

Suhail Pallath Sulaiman



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EDUCATION

Northwestern University, Evanston
— *MS Robotics*

DEC 2018

Mahatma Gandhi University, Kottayam
— *BTech Mechanical*

AUG 2014

EXPERIENCE

Here Technologies , Chicago,USA JUN 2018 - SEP 2018
— *Computer vision Intern - 3D vision- Highly Automated Driving unit*

- Worked on segmentation of 3D lidar data using 2D deep learning predictions to segment roadside barriers like guardrails, jersey barriers, curbs etc
- From the segmented lidar data of traffic lights, extracted bounding box, orientation, count, position & dimension of individual lights.
- Generated depth images using the lidar data and the perspective images, to improve the performance of 2D deep learning predictions.
- Participated in agile scrum ceremonies like daily standup, sprint planning, sprint review and retrospective, and in design discussions & code reviews

Infosys Technologies Ltd, Mysore,India NOV 2014 - AUG 2017
— *Senior Systems Engineer - The Boeing unit*

- Developed several applications focussing on automation of 3D CAD model generation of aircraft components and, automated comparison of 2D images and sketches with 3D CAD models, mainly using C++ and C#.
- Involved leading teams, meeting milestones, interacting with clients, testing and documentation.
- Clear understanding of SDLC , Agile & Scrum

SKILLS

Programming: C++ , Python, C, C#, Matlab, VB.Net, Typescript, HTML/CSS, Mathematica

Packages & Libraries: PCL, OpenCV, Boost, ROS, Gazebo, Tensorflow, CAA, Open3D, RViz, Angular

Version Control: Git, TFS, SVN

Issue tracking: JIRA

IDE: QtCreator, PyCharm, Visual Studio, Sublime, Visual Studio Code, Eclipse.

Database: SQL, Firebase

Hardware: Baxter, Sawyer, depth cameras, IMU, raspberry Pi, force sensors, Laser cutting, microcontrollers, 3D Printing.

OS: Linux, Windows

Design Softwares: Catia, Creo, Solidworks, AutoCAD

REFERENCES

Dr. Todd Murphey

Director - MS in Robotics

Professor in Mechanical Engineering
Northwestern University

t-murphey@northwestern.edu

Dr. Jarvis Schultz

Asst. Director - MS in Robotics

Lecturer in Mechanical Engineering
Northwestern University

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RELEVANT ACADEMIC PROJECTS

Synthetic Dataset generation for Machine Learning

[Demo](#)

— Northwestern University Winter Project

The goal of this project was to generate a huge dataset of fake simulated images of any object scanned, so that machine learning models could be trained on a variety of data to make them more robust. The project package performs following tasks

- Collect point clouds of an object using RGBD camera from different angles.
- Stitch the point clouds together to create a 3D point cloud of the object scanned.
- Create a 3d model from the 3d point cloud using surface reconstruction
- Generate fake images of the object by simulating different lighting conditions, pose, scale etc of the object using Gazebo.
- Train a Tensorflow object detection model on the images generated.
- Detect the object and its location in a camera feed after training.
- Skills: PCL, Open3D, Gazebo, ROS, Python, C++, Tensorflow, OpenCV

Cat Excavator bucket tooth detection

[Demo](#)

The goal of this project was to train a machine learning model that identifies and locates each tooth on an excavator bucket.

- Used tensorflow object detection API to create an object detection model.
- Trained the model on several images of excavator buckets and tooth.
- The model was able to locate and identify each tooth on excavator buckets.
- Skills: Python, Tensorflow, OpenCv.

Baxter Robot Constrained Motion

[Demo](#)

The goal of this project was to have Baxter locate and handle containers having liquid in it. The project performs the following.

- Sweep the table to locate the container using the camera and IR sensor on the limb of Baxter
- Once the container is located, baxter will grab it and then start tracking the right hand of the person standing in front of him using skeleton tracker on 3D data from the kinect depth camera mounted on the head of baxter.
- Then baxter will keep following the right hand of the person with the container until the cup is handed over to the user. Once the user pulls the cup baxter will sense the pull and release the gripper and the hand will go back to home position
- Skills: Python, ROS, OpenCv, Git.