Progress Presentation-I

e-Yantra Summer Internship-2017
Indoor Environments Mapping Using UAV

Samaahita S Belavadi
Rishabh Beri
Mentors: Vamshi, Simranjeet

IIT Bombay

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Overview of Project

- Project Name - Indoor Environments Mapping Using UAV
- Objective - The objective of this project is to map the indoor environments using a UAV equipped with a depth camera
- Deliverables -
  1) UAV with depth camera, processor mounted on it
  2) Code and Documentation for each task
  3) Video tutorials explaining solutions for each task

Overview of Task

Task No.	Task	Deadline
1	Install ROS, Control the quadrotor with keyboard in simulation	25th May
2	Land drone on an Aruco marker in simulation	31st May
3	Place Realsense R200 camera on the quadrotor model	2nd June
4	Generate 3D maps in simulation with keyboard controlled quadrotor	6th June
5	Literature review of autonomous mapping	8th June
6	Autonomously generate map in simulation	17th June
7	Interface Realsense with Cubieboard	20th June
8	Place setup of 3D camera and processor on drone	22nd June
9	Generate map in real time using drone (Manual control)	27th June
10	Project report	3rd July

Task Accomplished

Task No.	Task	Status
1	Install ROS, Control the quadrotor with keyboard in simulation	Completed
2	Land drone on an Aruco marker in simulation	Completed
3	Place Realsense R200 camera on the quadrotor model	Completed
4	Interface Realsense R200 camera with ROS on laptop and generate pointclouds	Completed
5	Generate 3D maps in simulation with keyboard controlled quadrotor	Completed

