Vision System for MediBot Phase 1

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Iteration Planning
&
Scrum Meeting Notes

Iteration Planning : Meeting 1

Meeting 1 - 11th October 2021

Agenda:

1. UML diagrams with new methods & return types
2. Update Iteration Backlog
3. Divide tasks

Meeting Notes:

1. Always keep a track of the work log.
2. Make sure to mark your name beside each backlog
3. Work on independent classes/methods first.

Scrum Meetings

Meeting 1 - October 13th, 2021

	Yesterday	Today
Driver: Shon, Navigator: Sameer	Completed B1.3, B1.4	B1.5 & B2.9 will be done today
Driver: Sameer, Navigator: Shon	Completed A1.4, A3.1, A3.2	A1.7, A1.9, A3.3 will be done today

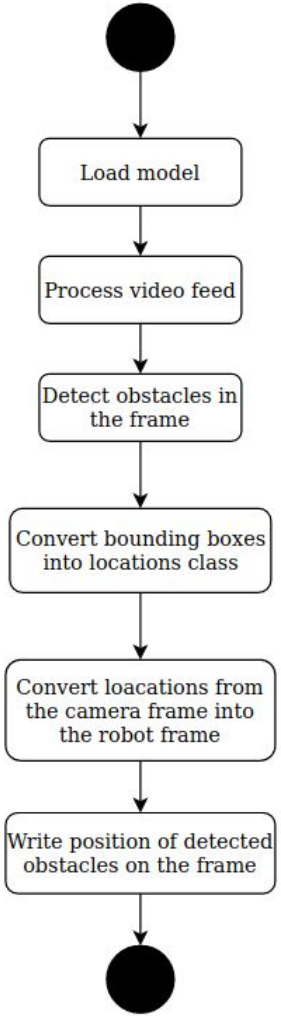
Meeting 2 - October 14th, 2021

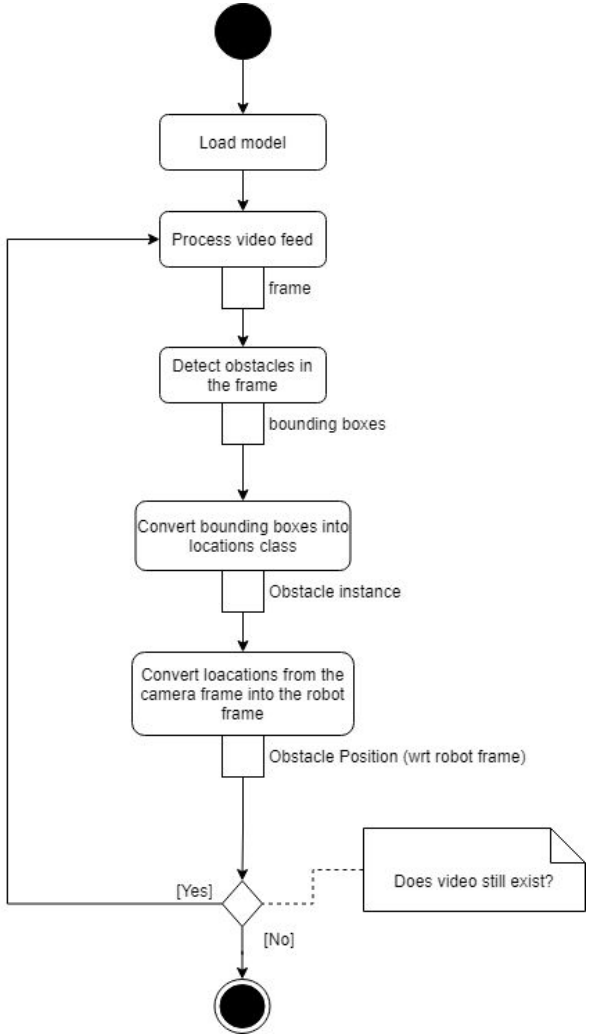
	Yesterday	Today
Driver: Shon, Navigator: Sameer	Completed B1.5 & B2.9	A2.2, B1.9,B2.0 will probably be done today
Driver: Sameer,	Completed A1.7, A1.9, A3.3	B2.2, B2.3, B2.4 will be done

Minor Changes:

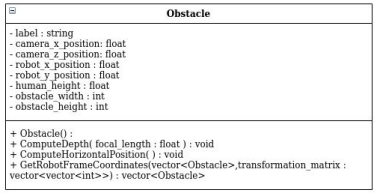
- Updated 2 class methods with correct parameters & return types
- Added 2 additional methods & updated those in the class diagram
- Switched from Azure Devops to the provided Google Sheets template for Product Backlog and Worklog tracking
- Added a new JsonCPP, Eigen dependency

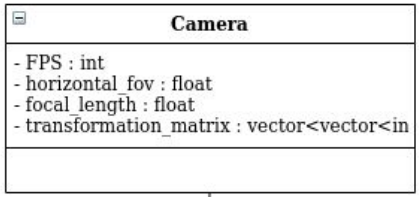
Activity Diagram:

