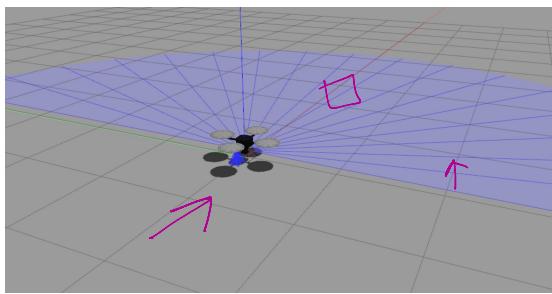
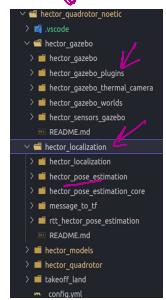


Course Walkthrough

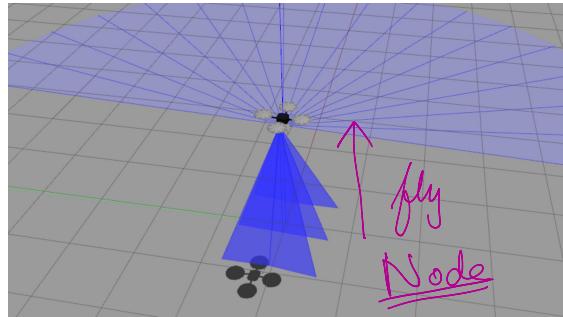
Saturday, 20 November 2021 7:43 AM



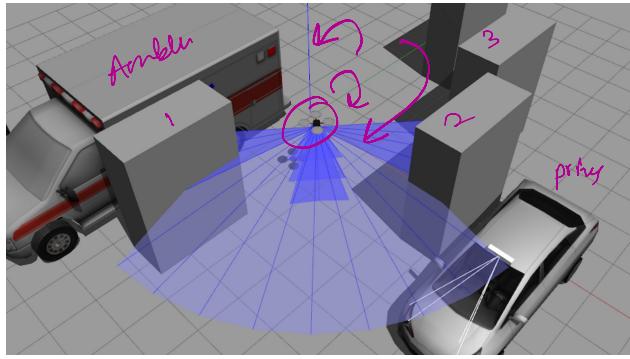
Obtaining the Drone Package



Floating in Air with Sonar Sensor

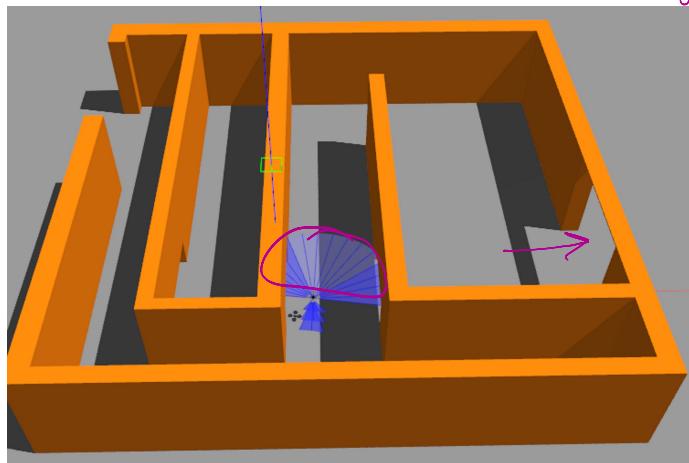


Obstacle Avoiding using Lidar



Maze Solving

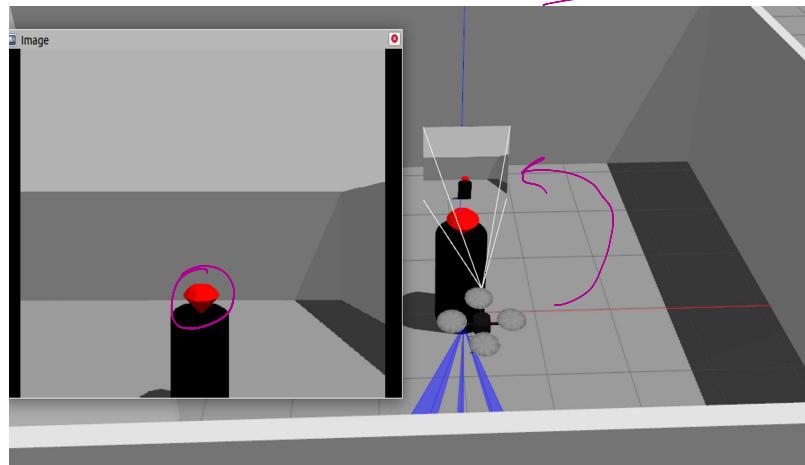
→ 8DOF → gazebo.
→ Nodes → Lidar Logic



→ Camera

Securing the Diamond

OpenCV



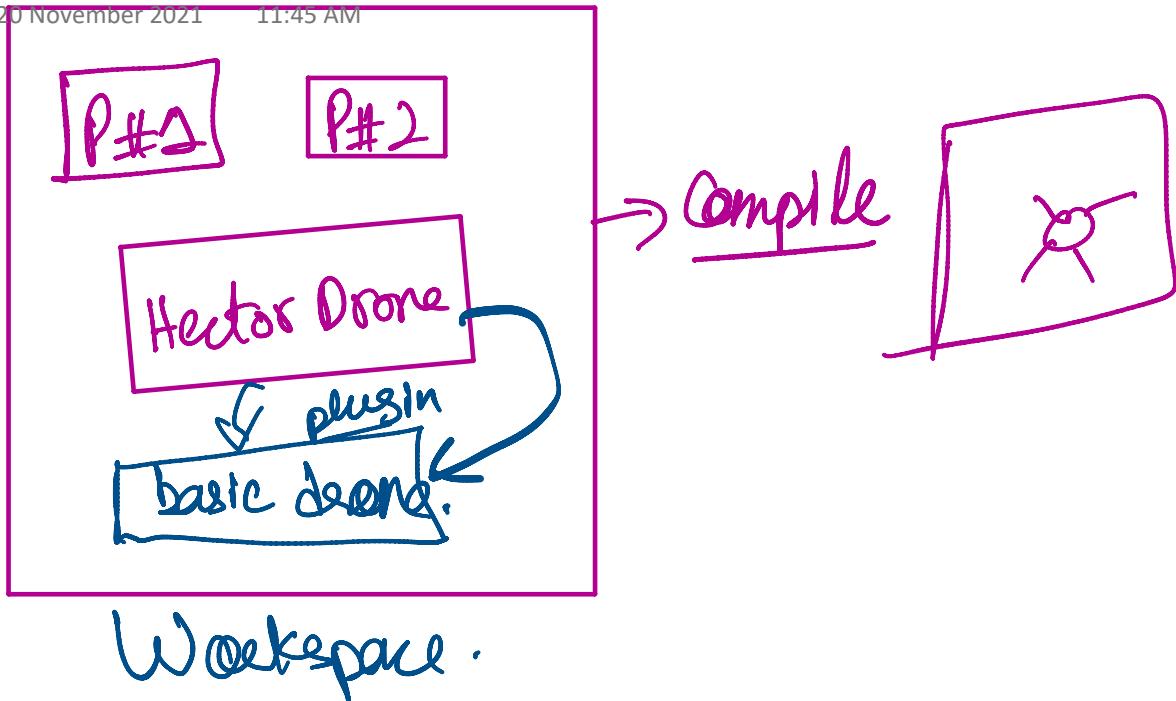
:

Section # 1 : Hector Drone

Saturday, 20 November 2021 7:45 AM

Package creation and package obtaining

Saturday, 20 November 2021 11:45 AM



Package Exploration

