Apt 27, 2205 St. Marc
Montreal, QC, H3H 2G9, Canada
1-250-859-9136
Zonghao.li@mail.mcgill.ca

ZONGHAO LI

EDUCATION

McGill University — Montreal, QC
M.Eng., Electrical Engineering (thesis-based) — 2017 - Present

University of British Columbia — Kelowna, BC
B.A.Sc., Electrical Engineering (with distinction) — 2013 - 2017

HONORS AND AWARDS

Capstone Design Competition Second Place (out of 46 groups) — 2017
International Student Faculty Award ($5000) — 2016
International Undergraduate Student Research Award ($5000) — 2016
Dean's Honor List of the Faculty of Applied Science — 2015, 2016
Deputy Vice-Chancellor Scholarship for International Student ($1500) — 2015, 2016
Golden Key International Honor Society Membership — 2014
Chancellor's Scholar Award — 2013

RESEARCH EXPERIENCES

Printed Chipless RFID Sensor — Montreal, QC
Dr. Kenneth Chau Research Group – Transparent Conductors — Kelowna, BC
Research Assistant — May 2016 - Present

Exploring the next-generation switchable smart windows that are based on silver-based transparent conductors is the main focus of this research. Specifically, Zonghao Li's responsibility is to analyze and test the configuration of an ultra-thin silver layer sandwiched between two titanium dioxide layers; and some critical parameters, such as transparence, resistance, reflectance, etc., are also taken into account. So far, a novel configuration is to fabricate the thin silver layer on the top of the ultra-thin germanium membrane, and it can half the thickness of the mainstream design and thereby increase the transmission.

UBC-Okanagan Computational Fluid Dynamics (CFD) Laboratory — Kelowna, BC
Research Assistant — May 2015 – December 2015

Investigating and simulating the multiphase flow (flows with solid and liquid phases) in the sudden expansion geometry with the use of an open-source C++ Linux-based CFD software package called OpenFOAM. The goal of these computer simulations is to study the flow of wastewater through a reactor that removes struvite particles from wastewater in order to provide a better solution to those waste water treatment plants. The simulations were conducted on desktops as well as on supercomputers accessed through the WestGrid consortium.

CAPSTONE PROJECT DESIGN

Spatial Tracking Algorithm for Wearable Sensors Kelowna, BC

Project Team Captain September 2016 – April 2017

The purpose of this project is to obtain sensor (magnetometer) data and improve its reliability for accurately modeling the human body motion by proposing a new calibration algorithm, which is implemented in both Matlab and Python by us. A hardware sensor will be provided and the algorithm will be implemented in an STM32F4 Series microcontroller. Zonghao Li's major responsibilities include group meeting conducting, industry-partner video call scheduling, project progress tracking and task organizing. This project is supervised by Dr. Thomas Johnson and sponsored by Kinetic Reality. This project received the second place in the 2017 Capstone Design Competition. For more details, see: https://www.youtube.com/watch?v=61_5dSP1mHw

TECHNICAL SKILLS

- Micro-fabrication and Cleanroom Experience (Angstrom Engineering NEXDEP Thin Film Physical Vapor Deposition System; OAI Model 204IR Mask Aligner, etc.)
- Measurement and Test (Emona TIMS-301 Telecommunications Instructional Modelling System, Keithley 2400 SourceMeter, Oscilloscope, Spectrometer)
- Programming Skills (C, C++, Python, Matlab)
- Digital System Design (Verilog, Modelsim, Xilinx-Vivado, Quartus-II)
- Analog Circuits (LTspice, PSIM, Cadence-Virtuoso)
- RF and Microwave Circuits (NI-AWR, ANSYS-HFSS, Keysight-ADS)
- PCB Layout Tool (Altium Designer)
- Supercomputer Experience (WestGrid)

COMMUNITY INVOLVEMENT

Kelowna's Gospel Mission (3 hours/week) Kelowna, BC

Thrift Store Sorter January 2014 – April 2014

Basic responsibilities include weekly donations sorting (clothes, shoes, furniture, etc.), price tagging and tracking, as well as donations maintaining.

RELEVANT COURSEWORK

CMOS Microelectronics 2017

Design of analog ICs using specialized analog CAD tools such as SPICE. Voltage and current amplifier design which encompasses the study of biasing circuits, current sources and mirrors, input and output stages, and frequency compensation; precision reference sources; analog multipliers; oscillators; waveform generators and shaping circuits, and analog switches.

VLSI for Machine Learning 2017

Study the recent trend of the digital system designs for machine learning applications, including fully connected network and Convolutional Neural Network (CNN). A project that is about the hardware implementation of them is also required in this course, which is done by using the Hardware Description Language (HDL).

Physical Basis of Semiconductor Devices 2017

Quantitative analysis of diodes and transistors. Semiconductor fundamentals, equilibrium and non-equilibrium carrier transport, and Fermi levels. PN junction diodes, the ideal diode, and diode switching. Bipolar Junction Transistors (BJT), physics of the ideal BJT, the Ebers-Moll model. Field effect transistors, metal-oxide semiconductor structures, static and dynamic behaviour, small-signal models.