Vignesh Thangavel

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EDUCATION

University of Central Florida — Orlando, FL
Master of Science in Electrical Engineering — May 2015

Birla Institute of Technology and Sciences (BITS), Pilani — Goa, India
Bachelor of Engineering (Honors) in Electrical and Electronics Engineering — May 2013

TECHNICAL SKILLS

Platforms and Operating Systems: PSoC Creator IDE 3.1 with PSoC 5LP, Xilinx ISE 8.2 with Spartan 3E, ISE 10.1 with XUPV2P, ISE 14.7 with Zynq 7000 AP SoC, Keil uVision, OrCAD PSPICE, Cadence Virtuoso layout suite and Spectre circuit simulator (in CentOS), MATLAB, MATLAB GUIDE, Simulink, MASM (Microsoft Macro Assembler) with 8086 ISA and NetSim by TETCOS on Windows; ns-2, OpenCV, TinyOS on Ubuntu

Programming Languages: C, C++, Python, MATLAB, Verilog, SPICE HDL and VHDL, nesC, C++, Tcl/OTcl, Netlogo

Certification: Fundamentals of Nanoelectronics: Quantum Models offered by Purdue University with nanoHUB.org

Additional Experience: Clean room experience to study processes involved in thin film production

PROFESSIONAL EXPERIENCE

Graduate Teaching Assistant — Aug. 2014 - Present
University of Central Florida — Orlando, FL

EEL 4742 - Embedded Systems (2 sections)

- Instructed lab experiments on TI MSP430 experimenter board with Code Composer Studio
- Graded lab reports, course assignments, quizzes and exams

EEL 3004 - Electrical Networks (4 sections)

- Instructed discussions to help solve problem sets on circuits and to clarify and reinforce difficult concepts

EEL 3123 - Networks and Systems

- Instructed lab experiments on breadboard based circuit design modelled in multisim and graded lab reports

Graduate Assistant and Developer at UCF CECS Proficiency Center — May 2014 – Aug. 2014
University of Central Florida — Orlando, FL

- Contributed to development of online assessments for two undergraduate engineering courses
- Helped develop autograder scripts in Python and Bash for coding assignments (C and Assembly)

Intern in Practice School Program — May 2011 – July 2011
Kudankulam Nuclear Power Project — Tirunelveli, Tamil Nadu (India)

- Toured entire NPP, studied Upper and Lower Level Control Systems (ULCS and TPTS), developed a MATLAB GUI to simulate control system function flow for valve control of steam generator plant

RESEARCH EXPERIENCE

Master's Thesis — Aug. 2014-Present

Title – Cascaded Digital Refinement for Intrinsic Evolvable Hardware

Mentors – Dr. Ronald F. Demara, Dr. Zixia Song, Dr. Kalpathy B. Sundaram

Computer Architecture Lab., UCF

- Performed intrinsic evolution of analog & digital computational circuits in a cascaded succession to evaluate & refine solutions to complex mathematical computations, demonstrated for ordinary differential equations

- Produced with Dr. Ronald F. Demara, Steven M. Pyle and Stephen M. Williams, a paper titled "Self-Scaling Evolution of Analog Computation Circuits with Digital Accuracy Refinement," ***accepted*** for oral presentation and inclusion in the conference proceedings of *2015 NASA/ESA Conference on Adaptive Hardware and Systems*

Bachelor's Thesis Jan. 2013-May 2013

Title – Implementation of a Non-Intrusive, Real-Time, Fine-Grained Power Monitoring System for College Campuses
Mentors – Dr. K.R. Anupama and Dr. M.K. Deshmukh

- Attempted SCADA implementation using a WSN of TelosB motes interfaced with HMC1001 magnetic sensors

RELEVANT ACADEMIC EXPERIENCE

Graduate Coursework

ECM 6308: Current Topics in Parallel Processing – Sustainable Modular Redundancy, Competitive Runtime Reconfiguration, Reliability, Group Testing, Near Threshold operation, Timing Management, Power Wall, Dark Silicon, Variability Mitigation, Anti-Aging Adaptation, Probabilistic Computation, Evol. Design of Approximate Circuits
Project-Presentation Component: "Techniques to mitigate aging issues and threshold variability in hardware"
EEL 5722: FPGA (Field Programmable Gate Array) Design – FPGA architectures, design flow, technology mapping, placement and routing. *Course Project:* Implementation of JPEG Huffman decoder
CDA 5106: Advanced Computer Architecture – Benchmarks, Amdahl's Law, Memory and Cache, Pipelining, Parallelism (ILP, TLP), GPU, Warehouse Scale Computers.
Course Project: "Study and Simulation of Inclusion Property in Multi-Level Caches for Simplescalar Architecture"
CAP 6675: Complex Adaptive Systems – Study of Cellular Automata, Multi-agent systems with Netlogo modelling
EEE 5332: Thin Film Technology – Level 100 and level 1000 clean room experience in fabrication of simple devices
CNT 5008: Computer Communications Network Architecture - *Programming Project*: "Simulation and Performance Analysis of Routing Protocols for Zigbee using NS2"

Undergraduate Coursework

Embedded Systems Design Experience with 8051, ATMega 128, LPC 2378, ARM, TI DSP 64xx family, TI MSP 430 architectures and Keil based simulations in labs. *Course project to produce a paper titled*: "Image Processing Based Implementation of Prey-Nest Algorithm for a Robot Swarm Connected by a Wireless Sensor Network of motes," *accepted for publication* in the International Conference on Wireless Networks, 2013.
Analog and Digital VLSI Design –Cadence (Spectre) simulations for delay-timing analyses of circuits
Artificial Neural Networks and their Applications - Hopfield, BAM, Classifier, Back Propagation networks
Course Project: Titled "Social interaction using Artificial Neural Networks"

OTHER EXPERIENCE

Graduate Student Assistant – OPS Note taker Sep. 2013 – Mar. 2014
University of Central Florida Orlando, FL

- Worked with UCF SDS to take notes and upload the same to facilitate the learning of the DHH community

ACTIVITES, LEADERSHIP AND INVOLVEMENT

Sangam – The Indian Student Association, *Member and Performer in annual talent show* Aug. 2013 – Present
Latin Rhythm, *Member and Level 3 Salsa student* June 2014 – Present
Intelligent Decisions on Environmental Awareness and Sustainability (I.D.E.A.S), *Member* Mar. 2014 – Present
Celestia (astronomy club), *Sub coordinator and radio-astronomy project head* Feb. 2010 – Feb. 2013
Electronics and Robotics Club, *Member* Oct. 2011 – Oct. 2012
URJA (initiative to save energy), *Coordinator* Feb. 2010 – Aug. 2012
Abhigyaan (literacy drive), *Instructor and Mentor* Jan. 2011 – May 2012
TEDxBITSGoa (TED talk), *Member, Core Organizing Team* Jan. 2011 – May 2012