Saturday, 20 November 2021 7:49 AM

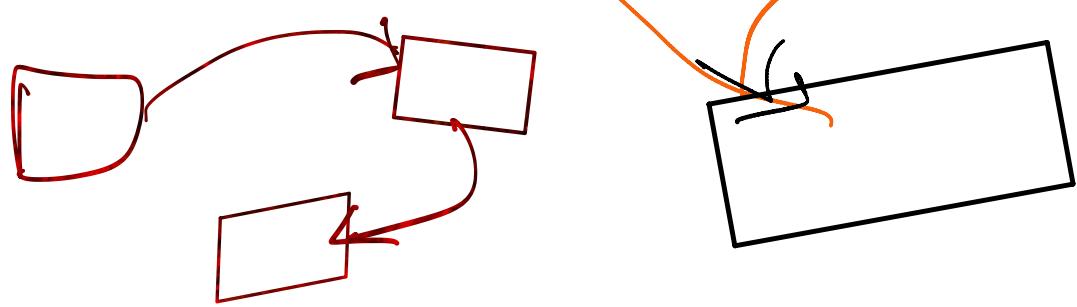
Sensors available



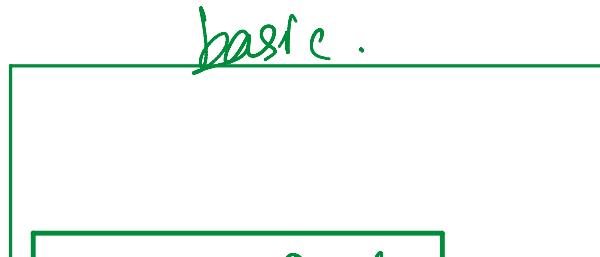
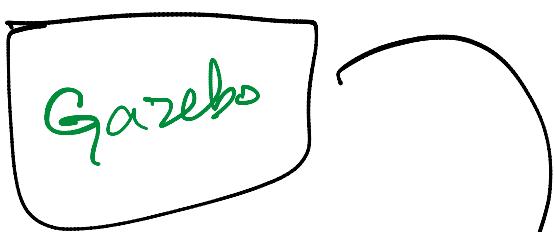
```
└── hector_models
    ├── hector_components_description
    ├── hector_models
    └── hector_sensors_description
        ├── meshes
        └── urdf
            ├── asus_camera.urdf.xacro
            ├── flir_a35_camera.urdf.xacro
            ├── generic_camera.urdf.xacro
            ├── generic_stereo_camera.urdf.xacro
            ├── generic_thermal_camera.urdf.xacro
            ├── generic_zoom_camera.urdf.xacro
            └── hokuyo_utm30lx.urdf.xacro
    └── CHANGELOG.rst
    └── CMakeLists.txt
```

