PERCIV

Progress Review - 02/16/2024

NISSAN

THE ROBOTICS INSTITUTE

Carnegie Mellon University

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PROGRESS

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FUTURE PLAN

Progress

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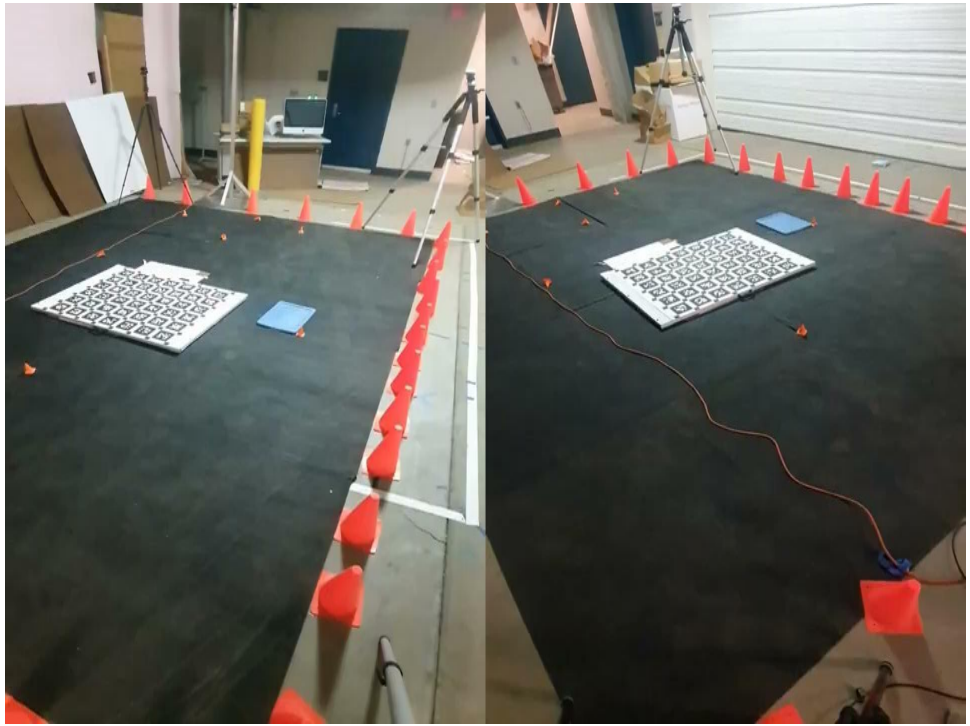
Controls: RC Car control with Controller

Perception: Multi-Camera feed stitching

Track Setup

Controls: RC Car Control With Controller

Perception: Multi-Camera Feed



Perception: Multi-Camera Feed Stitching

Challenges

- Risk Management
- Issue Log

Risk Management

Risk ID	Risk Subsystem	Description	Likelihood	Consequences	Mitigation
R-1	Controls	Low speed operation of car	Medium	High	Research for best possible option in both HW and SW
R-2	Perception	BEV perspective artifacts	High	High	Use AprilTags or other Fiducial Markers for real time correction
R-3	Logistics	Procurement Delays	Low	Medium	Order early. Look for locally available products and faster shipping options
R-4	Perception	Calibration issues	Low	High	Use sturdy tripods. Setup warning signs to not move equipment
R-5	Logistics	Faulty parts/breakdown of parts/ loss of parts	Medium	High	Order spare parts keeping in mind the fiscal impacts

Issue Log

Issue ID	Issue Subsystem	Date Created	Raised By	Owner	Description	Priority	Severity
I-1	Hardware	01/16/2024	Sashank	Sashank Khush	Tripod Heads not available	Medium	Low
I-2	Perception	01/20/2024	Shahram	Sashank Dhruv	Compute PC not sufficient	High	High
I-3	Perception	01/30/2024	Sivvani	Dhruv Khush Sashank	Need to make environment feature rich	Medium	High
I-4	Logistics	02/06/2024	Sashank	Sashank Sivvani	Project area to be vacated temporarily to facilitate evacuation of lab	Medium	High
I-5	Controls	02/10/2024	Khush	Dhruv Shahram	ROS1 to ROS2 migration	Medium	Medium
I-6	Controls	02/10/2024	Dhruv	Dhruv Khush Sashank	Driver issues with controller in Jetson	Medium	Medium

Issue Log

Issue ID	Solution	Solved On
I-1	Order tripod heads	01/24/2024
I-2	Talk to Prof. Dolan, TA's and request for a better PC	01/31/2024
I-3	Add lanes, typical objects(stop signs, trash bins etc.)	----
I-4	Talk to Prof.Dolan, TA's. Hold off on finalizing environment	----
I-5	Change ROS 1 code	----
I-6	ROS on a network	02/13/2024

Future Plan

- Perception
- Controls

Future Plan

- Perception

1. Camera stream time synchronization
2. BEV Generation(IPM)

- Controls

1. Predict car trajectories using odometry data

Spring’24 Milestones

Work Package	Activity	Date
Hardware	Complete Hardware Setup and Testing	01-25-24
Sensing Modalities	Setup and test Depth and RGB cameras	02-05-24
UIUX	Have barebone 2D map and safety alerts	03-08-24
Perception	Accurate rendition of synchronized RGB frame BEV	03-05-24
Integration	Complete System Integration Activities and prepare for testing	03-30-24