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**IS480 Project Proposal**

**RoboStudio**

**Two Cube**

**V1**

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**Team Members:**

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**Faculty Supervisor:**

**Sponsor and/or Clients (if any):**

* Ben Li (ben.li.2016@mi.smu.edu.sg) - Product Owner

# Project Overview

## Project Description:

Remote RoboLab is an online web platform that provides users an accessible place to learn Robotics Programming Python without a physical robot and yet it is still interactive and fun for the users. Remote RoboLabs provides robots with designed fun and interactive games where users can send code over the website to control the robots remotely and watch the robots execute the code, via the live camera. The users will be charged by half hour blocks for the usage of these remote robots. They can make booking beforehand as well.

Remote RoboLabs’ mission is to provide an easy, fun and affordable Python learning assistance for everyone.

Our project aims to target two types of users: *Game Players* and *Game Providers*.

Game Players are users who will be playing the games provided on the web platform to learn/improve Python.

Game Providers are users who purchases robot kits from us (*Robot kit comprises of a robot, camera and panel*). These Game Providers will then design a game and connects it to our platform. Thus, there will also be a variety of games designed by several Game Providers which are offered to users. The profit made from the Game Providers will be shared between themselves and RoboLab.

Our project will also offer two types of game forms: *Single-player* and *Multiple-player*.

For single players, there will be single-player games offered such as puzzle track.

(*Puzzle track – Players navigate their robots through a puzzle track*)

For multiple-players, the focus of the project would be multi-player games where several Game Players can play games such as robot fight or robot soccer. The concept of the multi-player games is that “Loser pays all” which means that the winner of multi-player games will not need to pay and their fees will be covered by the loser.

(*Robot fight - Multiple players remotely control their own robot with the goal of pushing their opponents out of the playing area*)

## Motivation:

There are several motivations for our group to take up this project. They are as follows: -

**Robotics as a learning tool to introduce programming**

New students who intend to learn programming may find it hard and mundane at the start. However, by having the opportunity to control a robot and seeing what goes wrong with it, students can better visualize what is wrong with their code by looking at how the robots execute them. Additionally, the students will also learn the need to be precise with their instructions so that the robots will run the code how they intended it to be.

**Expensive Robotic kits**

There are some platforms out there that teaches python robotics programming as well as how to get up and connect the robots. However, a single robot kit is very pricey and not everyone has the financial capabilities to purchase one. Additionally, not many will choose to take the risk to purchase one just for interests or learning purposes. Hence our platform is the solution for these people where they can simply pay a small price and in exchange, they get to learn python robotics programming by remote control which has almost the same benefits as owning a robot kit themselves but at a much lower cost.

**Suitable for everyone with a range of abilities**

There is no background programming experience needed to engage with the robots that are provided by RoboStudio. The complexity of the code is solely up to the individual. Because of this, younger students will not be deterred from learning programming. In addition, learning how to code or program using Robots is always a fun and engaging thing to do. Hence, this will help students in being more interested and helped them develop.