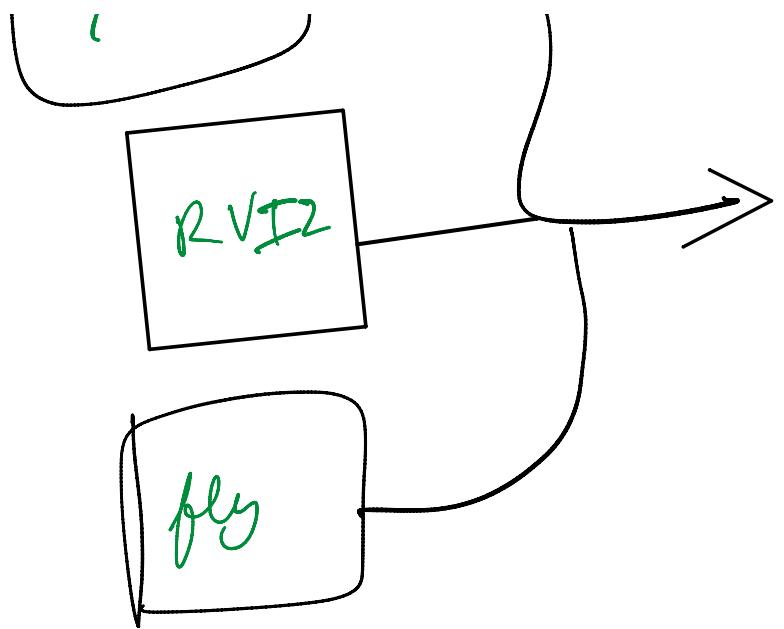
```
└── hector_components_description
    ├── meshes
    └── urdf
        ├── checkerboard.urdf.xacro
        ├── hector_multisensor_head.urdf.xacro
        ├── spinning_hokuyo_utm30lx.urdf.xacro
        ├── spinning_lidar_mount.urdf.xacro
        ├── vision_box_common_dimensions.urdf.xacro
        ├── vision_box_common_gazebo.xacro
        ├── vision_box_common.urdf.xacro
        ├── vision_box_dimensions_hector1.urdf.xacro
        ├── vision_box_dimensions_hector2.urdf.xacro
        ├── vision_box_hector1_addons.urdf.xacro
        └── vision_box_hector2_addons.urdf.xacro
    └── CHANGELOG.rst
```

```
└── hector_quadrotor
    ├── hector_quadrotor
    ├── hector_quadrotor_controller
    ├── hector_quadrotor_controller_gazebo
    └── hector_quadrotor_demo
    ├── hector_quadrotor_description
    ├── hector_quadrotor_gazebo
    ├── hector_quadrotor_gazebo_plugins
    ├── hector_quadrotor_model
    ├── hector_quadrotor_pose_estimation
    ├── hector_quadrotor_teleop
    ├── hector_uav_msgs
    └── .gitignore
    └── hector_quadrotor_rosinstall
```



