

## Individual Lab Report – 6

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Team D: CuBi

### Team Members

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## Individual Progress

For this progress review my major contribution were in the Project Formulation and Project Management sections. Firstly, I had to gather unattended questions and issues from the last semester. Some examples are as follows:

1. Should CuBi pick multiple toys at once?
2. Should the team concentrate on trying to grasp different types of objects, example flat toys?
3. Do we place toys at the edge of the walls as that could mean a more advanced problem of approachability?
4. Is using SLAM justified for our application or would good localization be sufficient?

These questions pose critical design and functional questions that could alter the course of the project. I collected such questions, came up with initial comments in order to discuss with the team.

Secondly, I came up with the list of lower-level tasks for each of the subsystem to tackle for this semester.

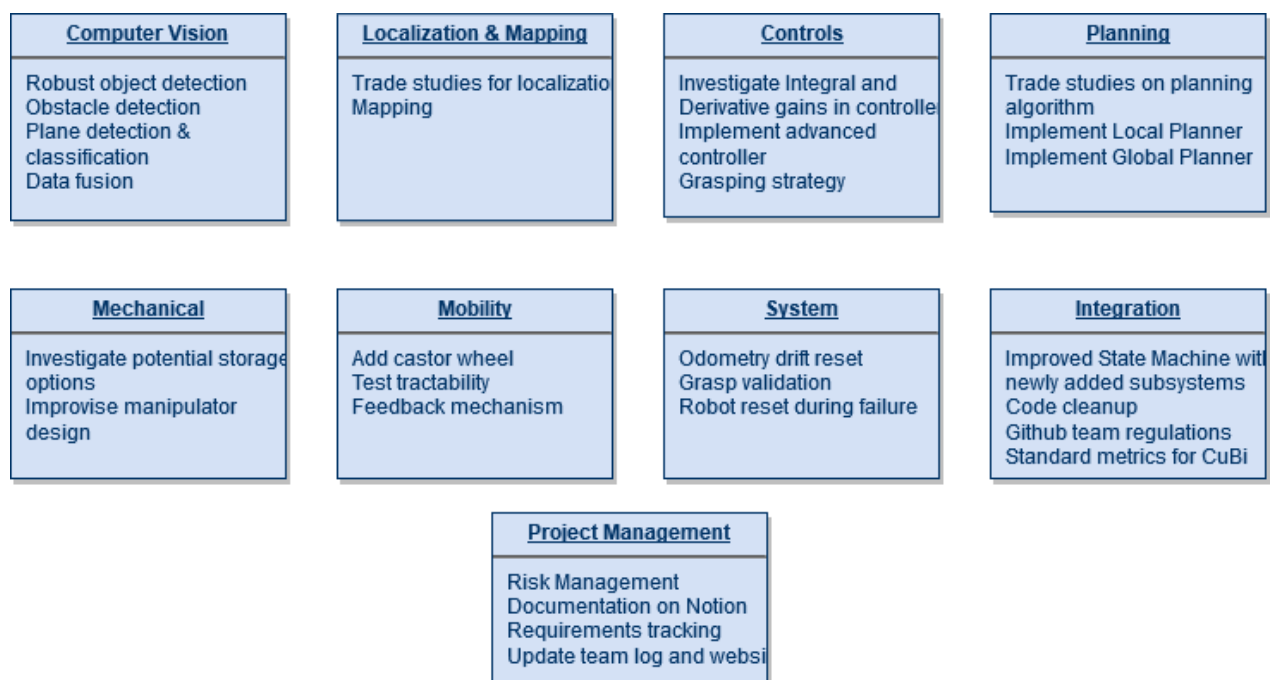


Figure 1. Subtasks in each subsystem

Figure 1 depicts the subtasks estimated under each subsystem. Each subtask is further divided into individual tasks for better tracking and completion. Finally, I explored the application of Rtabmap package on CuBi.

## Challenges

Estimating the type of tasks that we want to tackle was a subtle challenge because we are just predicting the system to work with a set of assumptions. Further, there might be certain tasks that will hamper the progress of the project but cannot be foreseen. To decide which problems to solve within the time frame to produce a functional robot is the real challenge.

## Teamwork

Jorge introduced the team to Notion, a comprehensive project management tool, which has proved very beneficial. He has been leading the efforts to create and assign tasks, which includes a lot of documentation and fixing last semester issues. He also worked to fix a rotation issue with the robot. Bobby had implemented a SLAM package using a ROS bag collected using CuBi. Paulo investigated the addition of a new castor wheel to improve tractability of the robot. Laavanye cleaned up the team's Git and also documented previous work.

## Plans

The next plan for me would be to investigate the need for Visual SLAM and find relevant packages that can be used. After team's discussion of what sensors to deploy for what functionality, I plan to perform sensor fusion for the data that comes from Camera, Lidar, and IMU. On the vision system, obstacle detection is the next major step and to investigate the use of Deep Learning based vision system. Planning subsystem should also be planned out for implementation.