Dhruv Patel

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EDUCATION

UNIVERSITY OF WATERLOO
Bachelor of Applied Science Honours Electrical Engineering, Co-op Program
Sept 2011 - April 2016 (Expected) | Waterloo, ON

- Final Year Capstone Project: Smart Power (Internet of Things with AC power-line communication)

RESEARCH EXPERIENCE

SRAM CIRCUITS - VLSI | Undergraduate Research Assistantship
Sept 2015 - Present | Waterloo, ON
Supervisors: Prof. Manoj Sachdev, Prof. Adam Neale

- Schematics, layout and simulations of 65nm SRAM cells and Sense Amplifiers in Cadence Virtuoso
- 4-layer PCB Design for Sense Amplifier IC designed by Prof. Neale for characterization purposes
- Attaining sense amplifier characterization plots in VLSI laboratory
- Took graduate level CMOS digital design course; Project: 16-bit 1GHz adder design in cadence

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POWER-LINE TRANSCEIVER DESIGN | Undergraduate Research Assistantship
8 months | Jan 2015 - Aug 2015 | Waterloo, ON
Supervisors: Prof. Vincent Gaudet

- Assisted in automotive DC power-line communication (PLC) research
- Schematics and PCB designs of transmitter and receiver analog-front-end (AFE) boards
- Prototyped and characterized AFE transceivers in microelectronic laboratory
- Performed substantial circuit simulations and component selections for the AFE circuitry

WORK EXPERIENCE

APPLE | Optical Sensor Design Intern
5 months | Aug 2014 - Dec 2014 | Cupertino, CA

- Optical Characterizations of CMOS SPAD arrays and VCSELs in optoelectronics laboratory
- Executed extensive statistical analysis of sensor test data for modelling purposes with python
- Architected Robotic control software for automating sensor characterizations with python and Java
- Involved in System level and PCB level designs of Optical sensor prototypes

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ARISTA NETWORKS | Hardware Design Engineering Intern
4 months | Jan 2014 - April 2014 | Santa Clara, CA

- Contributed in PCB designs for 40Gb/s Network Switches
- Designed and simulated matched 156 MHz clock fanout interfaces with HSpice and ADS
- Simulated power planes and optimized component placements for efficient power delivery
- Performed spectrum analysis for selecting Crystal Oscillators with lowest EMI
- Eye characterizations and tuning for Jitter and Power reduction
- Developed JTAG boundary scan test on Network Switches
- Characterized Airflow and Pressure inside the Network Switch chassis for better fan selection

BLACKBERRY | Hardware Verification Engineering Intern
4 months | May 2013 - Aug 2013 | Waterloo, ON

- Verified high-speed interfaces across baseband and application processors in GBit/sec class
- Analyzed signal eye diagrams and jitter measurements for signal integrity verification purposes
- Automated oscilloscopes, temperature chambers and frequency counters for chip testing in python
- Performed current drive optimization and noise analysis on baseband ICs
- Developed software in C for throughput measurements on USB and µSD interfaces
- Performed USB 2.0 electrical compliance tests according to USB protocol specifications
- Tested functionalities of Blackberry handheld devices using NI LabVIEW

CHRISTIE DIGITAL | Electrical Engineering - Intern
4 months | Sept 2012 - Dec 2012, Kitchener, ON

- Contributed to flight-simulator Projector's PCB designs
- Lead projector's harness designs: component selections, prototype building and finalizing designs
- Involved in Electro-Optical/Mechanical algorithm development and validation
- Performed net list checks, signal integrity and brought-up PCBs according to test plans
- Optimized Light Sensor sampling time by modifying existing amplification circuitry

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TDA INC. | Programmer - Intern
4 months | Jan 2012 - April 2012, Burlington, ON

- Developed scantron scanning software from scratch in C# and VB.net
- Designed Call Information System for VOIP to search call records from the database in VB.Net

AWARDS

2015 NSERC Undergraduate Student Research Award
2011 University of Waterloo Merit Scholarship
2011 Queen Elizabeth II Aiming for the Top Scholarship

SOCIETIES AND ACTIVITIES

2012-Present IEEE Student Member
2013-2014 UofW Application Specific Integrated Circuit (ASIC) group
2013-2014 UofW Badminton Club

MAJOR COURSEWORK

COMPLETED

Integrated Digital Circuits
Electronic Devices
EM Fields and Waves
Analog Control Systems.
Embedded Microprocessor Systems
Microelectronic Circuits I and II
Analog and Digital Communication
RF and Microwave Circuits
Power Electronic Converters
Probability Theory and Random Access

EXPECTED

Integrated Analog Electronics Photonics Devices and Systems Digital Integrated Circuits (grad course)