Bringing into our Launch File

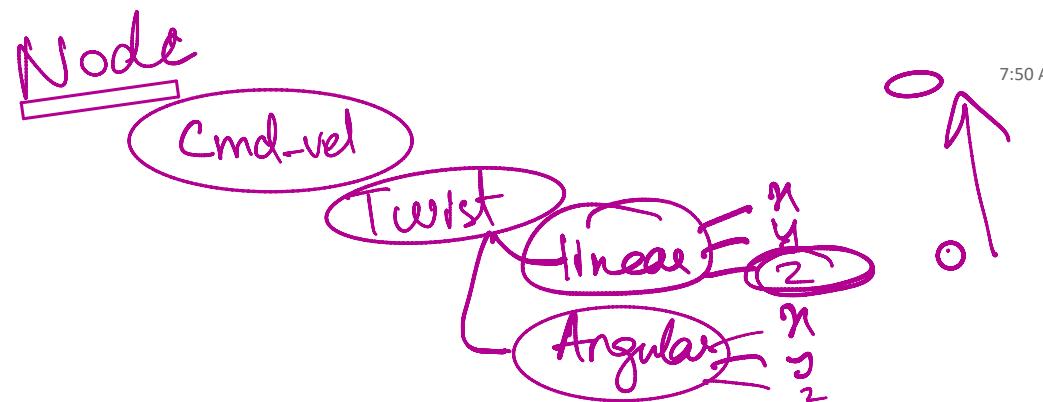
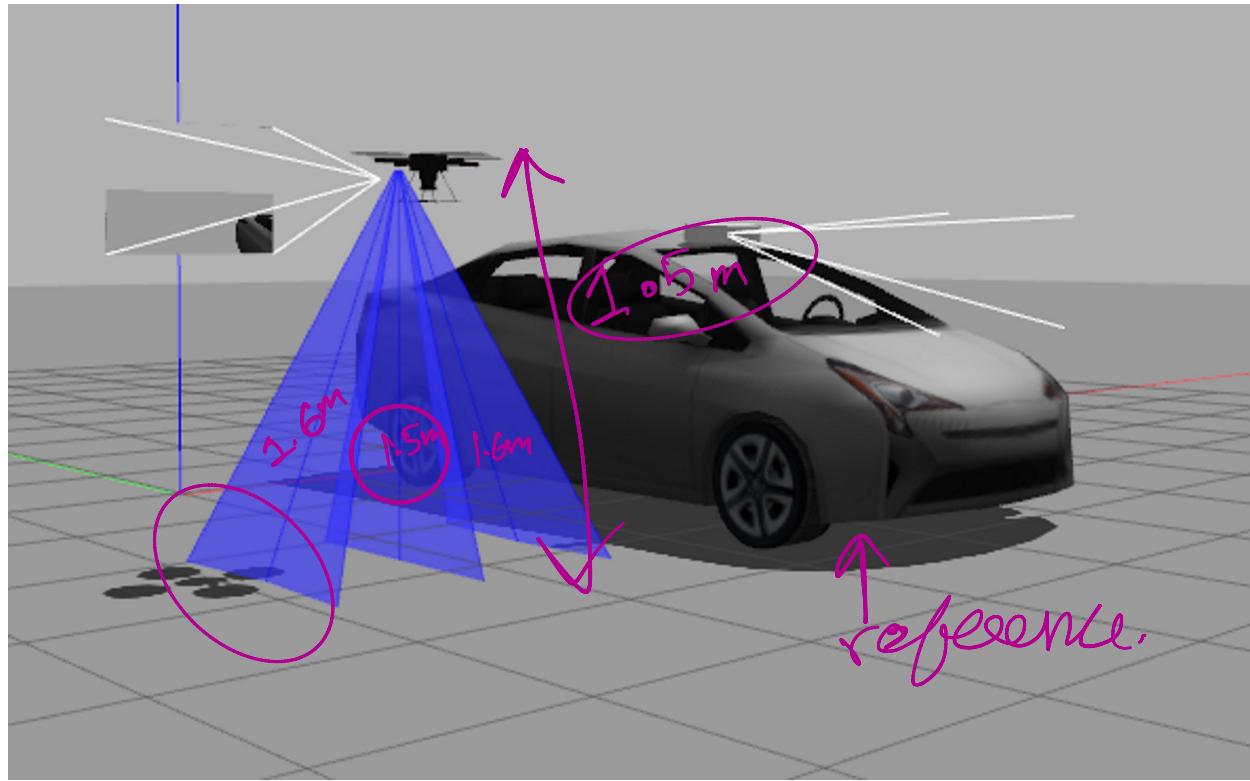