## Stakeholders:

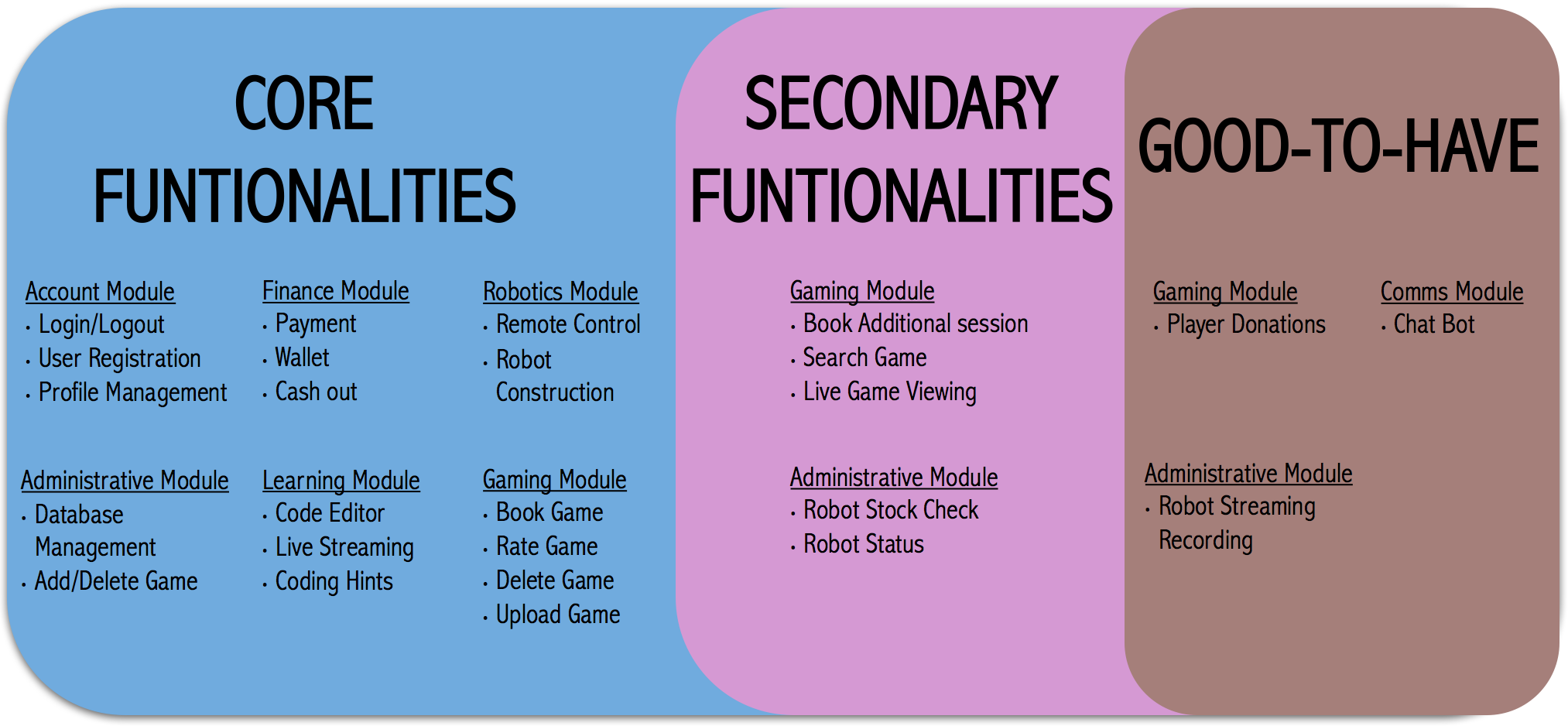
|  |  |
| --- | --- |
| Sponsor | Ben Li is the one who initiated the project. He is the product owner and founder of RoboStudio. |
| User | We will be targeting both new and experienced users who are keen in learning and improving Python Robotics Programming. We are also targeting users who are looking to earn some money by providing innovative robotics games for other users. |
| Advisors/  Practitioners/  Mentors | There may be other parties such as schools or institutions and almost robot kit providers that maybe interested in working with the project. |

## Deliverables:

## Web application with an online platform to allows users to choose and play games, either alone or with other users, provided by RoboStudios or Game Providers.

