Hochschule
Bonn-Rhein-Sieg
University of Applied Sciences

b-it Bonn-Aachen International Center for Information Technology

General Solution To Find Objects

D1: Initial Presentation

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Ragini Mishra
Sathwik Panchangam
Priya Chaudhary

Advisors
Minh Nguyen
Alex Mitrevski

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Problem Statement

The problem being addressed is described as follows:-

- Navigate through multiple coordinates in knowledge base to find specified object
- Perceive the required object
- Fetch the user specified object and navigate back to user

Project Goals

- Implement a general strategy to find object
  - Navigate through “storage locations”
  - Perceive scenes to look for specified object(s)
  - Move to next location if object not found
- Fetch object and bring back to original location

User Stories

Priority: High	**[US01]: Detecting objects**	**Estimation: 3 weeks**
Requirements: As a user of robot, We want to detect objects, So that the robot can pick up the user-specified object and bring it back to the user.		**Acceptance Criteria:** Given a location with multiple objects, the robot has to detect different objects present in the location.
Risk: Difficult		**Real Effort:**

User Stories

Priority: High	**[US02]: Find objects**	**Estimation: 2 weeks**
Requirements: As a user of robot, We want the robot to find a particular object from the set of detected objects, so that the robot can fetch the object to the user.		**Acceptance Criteria:** Given a set of detected objects the robot has to find the user-specified object by comparing the detected objects with the input data.
Risk: Difficult		**Real Effort:**

User Stories

Priority: High	**[US03]: Navigation**	**Estimation: 2 weeks**
Requirements: As a user of robot, We want the robot to navigate through different given coordinates, So that the robot can perceive for different objects and move to the next set of coordinates if user-specified object is not found.		**Acceptance Criteria:** Given a set of coordinates of locations in the knowledge base the robot has to navigate through the coordinates of location till it finds object.
Risk: Medium		**Real Effort:**

User Stories

Priority: High	**[US04]:Move to next location**	**Estimation: 2 week**
Requirements: As a user of robot, we want the robot to move to the next unvisited coordinates of location in the knowledge base, if the user specified object is not detected.	**Acceptance Criteria:** Given a set of detected objects, if the user specified object is not found, then the robot should move to the next unvisited coordinates in the knowledge base.	
Risk: Medium	**Real Effort:**	

User Stories

Priority: Low	**[US05]: Fetch object**	**Estimation:3 weeks**
Requirements: As a user of robot, we want the robot to pick the user-specified object so that the item can be brought back to the user.		**Acceptance Criteria:** The robot must know the orientation and pose of the object.
Risk:		**Real Effort:**

User Stories

Priority: Low	**[US06]: Bring object back to user**	**Estimation: 2 weeks**
Requirements: As a user of robot, we want the robot to bring the picked item to the user so that the request of the user can be fulfilled.		**Acceptance Criteria:** The robot must know the location of the user.
Risk:		**Real Effort:**

User Stories

Priority: Low	**[US07]: Speech Recognition**	**Estimation: 3 weeks**
Requirements: As a user of robot, we want the robot to recognize the commands given to it by user using speech recognition.		**Acceptance Criteria:** Possible extension of the project. The robot should have a speech recognition algorithm.
Risk: Medium		**Real Effort:**

Planned Steps

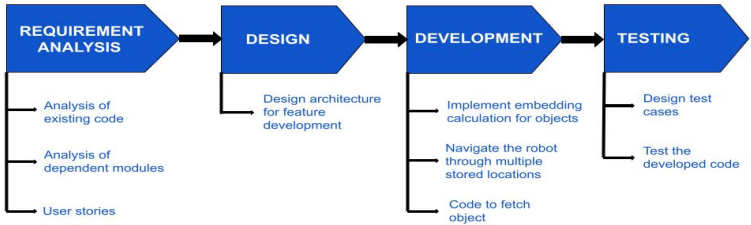

Figure 1: Workflow

Means of Collaboration

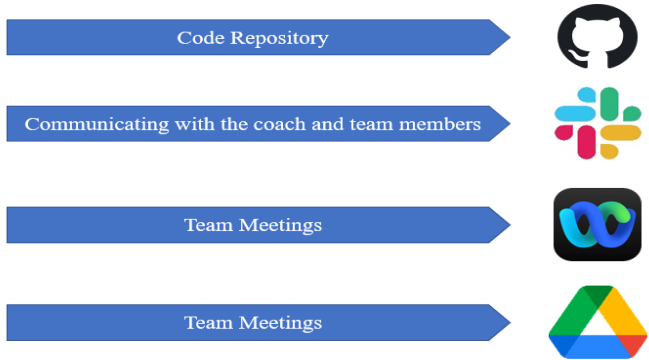

Figure 2: Means of collaboration

Technologies Used

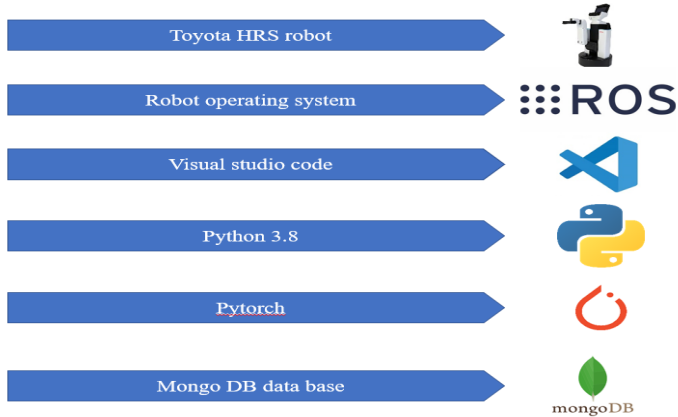

Figure 3: Technologies used

Timeline and Release Plan

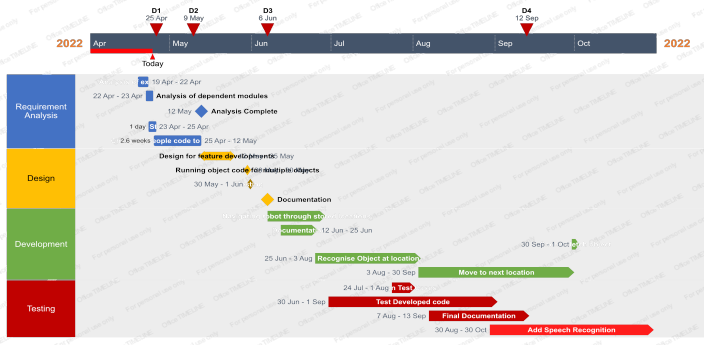

Figure 4: Gantt Chart