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OBJECTIVE

I aim to design and develop systems that have the potential to change the way we think, live and work. Subsequently, I am looking for a full-time position in developing Computer Vision and Machine Learning algorithms for Autonomous Robotics and IoT .

EDUCATION

• Carnegie Mellon University – Master of Science in Robotic Systems Development, SCS (CGPA – 4.07/4.00) (2015 - present)
Courses - Computer Vision, Machine Learning, Mobile Robotics, Robot Autonomy, MMC (Manipulation, Mobility, and Control), Systems Engineering, Deep Learning, Geometry based methods in Vision, Statistical Techniques in Robotics.
• PEC University of Technology – Bachelor of Engineering, Dept.of ECE – **Silver Medallist** (CGPA – 8.91/10.00) (2010 - 2014)
Courses - Neural Networks, Mechatronics, Object Oriented Programming, Operating Systems, Embedded System, Computer Architecture, Advanced Microprocessors, Digital Signal Processing, Virtual Instrumentation, VLSI Design, Data Communication.

PROJECTS/WORK EXPERIENCE

♠ **FAST-like keypoint detector for an Always-on Vision Sensor**
Interim Engineering Intern – Qualcomm Research Center, San Diego (May 2016 - August 2016)
Designed and implemented an algorithm for detecting FAST-like repeatable keypoints in integral images using a cascaded boosted classifier with MB-LBP features for a hardware acceleration which was developed for face detection.
• Project Reference – www.qualcomm.com/invention/research/projects/research-incubator

♠ **Automatic Cameraman for Dynamic Video Acquisition of Football Match**
Research Intern – IRSEEM, France (January 2013 - July 2013)
Designed a system for dynamic video acquisition of football match. Raw frames from static cameras were processed to track the position of players in the field. The tracking data was then used to control an array of Pan Tilt Zoom cameras.
• Research Paper won **Best Paper Award** at *2013 IEEE Second International Conference on Image Information Processing.*

♠ **Autonomous Boat** https://www.youtube.com/watch?v=N5CHFYJR25c
MRSD Project – NREC-CMU, USA (September 2015 - May 2016)
Developed algorithms to filter radar data – segment pylons, shores and obstacles in the 2D radar data, optimal cost inflation of static obstacles and a simulator from scratch to test the algorithms by using simulated static and dynamic obstacles.
• Project Webpage – mrsdprojects.ri.cmu.edu/2015teamb

♠ **Project Andy** https://youtu.be/dczJRN70csk
Robot Autonomy Course Project – NREC-CMU, USA (January 2016 - May 2016)
Worked in ARM-S lab on adding new capability to recognize color and new manipulation actions to a robotic manipulator.

♠ **Monocular and Stereo Visual Odometry (VO)** https://youtu.be/lzOOHqTMawU
Computer Vision Course Project – NREC-CMU, USA (April 2016 - May 2016)
Worked on implementing Monocular VO from scratch and Stereo VO using libviso2 to localize a car using KITTI dataset.

♠ **Computer Vision and Machine Learning Projects**
Open-Source Projects (August 2014 - present)
• Object Detector Framework using HOG and SVM using OpenCV and sklearn https://youtu.be/SPXocFBjr70
• Interactive Object Tracking using Dlib and OpenCV https://youtu.be/VVo-5kVmDEY
• Image Classification framework based on Bag of Words approach https://youtu.be/Ba_4wOpbJJM
• Face Recognition using OpenCV https://youtu.be/Ba_4wOpbJJM
• Handwritten Digit Recognition using scikit-learn and OpenCV https://youtu.be/ur6JY2Hl-MM
• Texture Matching using Local Binary Patterns (LBP) using scikit-image https://youtu.be/lIgqjRe88_s
The source code of all the above projects is available at github.com/bikz05.

♠ **Object Transportation Task by a Mobile Robot following a Human** https://youtu.be/cztFg5TCGaw
Final Year Project – PEC University of Technology (January 2014 - May 2014)
Build a robot which could track and follow the path of a human using Microsoft Kinect and carry a load from source to destination by using a gripping mechanism.
• Awarded **2**nd **prize** in PEC Open House 2014 and was presented at **Intel Asia Innovation Summit 2014**.

♠ **Robotics Competitions** *Student Member – PEC Robotics Society, India* (August 2010 - May 2014)
General Secretary – PEC Robotics Society, India (August 2013 - May 2014)
Participated in a number of robotics competitions where I worked in the domains of Manipulation, Computer Vision and Path Planning. Was awarded College Color by PEC University of Technology
• 1st prize in robotics event "Ocean's Fourteen" at IIT Kanpur Technical Fest in 2012. https://youtu.be/St5k1oojs20
• 1st prize in robotics event "I-Strike" at BITS Pilani Technical Fest in 2012. https://youtu.be/VHWCaINo5LE
• 2nd prize in Industrial IP event "Packman" at IIT Chennai Technical Fest in 2011. https://youtu.be/ztRQVsm4nmI

TECHNICAL SKILLS

• Programming Languages – Python, C++, Matlab, Java, C
• Libraries and Miscellaneous Softwares – ROS, Gazebo, OpenRAVE, OpenCV, scikit-learn, OpenNI, vim, git, numpy, LaTeX
• Hardware Skills – 8051, AVR, PIC, Arduino, 8085/86, MS Kinect, PTZ Cameras