gazebo
RVIZ
fly.
sensor

Flying Node

Saturday, 20 November 2021

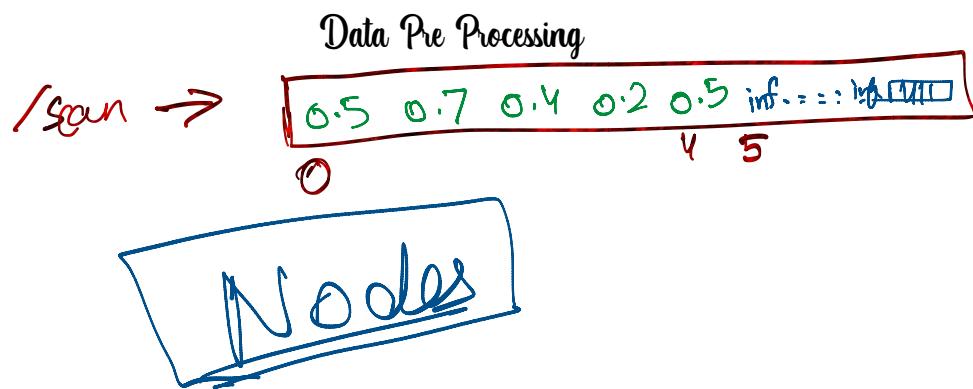
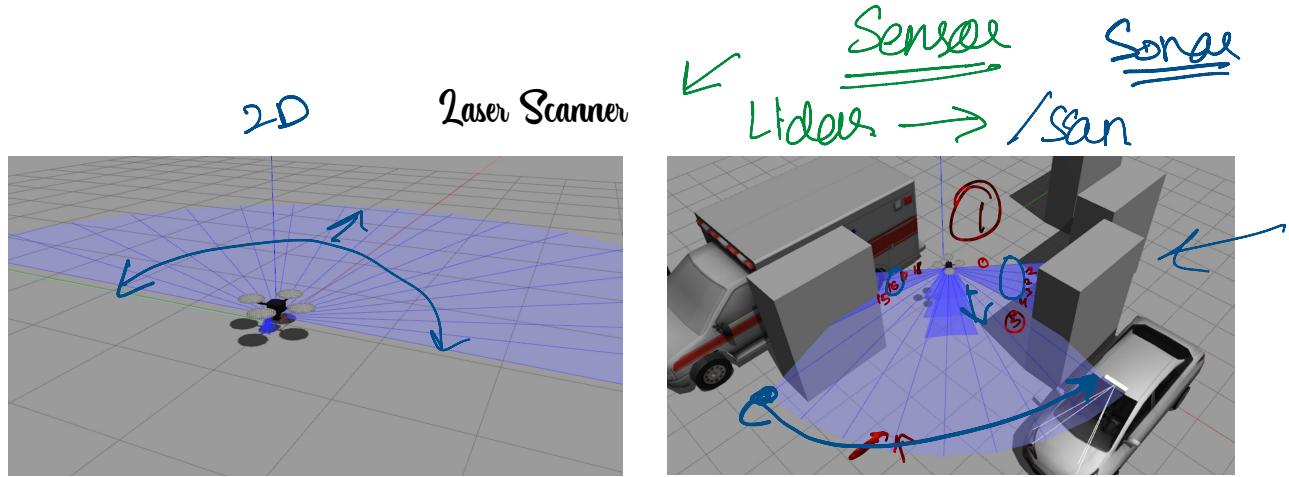


Section # 2 : Obstacle Avoiding

Saturday, 20 November 2021 12:10 PM

Sensor introduction and topic node

Saturday, 20 November 2021 7:46 AM



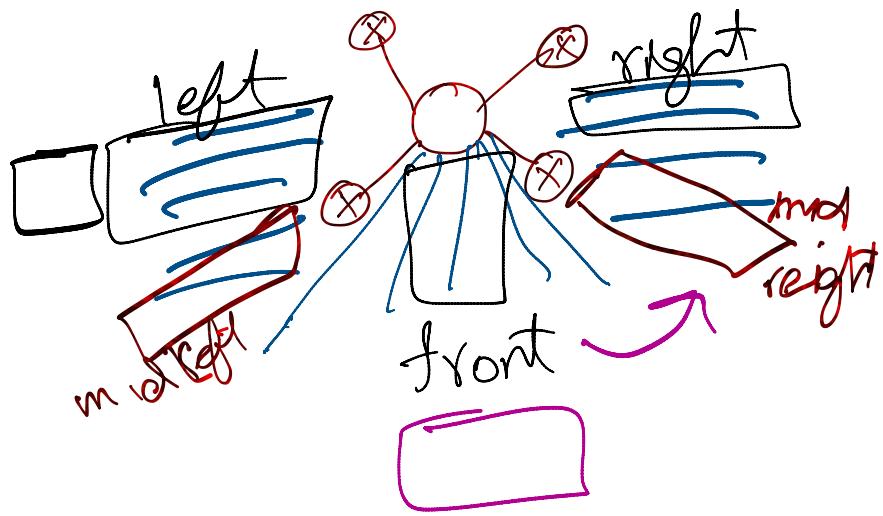
Avoiding Obstacles

Saturday, November 20, 2021 5:17 AM

sonar \rightarrow fly
Lidar \rightarrow avoid.

Problem Understanding

- Cases:
- 111 \rightarrow turning. U
 - 101 \rightarrow forward
 - 110 \rightarrow Right
 - 011 \rightarrow Left.