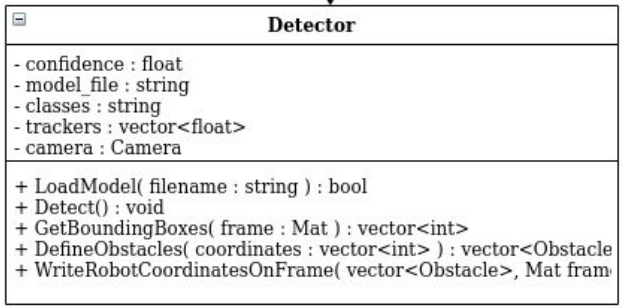


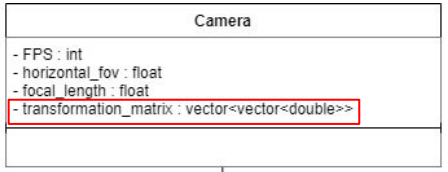


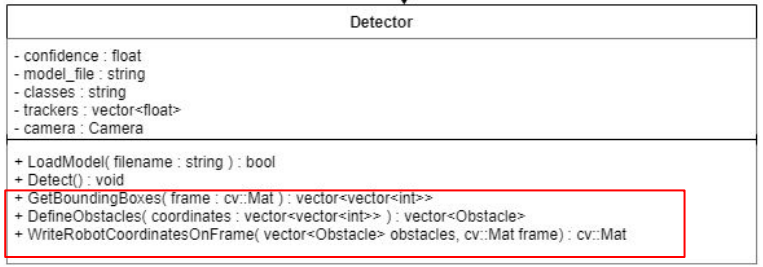
Class Diagram :

