

# Payam Nikdel

Research assistant at Autonomy lab  
Simon Fraser University

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<http://payamn.github.io>

## Education

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### Simon Fraser University (SFU)

*Ph.D. Computing Science*

– Supervisors: Dr. Richard Vaughan

Burnaby, Canada

*Jan 2019 - Present*

### Simon Fraser University (SFU)

*M.Sc. Computing Science*

– Supervisors: Dr. Richard Vaughan and Dr. Anoop Sarkar

– GPA: 4.17 out of 4.33

Burnaby, Canada

*Sep 2016 - Dec 2018*

### Shiraz University

*B.Sc. Computer Software Engineering*

– GPA: 17.82 out of 20; Achieved the highest GPA among all B.Sc students

Shiraz, Iran

*Sep 2010 - Feb 2015*

## Publications

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### **The Hands-Free Push-Cart: Autonomous Following in Front by Predicting User Trajectory Around Obstacles**

*Payam Nikdel, Rakesh Shrestha and Dr. Richard Vaughan*

Presented a human model for an autonomous mobile robot that follows a walking user while staying ahead of them. Used multi-modal person detection and a human-motion model that considers obstacles to predict the future path of the user. This [paper](#) is in proceeding of **ICRA 2018**. **Tools:** ROS, Stage, C++, Python, OpenCV

### **Reinforcing a Supervised Deep Network for Maximal Map Exploration**

*Payam Nikdel, Rakesh Shrestha, Faraz Shamshirdar and Dr. Richard Vaughan*

Built a hybrid network trained by a supervised algorithm to learn preliminary tasks, like obstacle avoidance, and then used Deep Reinforcement Learning to learn maximal map exploration. This work presented as a **poster** in **IROS 2017**. **Tools:** Tensorflow, Keras, ROS, Stage, Python, C++, OpenCV

## Research and Academic Projects

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### **Lip-Reading Using Dual Attention Model**

Spring, Fall 2018

Designed an audio-visual lipreading system that can translate a sequence of face images to natural language. To do so, we generated a data set containing a series of people's mouth images aligned with audio and subtitle from YouTube videos then trained a dual attention model. **Tools:** Pytorch, Python, OpenCV

### **Learning and Tracking Semantic Labels From Occupancy Grids**

Spring, Fall 2018

*Dr. Richard Vaughan*

Building an occupancy grid map during online and at the same time use a neural network (Based on ResNet34 and YOLOv2) to detect, locate and say the target classes around the robot. **Tools:** Pytorch, ROS, Stage, Python, OpenCV

### **Describe The Path Using Attention Model**

Fall 2017

*Dr. Anoop Sarkar and Dr. Richard Vaughan*

Proposed a way to help visually impaired people navigate through an unknown indoor environment. The robot provides environmental information and navigational instructions for visually impaired or blind people. It translates a sequence of laser scanner data to human readable language. **Tools:** Pytorch, ROS, Stage, Python, OpenCV

### **Daydream Ant Algorithm**

Fall 2016

*Dr. Richard Vaughan*

Presented a new approach based on SO-LOST algorithm by adding a thinking part. Daydream algorithm will reduce the path-finding time, and it will guarantee to find an optimal path. **Tools:** ROS, Stage, Python, C++

## Person Re-identification Using Point-cloud images

Fall 2016

Dr. Greg Mori

Enhanced and compared several deep-learning approaches for identifying people using 3D point cloud data. **Tools:** Tensorflow, Keras, ROS, Python, OpenCV

## Control the mouse cursor with eyes or hands

Fall 2014

Dr. Zohreh Azimifar

Controlled the mouse pointer by tracking the user's eyes or hand (two separate applications). **Tools:** C++, OpenCV

## 3D Multiplayer Game With AI

Spring 2014

Dr. Farshad Khunjush

Developed a multiplayer online first-person shooter game with AI for enemies. **Tools:** Unity3D, C#, Photon network

## Work Experience

### Researcher (Internship)

Vancouver, Canada

ScopeMedia Inc.

Jan. 2018 - Apr. 2018

- Designed a multi-person tracker using state-of-the-art techniques (OpenPose, Yolo and different trackers)

### System Developer

Tehran, Iran

Petro Gas Jahan Engineering company

May. 2015 - Jun. 2016

- Improved the company network performance tools and contributed to develop software

### Android Application and Web Development

Tehran, Iran

Cafebazaar (Iranian App Store)

Apr. 2012 - Sep. 2012

- Participated in creating the [Divar Android application](#) and the [Divar website](#) using Django

### Translator Software

Tehran, Iran

Text Processing Lab at University of Tehran

Sep. 2011 - Jan. 2012

- Participated in making an English to Persian translator using C++ language

## Technical Skills

### Programming Languages:

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|----------|-------|--------------|-------|------|
| ○ Python | ○ C   | ○ Java       | ○ C++ | ○ C# |
| ○ Matlab | ○ SQL | ○ JavaScript |       |      |

### Programming Platforms & Frameworks:

- |           |              |       |           |                                   |
|-----------|--------------|-------|-----------|-----------------------------------|
| ○ Pytorch | ○ TensorFlow | ○ ROS | ○ Keras   | ○ OpenCV                          |
| ○ OpenCL  | ○ Unity      | ○ Git | ○ Android | ○ L <sup>A</sup> T <sub>E</sub> X |

## Selected Teaching Assistants

Computing Laboratory

Fall 2016 & Fall 2017

Intro to Computing Science and Programming II

Fall 2016 & Fall 2017

Digital Design

Fall 2014 & Spring 2014

Artificial Intelligence

Spring 2014 & Fall 2013

Advanced Programming

Spring 2013 & Fall 2013

Data Structures And Algorithms

Spring 2013

## Awards, Grants & Honours

Fellowship and RA position from The Simon Fraser University

Fall 2018

Fellowship and RA position from The Simon Fraser University

Spring 2016

Fellowship and RA position from The University of Alberta and University of Victoria

Spring 2016

Ranked 1st among class of 2014, BSc Computer Engineering

Fall 2014

Awarded as the Best Undergraduate Student in Computer Engineering at Shiraz university

Spring 2014

Ranked 18th in Iranian National Computer Olympiad for university student

Spring 2014

Ranked 4th in Kashan ACM competition among all Iranian universities

Spring 2011