Section # 3 : Maze Solving

Saturday, 20 November 2021 7:46 AM

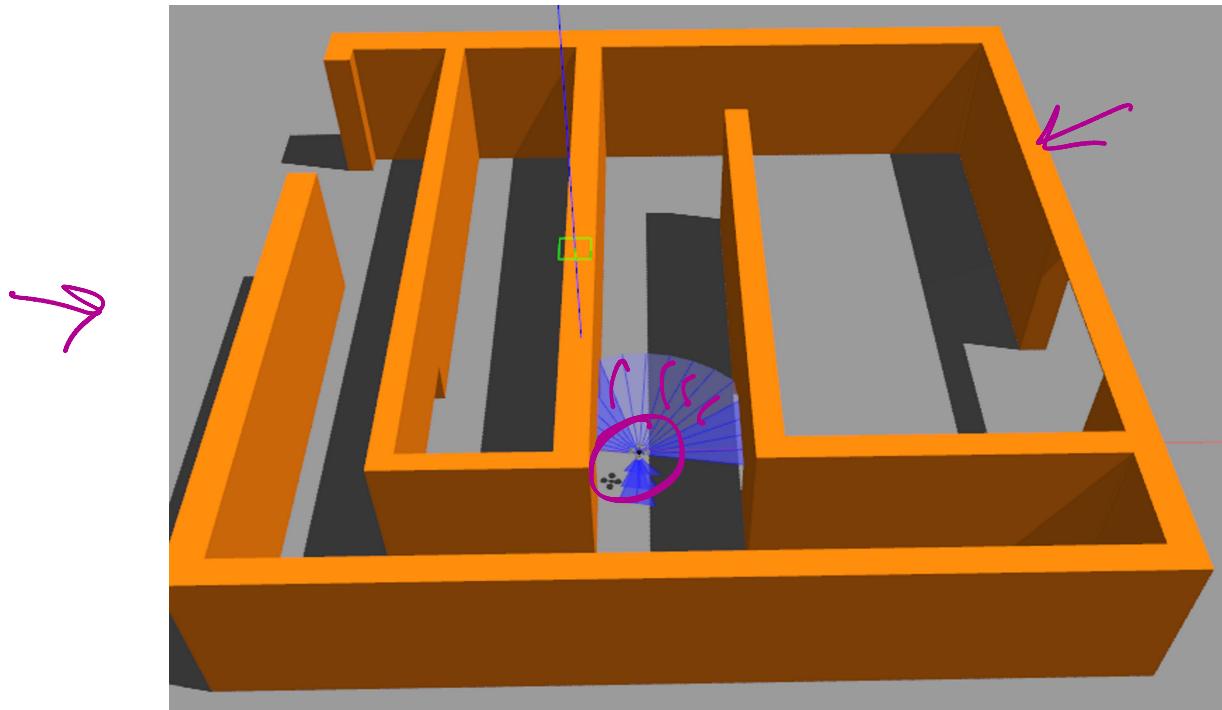
Creation of Maze

Saturday, November 20, 2021

5:19 AM

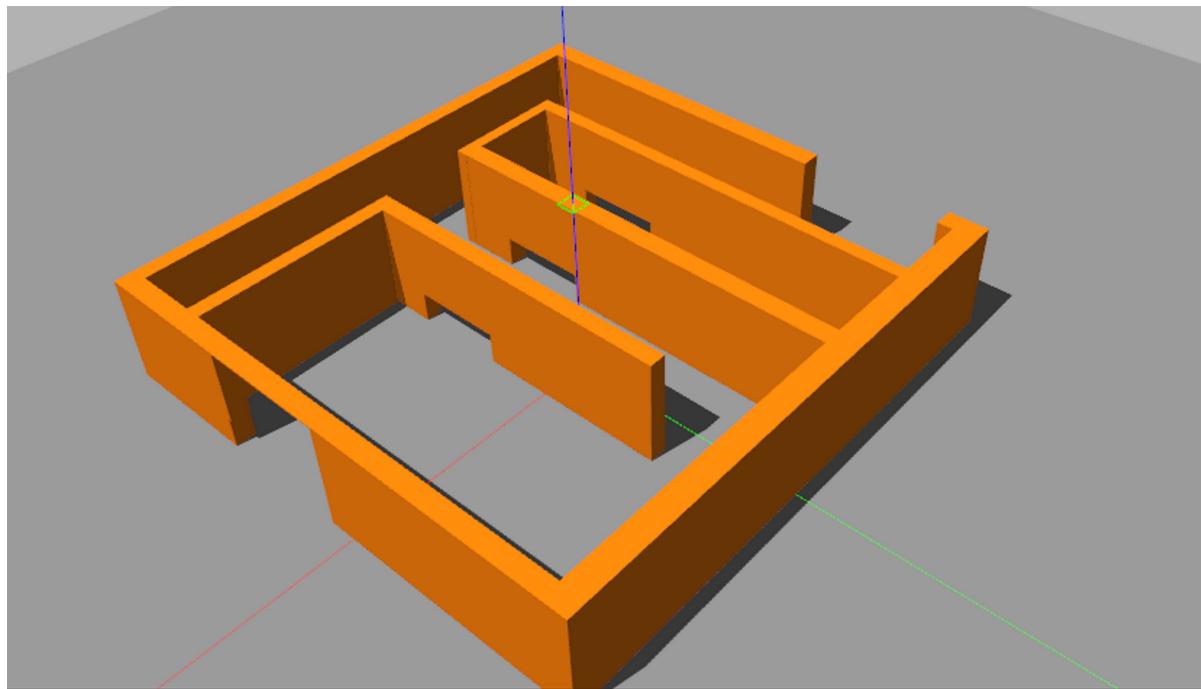
3D Model
Drone Sense

Logic



Gazebo SDF Models

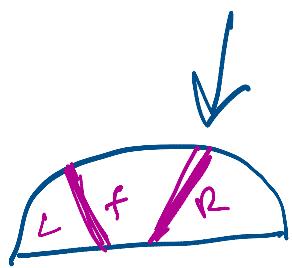