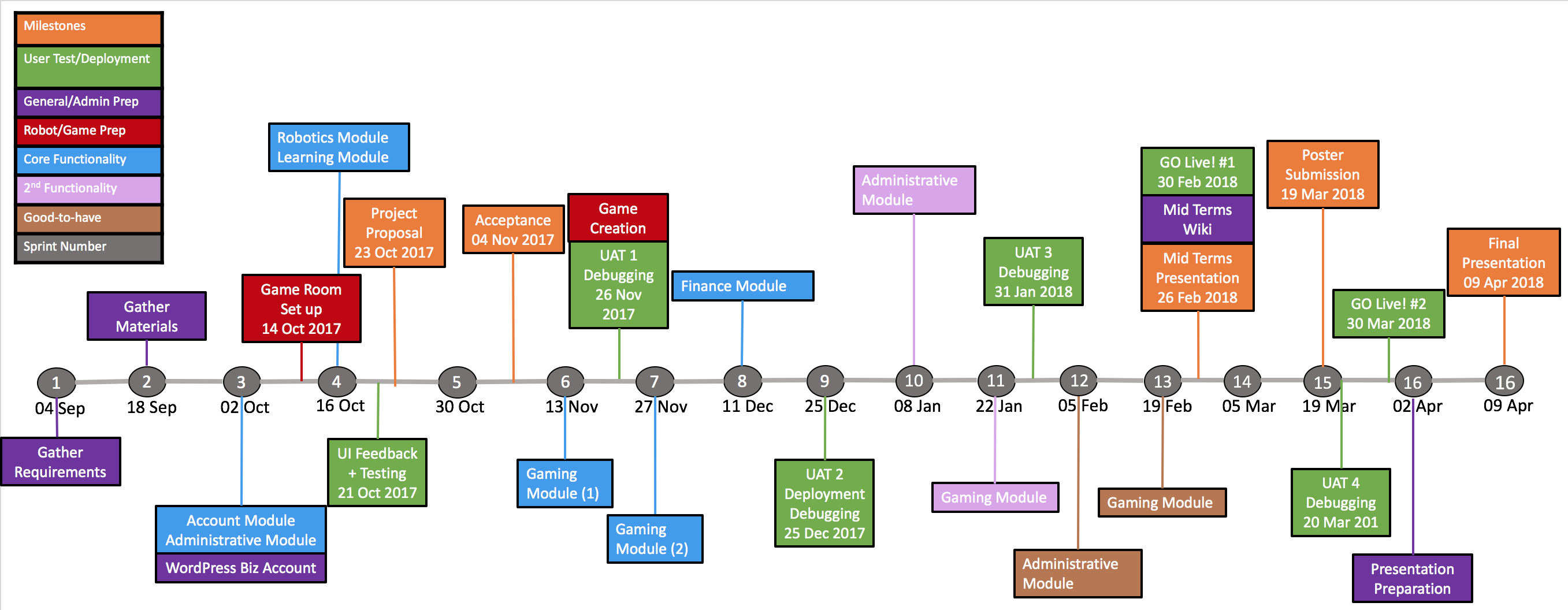
## Scope:

## Our scope is focused on providing an interactive platform for users interested in learning or improving python robotics programming. The core functions are to provide users with a platform to learn, from the many different games provided. Secondary functions are useful add-ons that allows other users to view the live games of users playing. Also, it allows administrators to better manage their robot kit inventories. Some of our good-to-have functions promotes a supportive robotics community by having player donations and well as a chat bot to assist new users on how to get started and answer any enquiries of existing users.



# Project Plan

## Project milestone:



## Risks:

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| --- | --- | --- | --- |
| Risk Type | Risks | Intensity | Mitigations |
| Technical | Team is unfamiliar with working with robotics hardware. | Medium | Team members will do up the necessary research (many available resources online) and consult our supervisors & sponsor. |
| Client Management | There may be many changes in the business and platform requirements as our project proceeds. | High | The team will meet with our sponsor weekly to get regular updates on requirements. |
| Project Management | Delaying of Project due to inaccurate time estimation on functionalities and unfamiliarity with robotics hardware. | Medium | Constantly review project schedule and make any adjustments along the way to the upcoming sprints if necessary. |

## Resources and References:

We will be researching on how to send codes remotely from our web platform to a physical Raspberry PI robot remotely. Also, we will increase our knowledge of the Python Robotics Programming by going to the websites listed below. The following also details the technologies used for the entire course of this project.