C++ Libraries

PUBLICATIONS AND RESEARCH PROPOSALS

Prateek Tandon, Alex Mitev, Stanley Lam, Ben Shih, Zhiyang Ong, "Quantum Adiabatic Implementation of the Quadratic Traveling Salesman Problem (QTSP) and Applications," submitted to a *Request for Proposal* by the Quantum Artificial Intelligence Laboratory (NASA's Ames Research Center, Google, and the Universities Space Research Association), 2017. **Status: Accepted.**

P. Tandon, S. Lam, B. Shih, T. Mehta, A. Mitev, and Z. Ong, "Quantum Robotics: A Primer on Current Science and Future Perspectives," Synthesis Lectures on Quantum Computing series, Morgan & Claypool Publishers, San Rafael, CA, 2017.

Z. Ong, A. H.-W. Lo, M. Berryman, and D. Abbott, "Multi-objective evolutionary algorithm for investigating the trade-off between pleiotropy and redundancy," in Proceedings of SPIE Complex Systems, vol. 6039, Brisbane, Australia, pp. 237-248, 11-14 December, 2005.

X. Ma, Z. Ong, A. Aziz, and W. Nowinski, "Smart Catheter for Interventional Neuroradiological Procedures," in International Congress Series: Proceedings of the 19^{th} International Congress and Exhibition on Computer Assisted Radiology and Surgery, vol. 1281, Berlin, Germany, pp. 1306, 22-25 June, 2005.

Z. Ong and S. F. Al-Sarawi, "Surgical application of MEMS devices," in Proceedings of SPIE Smart Structures, Devices, and Systems II, vol. 5649, Sydney, Australia, pp. 849-860, 12-15 December, 2004.

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

IEEE Circuits & Systems, **Solid-State Circuits**, and **Computer Societies**, Member 2003 – present
ACM Special Interest Group on Design Automation (SIGDA), Member 2006 – present
CIRTL@TAMU, Teaching as Research fellow Fall 2019
IEEE student chapter (TAMU), mentor for IEEE Aggie Mentorship Program 2017 – 2018
Aggie Graduate & Professional Community Club (TAMU), mentor for undergraduates 2016 – 2017
International SAT/SMT Solver Summer School, attendee 2011
Lincoln College (AU), volunteer academic tutor in residential hall 2004 – 2005

AWARDS AND ACHIEVEMENTS

Center for the Integration of Research, Teaching and Learning, Associate Certificate Summer 2019
IEEE Computer Society Annual Symposium on VLSI, NSF Student Travel Grant recipient 2019
Hack@DAC 2018 hardware security contest, member of joint winning team (out of 51 teams) 2018
IEEE-Eta Kappa Nu (IEEE-HKN), inducted as member of Gamma Mu chapter 2015
ICCAD CADathlon programming contest, student travel grant awardee 20[06/07/15]
NTU, International Students Scholarship recipient Fall 2013
UNIVR, UNIVR Scholarship recipient January 2011 – January 2012
Design Automation Conference (DAC), Young Student Support Program grant recipient 2011
ACM SIGDA Design Automation Summer School, travel scholarship recipient 20[07/09/11]