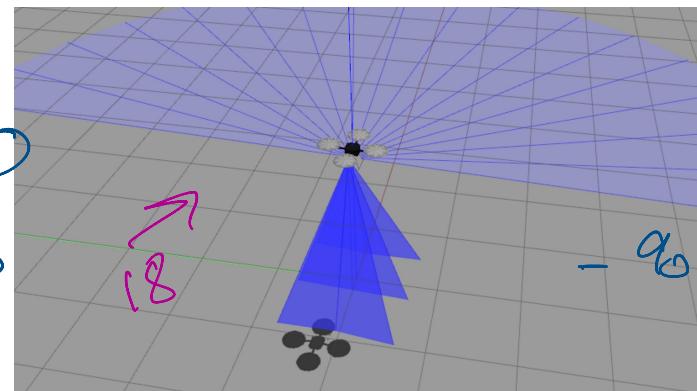
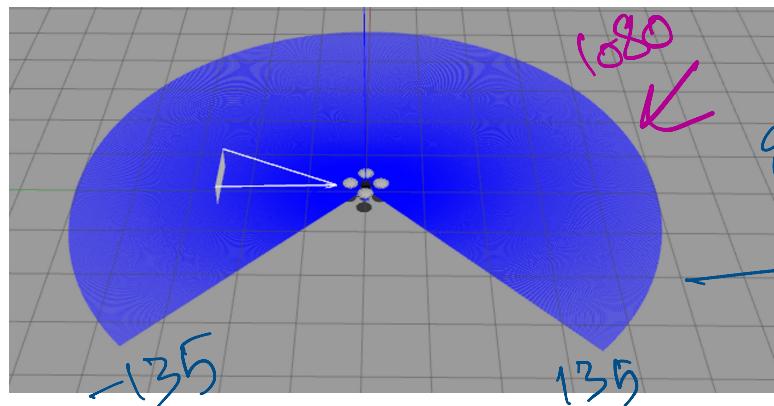
World



3D Maze
CAD

Sensor Parameters and Data processing

Saturday, November 20, 2021 5:19 AM



Data Stream and Logic

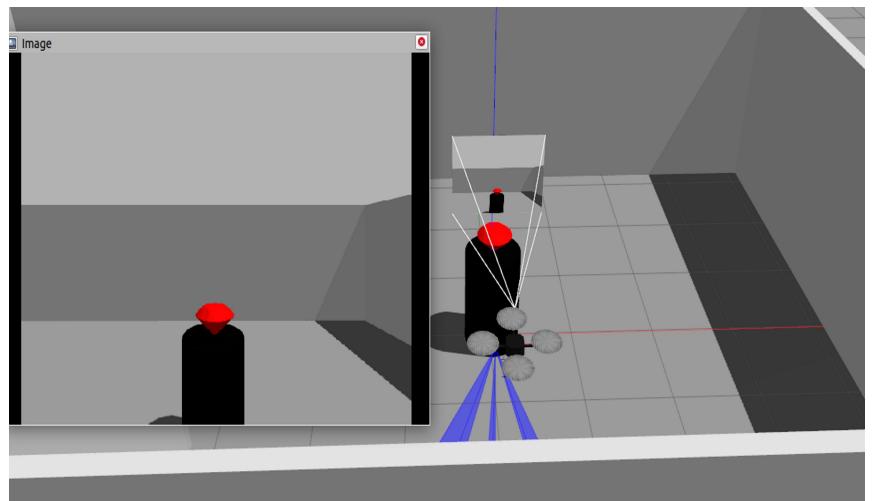
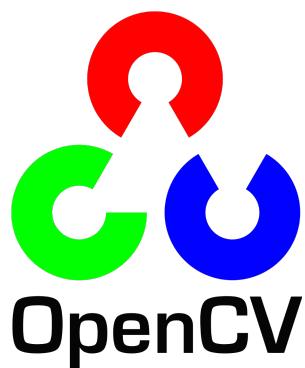
Cases: High, left, dead End

