Parv K. Parkhiya

pparkhiy@andrew.cmu.edu ♦ (412) 773-1610 ♦ linkedin.com/in/parvparkhiya ♦ parvparkhiya.github.io

EDUCATION

Carnegie Mellon University – School of Computer Science Pittsburgh, PA
Master of Science, Robotic Systems Development May 2020

International Institute of Information Technology (IIIT) Hyderabad, India
Bachelor of Technology (Honours), Electronics and Communication | ***GPA: 9.91/10*** August 2014 - May 2018

- Teaching Assistant - Digital Logic and Processor (1 semester), Basic Electronics Circuits (2 semesters)
    - Conducted weekly tutorial class, assignment/exam evaluation
- Selected Coursework – Computer Vision, Mobile Robotics, Statistical Methods in AI, Linear Control System

RESEARCH EXPERIENCE

Robotics Research Center, International Institute of Information Technology Hyderabad, India
Honours Student under Dr K Madhava Krishna June 2016 - May 2018

- Conceptualized and implemented (C++) monocular Object-oriented Simultaneous Localization and Mapping **(SLAM)** using deep Convolutional Neural Network (CNN) and pose graph optimization
- Demonstrated improvement in object localization error by factor of **1.85** and trajectory drift error by factor of **4.2** over existing state of the art SLAM methods in 5 challenging scenarios on **quadcopter** in indoor environment
- Demonstrated promising results in specific case where traditional monocular SLAM breaks or fails to initialize
- **[Publication]: (IEEE ICRA 2018, Brisbane)** – "Constructing Category-Specific Models for Monocular Object SLAM"

PROJECTS

IIIT, Hyderabad

Doubly Convolutional Neural Network (DCNN) January 2017 - May 2017

- Implemented DCNN (TensorFlow) where parameter sharing across filters decreased total parameters by factor of **4.7** resulting in better generalization of CNN for supervised learning
- Demonstrated 10% increment in accuracy compare to traditional CNN with same number of parameters

Lane Detection Module for Autonomous Car August 2016 - December 2016

- Engineered computationally efficient lane detection module using RANSAC based particle filter and image processing resulting in better planning and control of autonomous car
- Implemented prototype module in MATLAB followed by final module from scratch using OpenCV library in C++ and achieved **3 times** faster performance then previous module

Augmented Reality (AR) for 3D Room Decor August 2016 - December 2016

- Developed custom marker and its robust detection, pose estimation followed by Gaussian blending of rendered image with input image to create realistic augmented images

SKILLS

Programming Languages: C, C++, Verilog, VHDL, Python
Hardware: Microcontroller (Arduino, AVR, VEX), FPGA (ZedBoard), Quadcopter (Parrot Bebop, AR)
Software: Optimizers (Ceres-Solver, GTSAM, GCO), Linux, ROS, LIBSVM, OpenCV, Gazebo, Unity, TensorFlow, MATLAB, Cadence, Xilinx Vivado

AWARDS AND ACTIVITIES

Institute Gold Medal IIIT Hyderabad, India | for graduating B. Tech class of 2018
Coordinator of Literary Club IIIT Hyderabad, India | June 2016 - May 2017