Bonn , Germany

ANIRUDH
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Employment

Student Research Assistant | **Fraunhofer FKIE, Wachtberg - Germany** | **June 2019 - Present**
Cognitive Mobile Systems

- Research ways to integrate Unity with ROS for robot visualization. (C# , python)
- Create a pipeline to implement teleoperation of robot arm using Virtual Reality in Unity and ROS. (Unity, C++)

Senior Software Engineer | **Cognitive Machines , Bangalore - India** | **Feb 2016 - May 2018**
(https://www.cognitivemachines.in/)

- Offline Drone photography based vehicle counting system for parking lots using an SVM based object finder with over 90% accuracy. Special statistical and geometrical techniques used to find the vehicles at different orientations. (*C++ , Qt , OpenCV , DLib*)
- 3-Month Project on Augmented Reality application with custom algorithms based on Natural Feature Tracking for both Android and iOS. (*Basic Java/NDK Android , Basic Swift iOS , OpenCV*)
- In-house image processing framework built on process block architecture. The framework was designed to be modular enough to be used with all the projects requiring Computer Vision. (*C++ , OpenCV*)
- Internal tools for image annotation and augmentation using Qt-Framework. (*Qt , C++*)

Education

Bonn, Germany | **Bonn-Rhein-Sieg University of Applied Sciences** | **Sept 2018 - Present**

- Masters in Science (M.Sc) , Autonomous Systems (**http://www.b-it-center.de/b-it-programmes/msc-in-autonomous-systems/description/**)
- Coursework: Computer Vision ; Neural Network ; Robot Perception ; Advanced Software Technologies ; Mathematics for Robotics ; Introduction/Advanced Scientific Working ; Artificial Intelligence ;

Mysore, India | **National Institute of Engineering** | **Aug 2011 - June 2015**

- Bachelor of Engineering (B.E), Mechanical Engineering
- Coursework: Dynamics of Machines ; Kinematics of Machines ; Heat Transfer ; Advance Thermodynamics ;

Technical Experience

Projects

- *Qt Based Image Annotation Tool* : Annotation tool for creating training images for machine learning.
- *AR-Toolkit 5 and OpenCV based Natural Feature Tracking application* : Integration of AR-Toolkit C++ with OpenCV and was able to convert output Pose Matrix to required format. (**https://github.com/njanirudh/OpenCV-ARTK**)

- *Python AR Application* : OpenGL and OpenCV based AR app with JSON based process block architecture. (**https://github.com/njanirudh/Augmented-Reality**)
- *Robot localization and tracking* using computer vision and aruco markers. (**https://github.com/njanirudh/robot_tracking**)
- Object detection for counting edible nuts of 3 classes in a video. (**https://github.com/njanirudh/Nut-Detector**)
- *Scanned image auto-cropper* : Cropping individual images from multiple scanned photos. (**https://github.com/njanirudh/img_scan_assistant**)

Research

- ***Research and Development*** on "***Manipulation of Handles in Domestic Environments***"
  - Involves the design of the general pipeline required for the above task.
  - Literature search on the possible methods that have been used for solving the subtask of Perception and Manipulation.
  - Weighted Maximum Likelihood Estimation is used for learning the best grasping position.

  (**https://github.com/njanirudh/Research-Development-HBRS**)

- Research on the topic "**Robot Learning**" and summary for top relevant papers. **(**http://www.shortscience.org/user?name=anirudhnj**)**

Additional Experiences and Awards

- **First Prize** for presentation on topic **"Wing in Ground(WIG) effect and its practical applications"** during Undergraduation
- **SAE-India :** Volunteered for organizing one of the biggest Automotive fest in Mysore "Automotive Technology Fest - 2014".

Technology Stack

Programming Languages

- C++
- Python
- Java Android and NDK (Basic experience)

Frameworks and Tools

- OpenCV
- Tensorflow 1.14 (Object Detection API)
- ROS
- Qt (C++, Python)
- Git Version control system

Communication Skills

- English (Business Proficiency)
- German (Basic)
- Hindi
- Kannada