Section # 4 : Securing the Diamond

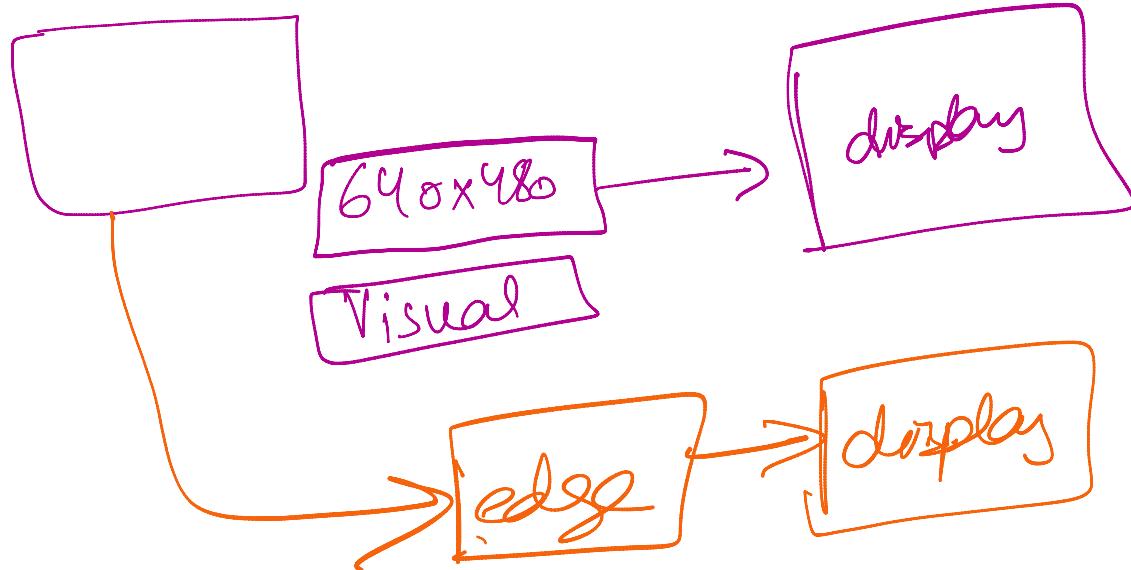
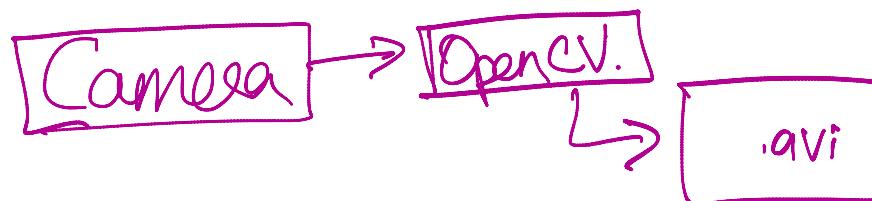
Saturday, 20 November 2021 7:47 AM

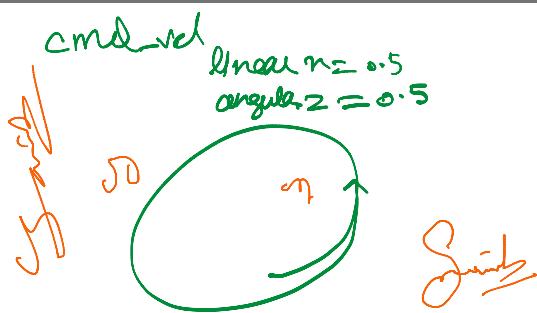
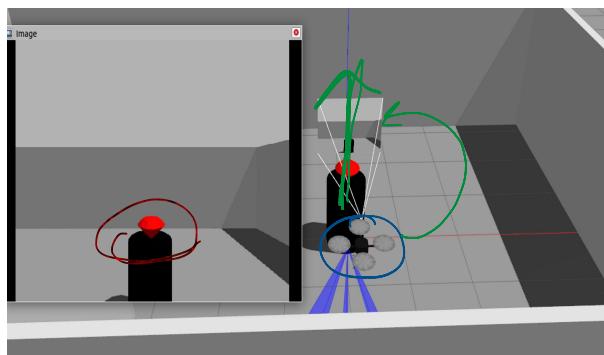
Video Recording Node

Saturday, November 20, 2021 5:26 AM

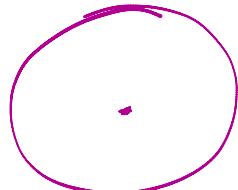
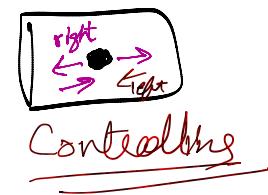


Parameters to Sensor





S Sarib Sajjad
Sarib



Sarib Sajjad

Sarib
Sarib

Videos

Saturday, 20 November 2021 7:47 AM

S1_t_coursewalkthrough
s1_1_t_v :Workspace Creation and Drone Package Obtain
s1_2_p_v : Workspace Setup and drone Obtain
s1_3_t_v : Package Exploration
s1_4_p_v :Launching Drone Nodes
s1_5_t_v : Flying Node
s1_6_p_v : Flying Node without Sonar
s1_7_p_v : Flying Node Height Control

s2_1_t_s_Sensors_introduction
s2_2_p_s_Only_robot_migration
s2_3_p_s_Data Stream checking and understanding bandwidth
s2_4_p_s_Node_dealingwith_regions_testing
s2_5_t_s_Avoiding_obstacles
s2_6_p_s_logic_implement_avoiding

S4_1_t_VideoRecordingNode
S4_2_p_f_world_creation_diamong_boundary
S4_3_p_s_CameraSensor_migration_parameterChange_bandwidth
S4_4_p_f_OPENCVBrigdeNode,VideoSaving
S4_5_t_Security_Motion_Node
S4_6_p_f_Circular_motoion_circular_radius Motion