Yogesh Parnandi

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EDUCATION

Masters of Science - Robotics and Autonomous Systems   Dec 2023 (Expected)
Arizona State University, Tempe, AZ

Technology Entrepreneurship & Product Design   June 2016
Indian School of Business, Hyderabad, India

Bachelor of Technology - Electronics and Communication   June 2016
MLRIT&M, Hyderabad, India

TECHNICAL SKILLS

Programming Languages: Python, C/C++
Tools and Libraries: ROS, Gazebo, RViz, OpenCV, PCL, SFM, Sophus, g2o, PX4, Ardupilot, RTOS, Git, Visual Studio, Arduino, Keil, Cube IDE (STM)

PROFESSIONAL EXPERIENCE

Robotics Engineer: HC Robotics, Hyderabad, India   05/2017 - 07/2022
- Engineered an Omni-directional imaging system using global shutter cameras. This system is further integrated with INS, and LiDAR systems. These systems are currently being used for utility mapping in the US
- Developed applications to collect and post process the sensor data from INS, LiDAR and Imaging Systems. The outcome of the system is a Geo-referenced 3D point cloud data and RGB panoramic images
- Developed data processing tools, for point cloud data, using techniques such as registration, re-projection, classification, and extraction to filter and generate models as per the requirements
- Implemented an ORB-SLAM2 system on the UAVs for indoor navigation, and mapping indoor environments
- Developed scripts based on SFM algorithms to analyze drone footage and produce inspection-ready 3D models of utilities, cell towers, and hydel power plants for inventory management and maintenance activities
- Worked extensively on Image descriptors, feature extraction, feature matching, and 3D reconstruction
- Attended trade shows and exhibitions for product demonstrations
- Managed and led various inter-disciplinary projects

Associate Software Engineer: Tech Mahindra, Hyderabad, India   08/2016 - 04/2017
- Developed enhancements for the Roche Diagnostics project, modified tables, and created smart forms, and reports as per the requirement defined by the business analyst.
- Worked on user management, role management, and troubleshooting security authorization problems in accordance with Segregation of Duties (SOD).
- Worked on creating various jobs in the scheduling system to reduce manual intervention and schedule background jobs in CPS(Central Process Scheduler) and SAP.

Intern: Jay Robotix, Hyderabad, India   02/2016 - 07/2016
- Embedded Systems programming - 8, 16, and 32 - bit microcontrollers
- Jay Robotix is an ed-tech startup working on ROBOX. It is a holistic experiential learning package that helps the students learn subjects better and mold them into strong positive minds. As an intern, I developed scripts to read the data from its sensors by making use of communication protocols (I2C, UART, and SPI) in C

PUBLICATIONS

- **System and method for provisioning local position using Cellular Networks**
  Indian Patent Application No.IN201641035051
  Date of publication: 13/04/2018
  The system comprises a plurality of location area codes for providing location information. The user performs the location search in the database/server and retrieves the location longitude and latitude information through GSM. The location latitude and longitude are displayed on the offline map.
- **Intelligent Video Surveillance Systems**
  Publisher: IEEE
  Conference: International Carnahan Conference on Security Technology (ICCST), 2021
  In the past decades, there has been tremendous growth in security-related issues throughout the world. With such a multifold increase in demand for security, video surveillance has become a critical research area. This paper discusses a comprehensive and systematic overview of the existing video surveillance techniques and possible enhancements.

- **Smartphone 3D Imaging for Supporting Crop Analytics**
  Supported by: The Bill and Melinda Gates Foundation
  Managed by: Tetra Tech's AGDATA Acceleration Facility
  In this project, we have used terrestrial remote sensing and 3D imaging technologies at strategically chosen locations in Odisha, India, to improve both crop yield measurement accuracy and its representativeness for the surrounding landscape. To address the challenges of efficiently collecting representative crop yield data, we developed a new, scalable crop yield measurement approach based on Dynamic Area Sampling Frames (DASF) and 3D imaging technology using the Terrestrial Laser Scanning (TLS) and the Structure from Motion (SfM) approaches.

RELEVANT PROJECTS

Aerial LiDAR system - BPC Pi Technologies   **April 2017**
- Designed an Aerial LiDAR system using Velodyne puck LiDAR and INS.
- Utilized point clouds to create Digital Elevation Models (DEM) and 3D maps for surveying
- Emphasized optimizations to expedite execution and efficient usage of computer hardware resources
- Built the application using Python and the runtime performance of the program was improved using Cython
- Sensor Stack – Velodyne puck, INS, GNSS/GPS

Unmanned Aerial Vehicle - Workshop, MLRIT   **Jan 2016**
- Developed and demonstrated the quadcopter's ability to avoid obstacles while flying along a predetermined course
- Worked on scripts for feature detection and tracking, multi-view geometry, and SLAM
- Performed sensor fusion using multiple sensor modalities (GNSS, inertial sensors, cameras, LIDAR, radar) to improve perception and/or localization
- Sensor Stack - Intel Real sense D435i, LiDAR Lite v3, IMU, GNSS

Unmanned Ground Vehicle - Academic Project, MLRIT   **Aug 2015**
- Built a ROS-based autonomous system for campus surveillance and visualized a local map of the campus
- Enabled the target-based autonomous navigation system by marking the target locations as waypoints on the map.
- Worked on mapping and localizing the robot in a highly cluttered environment and implemented path planning for navigation
- Captured the depth information with the Intel Realsense D435i and built a 2D occupancy grid map using ROS
- Computed the robot's pose using the ROS navigation stack with data from wheel encoders and VO data from the Realsense camera