Omid **Karimpour**

Robotics Researcher · NCART Lab

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"They told me I couldn't, so I did"

Work Experience

Fleming College

Peterborough, ON

Adjunct Faculty — *Jan. 2019 - Present*

- Mechatronics Course Developer, Instructor, Applied Projects Manager & Mentor of Student Capstones
  - Developing a Mechatronics course including lectures, labs, exams & projects
  - Responsible for Agile Project Managment, providing sponsors with desired expectations within scope of agreements
  - Supervising students during lab sections, evaluating their performance in Electronics & Electricity labs

Network Centric Applied Research Team

Toronto, ON

Robotics Researcher — *Aug. 2018 - Present*

- Developing and implementing a modified Pioneer 2DX Autonomous Mobile Robot using 2D Lidar, localization, SLAM, mapping, path planning, and obstacle avoidance
  - Comparision of Gmapping, EKF, Hector, SLAM systems, utilizing fusion sensors
  - Premapping and SLAM in Search & Rescue Field research
  - Stair mapping, glass detection, and navigation, investigation
  - Full ROS Navigation system and Gazebo simulation in indoor environment using RPLidar

SDI Marketing (TMS)

Newmarket, ON

Manager & Lead Advisor — *Sep. 2015 - Nov. 2018*

- Managed and oversaw the operations of multiple stores. Developed and performed incentives, and trained District's employees & lead advisors
  - Multiple award winner for top sale performance
  - Generated a 314% growth in revenue (Over $1M Revenue)
  - Earned a reputation for effective leadership under ambitious deadlines

McMaster University (Smart Joint Monitoring Lab)

Hamilton, ON

Scholar — *Jan. 2016 - Sep. 2016*

- Worked with **Prof. Jamal Deen** to analyze gait kinematics and gait kinetics. This led to a research on Smart Joint Methods based on adding gyroscopes, force plates, EMG, & muscle force. Further researched on Slavelberg, Former-Cordero estimate 3D ground reaction forces (GRFs), and optimal placement of accelerometers.
  - Gait analysis, accuracy and reliability of Smart Joint Methods and Optimal Sensors Placement
  - Surveyed the Bro, Intille and Gjoreski approaches based on accelerators, gyroscopes, and force sensors

Research Experience

Ryerson University

Toronto, ON

Master of Engineering at EE Department — *Sep. 2015 - Present*

- **Prediction models for digit recognition, car acceptability, wine quality, & water level**
  Advisor: Prof. Farah Mohammadi
  - Modeled and simulated with MATLAB on different real world datasets
  - Created a Neural Network, SVM Prediction Model, K-means clustering for image dimensionality reduction

- **Lines, & circles detection in noisy environment with 5 pixels accuracy**
  Advisor: Dr. Lev Kirischian
  - Blurring Process, Edge detection, and Hough transform algorithms with OpenCV
  - Comparison of Hough transform; Fast and Random Hough transform; and efficient randomized algorithm

Shahid Beheshti University

Tehran, Iran

Research Assistant at Electronics Lab — *Jan. 2012 - Jul. 2015*

- **Final Project: Designing, simulating and implementing CMOS amplifier with Beta-Multiplier Reference**
  Advisor: Prof. Hashemipour
  - High gain low noise CMOS amplifier design with a BMR utilizing positive close loop feedback, novel Cascade Currant Mirrors

- **Designing and implementing a ZigBee OEM Module Starter**
  Advisor: Prof. Jalali
  - Designed, optimized, and implemented a ProBee ZE10 Starter using ARM Cortex M3
  - Sigma-Delta AD Converters analysis, the highway traffic measurment analysis using GPS mobile devices

Teaching Experience

2019	**Human Robot Interaction,** Graduate Assistant	*Ryerson University*
2019	**Final Project Mentorship,** Mentor	*Fleming College*
2019	**Electricity 1,** Lab Instructor	*Fleming College*
2012-15	**Mathematical and Physics,** Instructor	*Raadfar Academy*

Academy Membership

IEEE (Institute of Electrical & Electronics Engineers)

Ryerson Student Branch

Member — *Nov. 2018 - PRESENT*

- Organized a project showcase for faculties, graduates, and undergraduates
- Hosted an "Improving Communications Skills for Engineers" workshop
- Participated and started a number of IEEE events such as Industry Night

Hardware-software co-design, DE2-Altera FPGA based, and Nios II SoPC Development

Embeded System

Member — *Sep. 2017 - Dec. 2017*

- Real-time scheduling techniques, concurrency, system on chip and hardware software codesign tools
- Real-time scheduling and investigating RTOS using uVision, RTX, and ARM Cortex M3

Reliability evaluation & build in self repair of reconfigurable

Digital System Testing

Core Member — *Jan. 2017 - June. 2017*

- Reliability analysis & comparison of hierarchical redundancy, optimal repair, coarse redundancy, Tile-based
- Analyzed combinational and sequential circuit test generation methods. memory, delay testing, and testability design methodology

Architecture analysis and high-level synthesis of ASP of a VOP buffer

Architiectural Synthesis

Core Member — *Sep. 2012 - Dec. 2016*

- Analyze the fully pipelined variant of architecture to get the highest performance of ASP along with 32-bit Multi Cycle Processor design.
- Assess the economic aspects, power consumption, and VOP area, determined by the available memory bandwidth

Education

Ryerson University

Toronto, ON

M.Eng. in Electrical and Computer Engineering — *Aug. 2016 - Present*

Shahid Beheshti University (former National University of Iran)

Tehran, Iran

B.S. in Electrical and Computer Engineering — *Sep. 2010 - Jan 2015*

Skills

Programming	C/C++, Python, MATLAB, VHDL, Verilog, LaTeX
Robotic Programming Tools	ROS (Robot Operating System), OpenCV
Smart Phone Programming	iOS (Swift)
Web	HTML, CSS, JS, php
Microcontrollers	AVR, ARM, FPGA
Analog Digital Design Tools	H-Spice, P-Spice

Honors & Awards

2018	**1st Place,** TMS, Certified for top revenue improvement, Eastern Canada	*GTA, ON*
2017	**1st Place,** TMS, Certified for top leadership, Eastern Canada	*GTA, ON*
2010	**Ranked Top 1%,** Mathematics and Physics among more than 178,000 students in Iranian nationwide university entrance examination (Konkoor).	*Tehran, Iran*
2008	**Accepted,** Iranian National Olympiad Competition in Mathematics	*Tehran, Iran*