Image - 1

Samaahita S Belavadi
Rishabh Beri
Mentors: Vamshi, Simranjeet

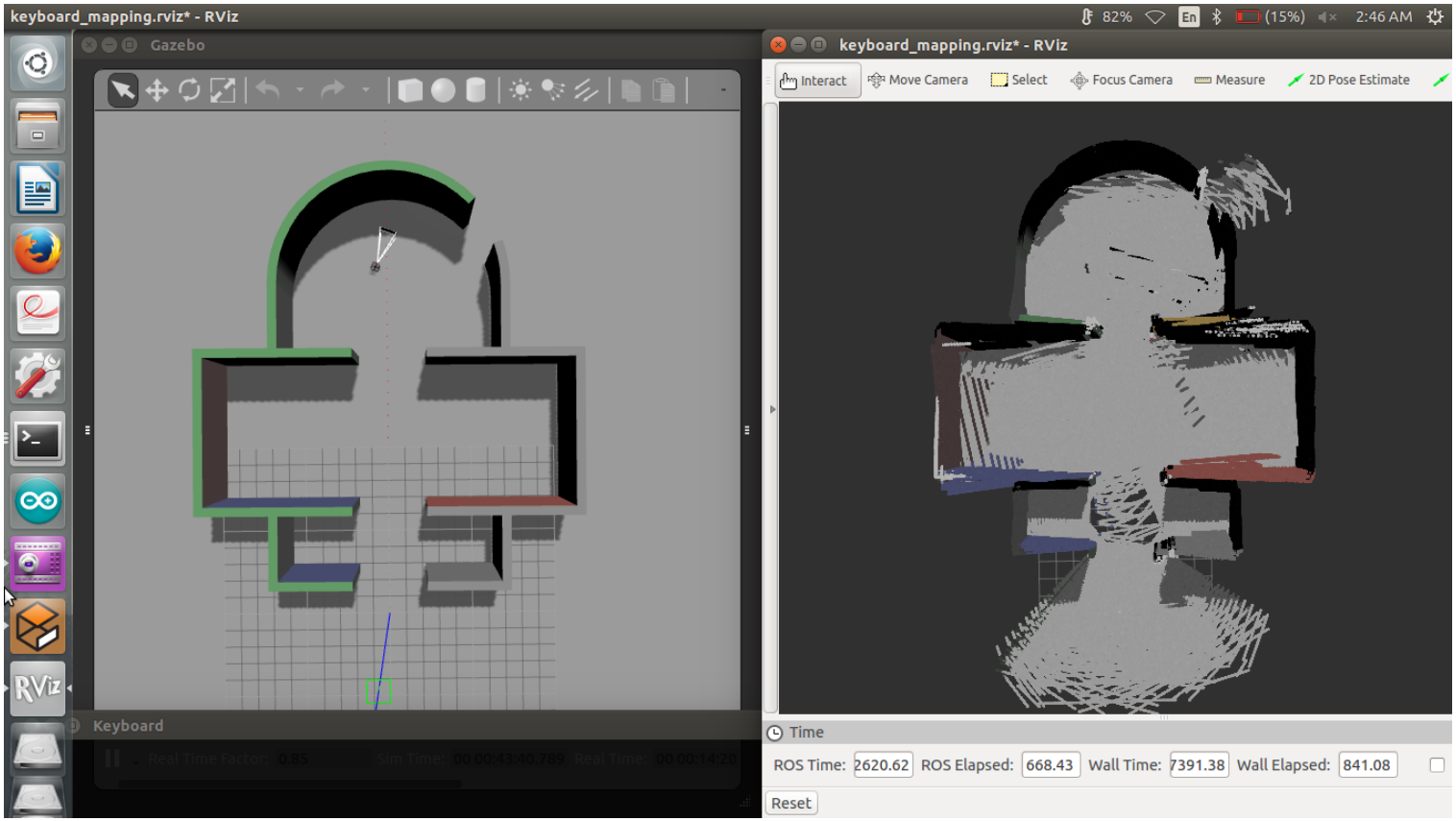

Image - 2

Samaahita S Belavadi
Rishabh Beri
Mentors: Vamshi, Simranjeet

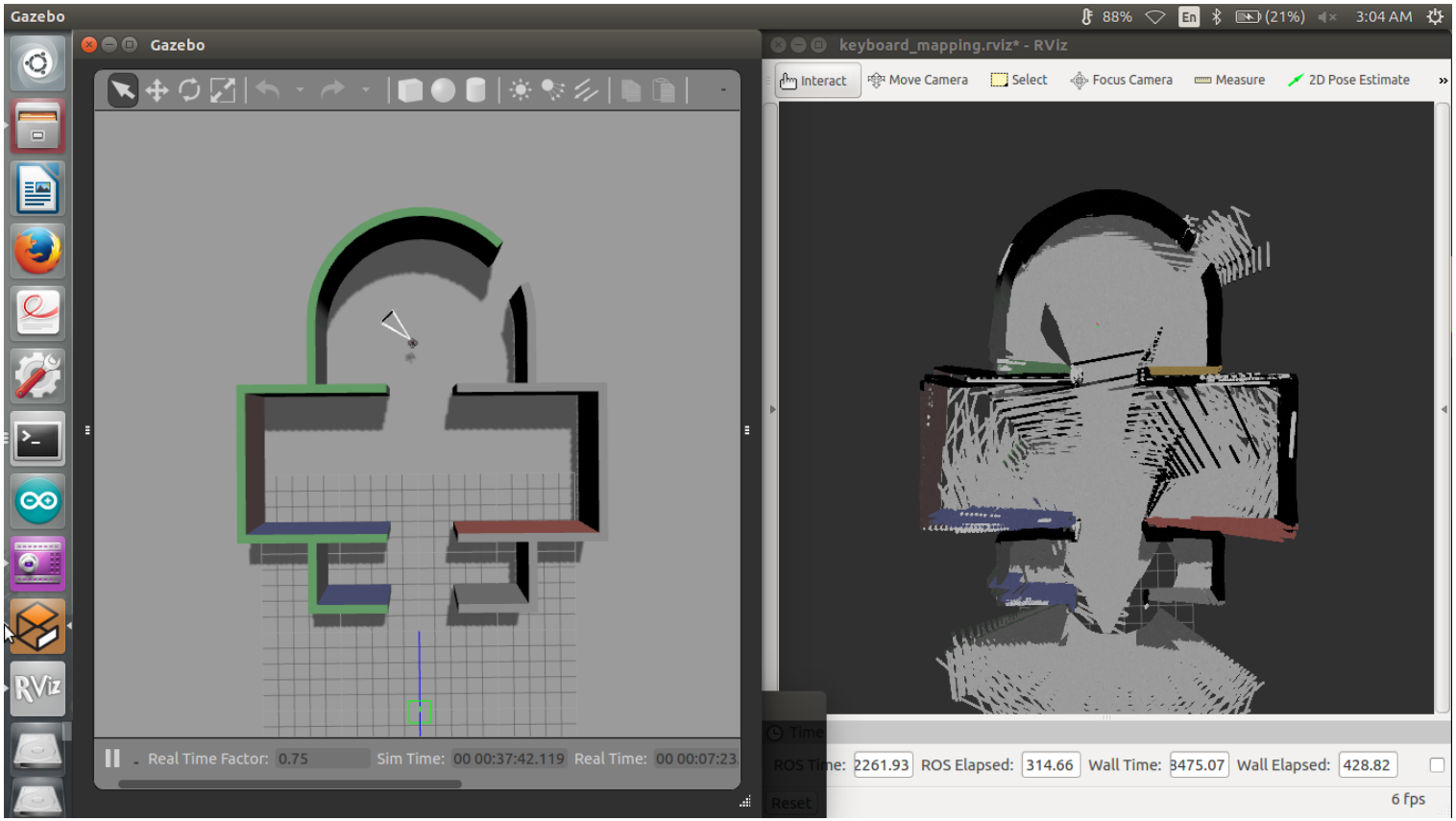

Image - 3

Samaahita S Belavadi
Rishabh Beri
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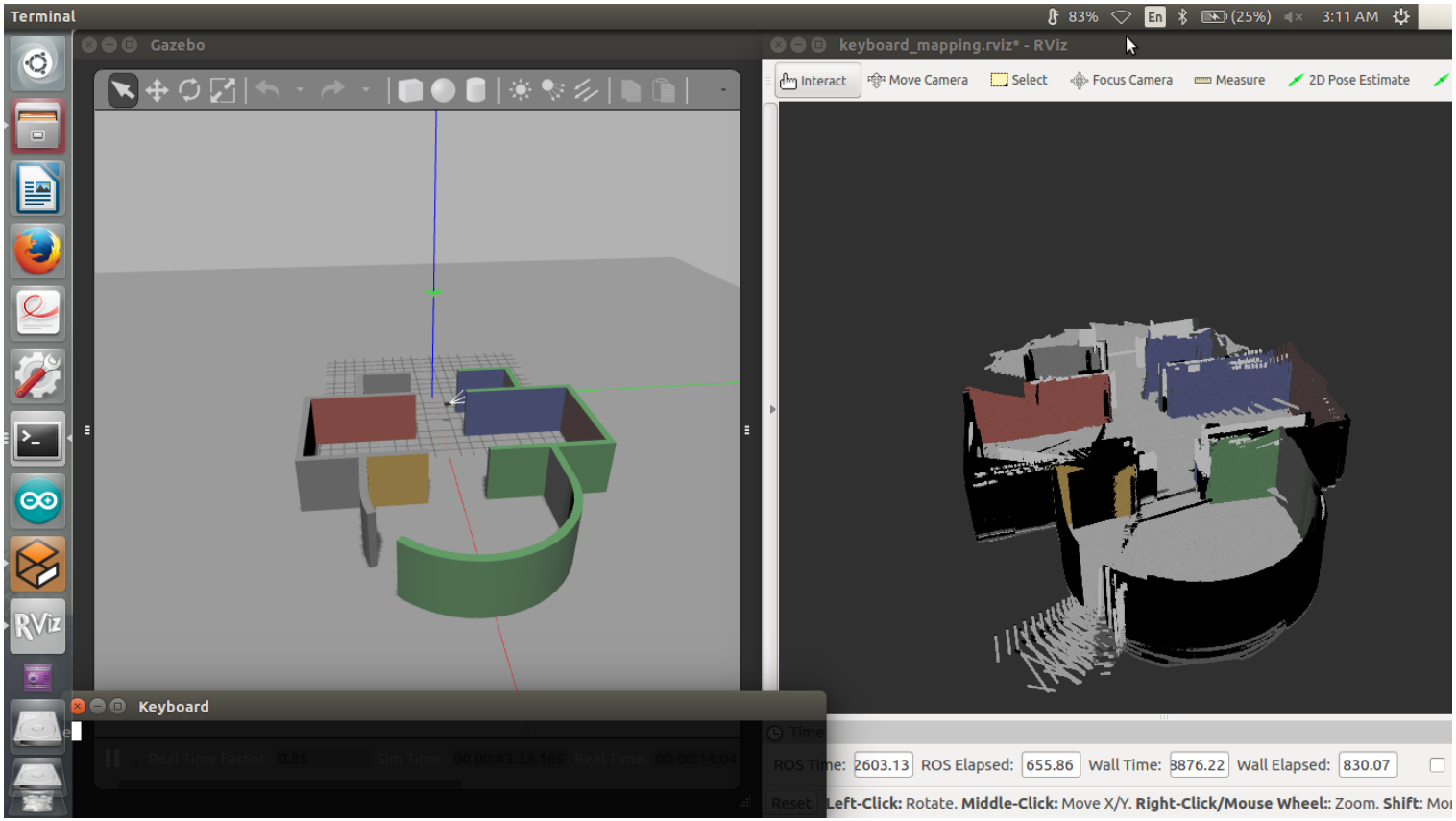

Challenges Faced

- Tuning PID parameters for navigating the drone in simulation
- Realsense R200 camera model was in URDF format which is not supported by Gazebo
- The default encoding of the depth image is mono16 which had to be converted to 16UC1 for obtaining 3D point cloud data
- The frame of the depth image had to be changed to that of the color image for obtaining 3D point cloud data

Future Plans

Task No.	Task	Deadline
1	Autonomously generate map in simulation	17th June
2	Interface Realsense with Cubieboard	20th June
3	Place setup of 3D camera and processor on drone	22nd June

Thank You

Samaahita S Belavadi
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THANK YOU :)