Payam Nikdel

Research assistant at Autonomy lab
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Education

Simon Fraser University (SFU) — Burnaby, Canada
Ph.D. Computing Science — *Jan 2019 - Present*

- Supervisors: Dr. Richard Vaughan

Simon Fraser University (SFU) — Burnaby, Canada
M.Sc. Computing Science — *Sep 2016 - Dec 2018*

- Supervisors: Dr. Richard Vaughan and Dr. Anoop Sarkar
- GPA: 4.17 out of 4.33

Shiraz University — Shiraz, Iran
B.Sc. Computer Software Engineering — *Sep 2010 - Feb 2015*

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

Publications

Relational Graph Learning for Crowd Navigation
Changan Chen, Sha Hu, Payam Nikdel, Greg Mori, Manolis Savva — *Submitted to ICRA 2020*
Present a relational graph learning approach for robotic crowd navigation using model-based deep reinforcement learning that plans actions by looking into the future. **Tools:** Pytorch, ROS, Stage, Python, OpenCV

Recognizing and Tracking High-Level Navigation Features of Occupancy Grid Maps
Payam Nikdel and Richard Vaughan — *Submitted to ICRA 2020*
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

The Hands-Free Push-Cart: Autonomous Following in Front by Predicting User Trajectory Around Obstacles
Payam Nikdel, Rakesh Shrestha and 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 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

Selected Research and Academic Projects

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 mouse images aligned with audio and subtitle from YouTube videos then trained a dual attention model. **Tools:** Pytorch, 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

Research Scientist Vancouver, Canada

Advanced Intelligent Systems Inc. *April. 2019 - Present*

– Designing robotic solutions to solve Real-World problems (ROS, C++, Python, OpenCV)

Research Scientist (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 & Jahanpars Engineering company *Jul. 2015 - Aug. 2016*

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

Technical Skills

Programming Languages:

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

Programming Platforms & Frameworks:

- Pytorch
- TensorFlow
- ROS
- Keras
- OpenCV
- OpenCL
- Unity
- Git
- Android
- LaTeX

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	Spring 2016 & Fall 2018
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