ALI JAHANI

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EXPERIENCE

Research & Teaching Assistant Sep 2016 - Present
University of Alberta, Edmonton, AB

- Used **LiDAR** (as supervised) and **stereo** images (as unsupervised) to improve state-of-the-art single image depth estimation accuracy by ~3%
- Applied **conditional GANs** on semi-supervised monocular depth estimation framework
- Researched on **3D reconstructions** of an environment using **SLAM** for polarized cameras
- Integrated deep learning depth estimation with the current state of the art of SLAM to recover scale and improve accuracy and robustness
- Taught *Introduction to Computing Science* to non-computer science students
- *Technologies: Python, Tensorflow, Pytorch, OpenCV, ROS*

3D Game Developer Intern Nov 2017 - Sep 2018
vrCAVE - Edmonton, AB

- Implemented a **rule-based AI** and automated/manual in-game hint system in multiplayer virtual reality escape room games
- Used **agile** methodology
- Pitched and implemented **new successful innovative ideas,** e.g. destructible meshes
- Performed various profiling and optimizations to reach 90 fps
- Created wiki manual documentation for customers
- *Technologies: Git, HTC VIVE, Unreal Engine 4*

EDUCATION

MSc, Computer Science (GPA: 3.9/4) Sep 2016 - Present
University of Alberta, Edmonton, AB

Relevant Coursework: **Deep Learning**, **Machine Learning**, **Computer Vision**, Computer Graphics, Robotics
*Thesis: **Semi-Supervised Single Image Depth Estimation** Using Deep Neural Network* *[Source code][Demo]*

BSc, Electrical Engineering (GPA: 3.1/4) 2011 - 2016
University of Tehran, Tehran

Relevant Coursework: Advanced Programming, Linear Algebra, Engineering Probabilities and Statistics
Thesis: Real-time Video Stabilization and Mosaicing *[Source code][Demo]*

PUBLICATIONS

- *Semi-Supervised Monocular Depth Estimation with Left-Right Consistency Using Deep Neural Network*
  A Jahani**,** SY Loo, and H Zhang (Submitted to IROS 2019) *[PDF] [source code] [Demo]*

- *CNN-SVO: Improving the Mapping in Semi-Direct Visual Odometry Using Single-Image Depth Prediction*
  SY Loo**,** A Jahani, S Mashohor, SH Tang, and H Zhang (ICRA 2019) *[PDF] [Source code] [Demo]*

- *Real-time video stabilization and mosaicking for monitoring and surveillance*
  A Jahani, H Moradi (ICROM 2016) *[PDF] [source code] [Demo]*

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SELECTED PROJECTS

Crop Growth Stage Classification *[blog] [Demo]* **Finalist Group** @ATB DATATHON, Edmonton (2019)

- Developed a real-time deep neural network to classify the growth stages of the crop to help farmers
- Performed a live demo on the stage
- Finalist group (top 6 out of 42)
- *Technologies: Python, Tensorflow, Keras, Scikit-learn, OpenCV*

2DGrid Mapping and Navigation using Monocular Camera *[Demo]* Robotics Course (2017)

- Improved state of the art ORBSLAM 2 framework for navigation tasks
- *Technologies: C++, ROS*

Direct Sparse Odometry vs ORB-SLAM *[Demo]* Computer Vision Course (2017)

- Compared direct and indirect methods in Simultaneous Localization and mapping algorithms
- *Technologies: C++, ROS*

Image Segmentation of Choroideremia Disease *[PDF]* Machine Learning Course (2016)

- Implemented ML algorithms such as **SVM, Random Forest, UNet** for pixel-wise classification of retina images
- Due to small dataset size, achieved good results by using bagging methods.
- *Technologies: Python, MATLAB, Caffe*

SKILLS

Programming: Python (3+ years), C++ & MATLAB (Proficient)
ML/DL Tools: Tensorflow, Keras, Pytorch, Scikit-learn
Database: MySQL, Pandas
Robotics and Computer Vision: ROS, OpenCV, Unreal Engine
Optimization and Numerical Analysis: Scipy, Numpy, g2o
Visualization: PowerBI, Plotly, Matplotlib, OpenGL
Others: Git, Docker

CERTIFICATES

Deep Learning Specialization (deeplearning.ai on Coursera) Mar 2019

- Neural Networks and Deep Learning
- Improving Deep Neural Networks: Hyperparameter tuning, Regularization and Optimization
- Structuring Machine Learning Projects
- Convolutional Neural Networks
- Sequence Models

VOLUNTARY

- ICRA2019, IROS2017, and AI-GI-CRV2017 conferences
- Leader of convocation video clips teams