

# Omid Karimpour

ROBOTICS RESEARCHER · NCART LAB

350 Victoria Street, Toronto, ON, M5B2K3

☎ (+1) 647 447 5915 | ✉ okarimpour@ieee.org | 🏠 http://omidkarimpour.ca | 📱 okarimpour

## Work Experience

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### Adjunct Faculty

Peterborough, ON

FLEMING COLLEGE

Jan. 2019 - Present

- Mechatronics Course Developer, design the course Materials including lectures, labs, exams & projects
- Instructor and Applied Projects Mentor of Student Capstones
  - Student performance development through lab sections in Electronics & Electricity labs
  - Utilizing Agile Project Management to meet sponsors desired expectations within scope of agreements

### Robotics Researcher

Toronto, ON

NETWORK CENTRIC APPLIED RESEARCH TEAM

Aug. 2018 - Present

- Developing and implementing a modified Pioneer 2DX Autonomous Mobile Robot using RPLidar, localization, SLAM, mapping, path planning, and obstacle avoidance
  - Comparison of Gmapping, EKF, Hector, SLAM systems
  - Premapping and SLAM in Search & Rescue Field research
  - Stair mapping, glass detection, and navigation, investigation

### Manager & Lead Advisor

Newmarket, ON

SDI MARKETING (TMS)

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

## Education

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### Ryerson University

Toronto, ON

MASTER OF ENGINEERING IN ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT

Sep. 2016 - Aug. 2019

- **Deep Learning Project on DNN and CNN**
  - Building a L-layered Neural Network using Vectorization, different Regularization, multi classification and etc
  - Utilized various optimization techniques such as Adam, RMSprop, and Momentum optimization.
  - Regularization, Dropout, and cut off
  - Built and Applied Convolutional Neural Network such as eNet-5, AlexNet, VGG-16 on several data sets with Object localization, Landmark Detection, Object Detection
- **Overlay Image Project using OpenCV**
  - Utilized Amazon EC2, Lambda Function and S3 Storage services for Continuous Deployment
  - Included the continuous Integration using Travis and GitHub for new versions of the code and a complete instruction
- **Digit recognition using prediction models, 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
  - Designed and implemented a ProBee ZE10 Starter using ARM Cortex M3
  - Sigma-Delta AD Converters analysis, the highway traffic measurement analysis using GPS mobile devices

## Teaching Experience

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2019	<b>Advanced Operating Systems</b> , Adjunct Faculty	<i>Fleming College</i>
2019	<b>Electronics</b> , Adjunct Faculty	<i>Fleming College</i>
2019	<b>Electrical</b> , Adjunct Faculty	<i>Fleming College</i>
2019	<b>Applied Project</b> , Adjunct Faculty	<i>Fleming College</i>
2019	<b>Human Robot Interaction</b> , Graduate Assistant	<i>Ryerson University</i>
2015	<b>Physics</b> , Teacher	<i>Radfar Institute</i>
2014	<b>Advanced Math</b> , Teacher	<i>Radfar Institute</i>

## Academy Membership

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### 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

*Embedded 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

*Architectural 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

## Projects

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2019	<b>Control of Mobile Robots</b> , Behavioral Control of Mobile Robot	<i>Coursera</i>
2019	<b>Neural Networks and Deep Learning</b> , L-Layer Neural Networks and Logistic Regression	<i>Coursera</i>
2019	<b>Convolutional Neural Networks</b> , Build & apply a convolutional neural network, including recent variations	<i>Coursera</i>
2018	<b>Computer Vision</b> , Implementing different CV algorithms on OpenCV	<i>Udacity</i>
2017	<b>Machine Learning</b> , Implementing different ML algorithms on MATLAB	<i>Coursera</i>
2017	<b>Image and Video Processing</b> , Implementing Image and Video processing methods on OpenCV	<i>Coursera</i>
2015	<b>Digital Control</b> , Implementing a current source controlling with PID using ARM	<i>S. Beheshti Univ.</i>
2013	<b>Industrial Electronics</b> , Simulating different kinds of convertes(buck, boost, buck- boost) with MATLAB	<i>S. Beheshti Univ.</i>
2012	<b>Electronics II</b> , Designing, Simulating and Implementing a High gain Amplifier with low noise	<i>S. Beheshti Univ.</i>

## Honors & Awards

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

## Skills

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<b>Proficient</b>	c/C++, ROS, OpenCV, Python, MATLAB, LaTeX
<b>Intermediate</b>	CI/CD(Travis), HTML, CSS, iOS, AWS, ARM, AVR, VHDL, FPGA, H-Spice, P-Spice
<b>Familiar</b>	Python, JS, php, Verilog

*References available upon request*