

Harsh Agarwal

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EDUCATION

- **Carnegie Mellon University** Pittsburgh, PA
Master of Science in Robotics Aug. 2018 – Aug. 2020
- **Indian Institute of Technology - BHU** Varanasi, India
Bachelor of Technology in Electrical Engineering; CGPA: 9.32/10.0 July. 2014 – May. 2018

EXPERIENCE

- **Australian Centre for Robotic Vision** Adelaide, Australia
Research Intern under Prof. Ian Reid May 2017 - July 2017
 - **Unsupervised Learning of Monocular Depth Estimation and Visual Odometry with Deep Feature Reconstruction:** Developed the depth estimation network and layers of a Spatial Transformer Network, that is used for Unsupervised Estimation of pose given the depth map. [\[Project Page\]](#)[\[Code\]](#)
- **Video Analytics Lab, Indian Institute of Science** Bangalore, India
Research Intern under Prof. R. Venkatesh Babu May 2016 - July 2016
 - **Sematic Sketch Segmentation and Annotation using CNN's:** Inspected a variant of VGG-16 and fine tuned it to segment sketches. Also fabricated a post processing method to refine the results. Designed a small unity based application for animating the segmented sketches so obtained. [\[Project Page\]](#)[\[Code\]](#)
- **Cognitive Assistance Lab, Carnegie Mellon University** Pittsburgh, PA
Research Project under Kris Kitani July 2018 - Present
 - **NavCog - Pose estimation on iPhone:** R&D on approaches that can be used for robust and efficient pose estimation using a combination of sensors like IMU, BLE, and Camera, which can be deployed on a mobile device.

PROJECTS

- **im2latex:** Engineered a ConvNet that could convert the image of a mathematical formula into it's corresponding latex expression based on the work of Gehring et al.¹
- **DL in Communication:** Performed Link Adaptation using RL and designed a Neural Network for MIMO detection.
- **DesignAR:** Created an AR based mobile application to augment objects on phone using ROS and Unity. [\[Video\]](#)[\[Doc\]](#)
- **Virtually True:** Innovated a virtual reality game based on Kinect using Hand Gesture Recognition and AR. [\[Code\]](#)

PUBLICATIONS AND PROJECT LINKS

- **Unsupervised Learning of Monocular Depth Estimation and Visual Odometry with Deep Feature Reconstruction** by Huangying Zhan, Ravi Garg, Chamara Saroj Weerasekera, Kejie Li, **Harsh Agarwal**, Ian Reid, accepted at **CVPR 2018** [\[Paper\]](#)

PROGRAMMING SKILLS

- **Languages:** C++, Python, MATLAB, C
- **Frameworks:** *Proficient:* Caffe, Keras *Prior Experience:* Tensorflow, CUDA, ROS

EXTRA-CURRICULAR ACTIVITIES AND ACHIEVEMENTS

- Created a Large Short Film [Stopping by Woods](#) as a part of the [Film and Media Council](#) at IIT BHU.
- Pioneered a club **DLisLife** to promulgate and work on recent advancements in Machine Learning.
- Qualified for the *pre-final* round of the prestigious **Rhodes Scholarship**
- Co-partnered **Handy Presents** to develop a business strategy for it's expansion.
- **Imagine Cup 2016 Big Idea Pitch - DesignAR** acknowledged as top 10 ideas in the world.
- **KVPY Scholar 2014** and **INSPIRE, 2014** Awardee

¹[Convolutional Sequence to Sequence Learning](#)