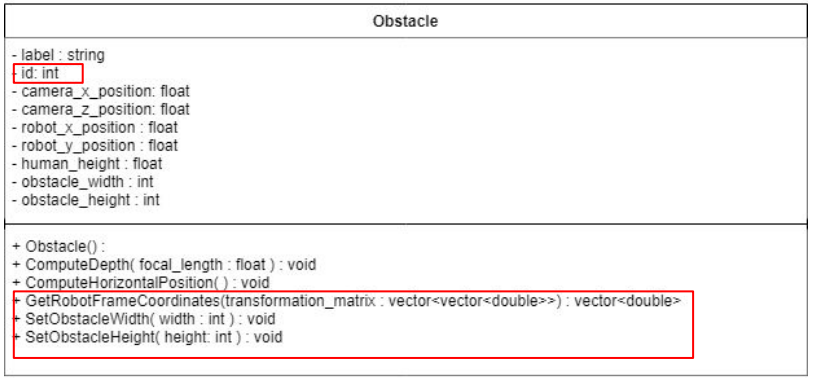






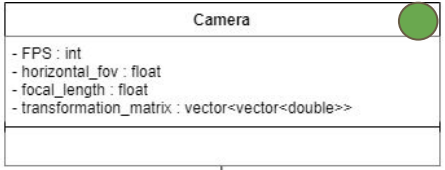


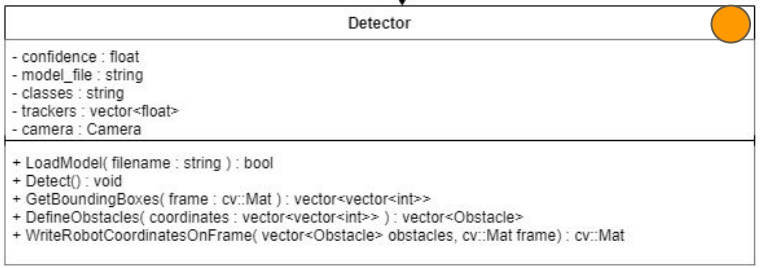


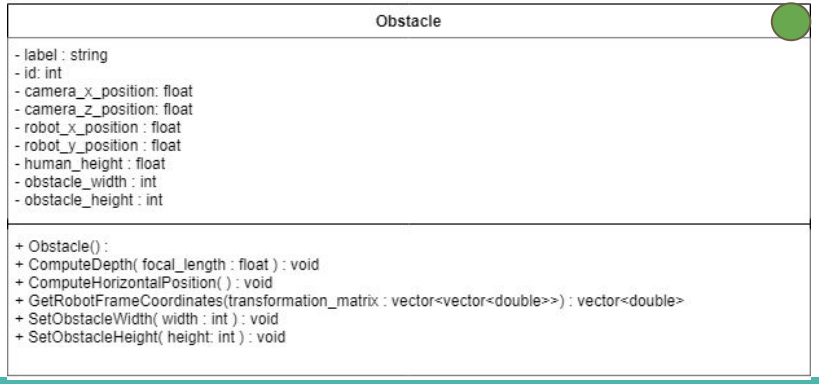


API Status

- Complete
- In progress







Initial Product Backlog

- Initial time estimate of approximately 60 work hours

ID	Title	Work Item Type	State	Original Estimate	Value Area	Iteration Path	Tags
33	Detection Model Testing	User Story	New		Business	ENPM808X - Midterm\Sprint 1	
34	Obtain testing data for human detection.	Task	New	3		ENPM808X - Midterm\Sprint 1	
35	Clean testing data.	Task	New	4		ENPM808X - Midterm\Sprint 1	
27	Unit Testing	User Story	New		Business	ENPM808X - Midterm\Sprint 1	
28	Define tests for the Obstacle class method for converting positions into the robot frame.	Task	New	2		ENPM808X - Midterm\Sprint 1	
29	Define tests for the Obstacle class method for converting from bounding boxes to positions in the camera frame.	Task	New	2		ENPM808X - Midterm\Sprint 1	
30	Write test for the Detector Video feed method.	Task	New	2		ENPM808X - Midterm\Sprint 1	
31	Write tests for the Detector class Get bounding box method	Task	New	2		ENPM808X - Midterm\Sprint 1	
32	Write tests to confirm accuracy of human detection model.	Task	New	2		ENPM808X - Midterm\Sprint 1	
25	Repository	User Story	New		Business	ENPM808X - Midterm\Sprint 1	
26	Write README.md	Task	New	4		ENPM808X - Midterm\Sprint 1	
36	Set up Travis and coveralls unit testing	Task	New	0.5		ENPM808X - Midterm\Sprint 1	
37	Generate Deoxygen files	Task	New	0.5		ENPM808X - Midterm\Sprint 1	
12	Camera Class	User Story	New		Business	ENPM808X - Midterm\Sprint 1	
18	Define Camera attributes.	Task	New	2		ENPM808X - Midterm\Sprint 1	
19	Get initialization values for all camera attributes.	Task	New	0.5		ENPM808X - Midterm\Sprint 1	
20	Initialize all camera attributes with actual camera parameters.	Task	New	0.5		ENPM808X - Midterm\Sprint 1	
11	Detector Class	User Story	New		Business	ENPM808X - Midterm\Sprint 1	
21	Define Detector attributes.	Task	New	0.5		ENPM808X - Midterm\Sprint 1	
22	Write method to load model for object detection.	Task	New	3		ENPM808X - Midterm\Sprint 1	
23	Write method for processing video files.	Task	New	4		ENPM808X - Midterm\Sprint 1	
24	Write method for detecting the bounding boxes using dlib.	Task	New	3		ENPM808X - Midterm\Sprint 1	
10	Obstacle Class	User Story	New		Business	ENPM808X - Midterm\Sprint 1	
13	Define Obstacle attributes	Task	New	0.5		ENPM808X - Midterm\Sprint 1	
17	Define position of camera with respect to robot's cordinate frame.	Task	New	1		ENPM808X - Midterm\Sprint 1	
14	Define camera to robot transformation matrix.	Task	New	2		ENPM808X - Midterm\Sprint 1	
16	Create method to convert positions form camera frame to robot frame.	Task	New	4		ENPM808X - Midterm\Sprint 1	
15	Create method to convert from bounding boxes to camera frame.	Task	New	4		ENPM808X - Midterm\Sprint 1	
7	Proposal	User Story	New		Business	ENPM808X - Midterm\Sprint 1	
2	Film Midterm Proposal Video	Task	New	2		ENPM808X - Midterm\Sprint 1	
3	Midterm Proposal Paper	Task	New	8		ENPM808X - Midterm\Sprint 1	
8	Bugs	User Story	New		Business	ENPM808X - Midterm\Sprint 2	

Group Name: MT 06, Group Members: Sameer Pusegaonkar, Shon Cortes
Vision System for MediBot
Product Backlog

Unique ID	Task	Sprint	Estimated time (mins)	Time after Iteration 1(mins)	Time after Iteration 2(mins)
1A	**Plan and Design**		**1535**	**970**	**0**
1.1	Setup initial project files using CMake	1	30	30	
1.2	Update UML Diagrams	1	30	45	
1.3	Update ReadMe.MD (run/install instructions)	1	240	120	
1.4	Add output folders for cpplint & cppcheck	1	30	10	
1.5	Update travis.yml for building on xenial systems	1	10	10	
1.6	Setup Travis & Coveralls for build & testing	1	30	20	
1.7	Setup github project license	1	15	25	
1.8	Setup bash script for running cpplint, cppcheck & valgrind	1	30	30	
1.9	Setup links to download the specific mobilenet version	1	30	45	
2	Setup bash script for downloading testing data	1	30	30	
2.1	Create user defined parser for confidence, number of humans, etc	2	60	60	
2.2	Write tests for converting positions into the robot frame	2	120	360	
2.3	Write tests for converting bounding boxes to positions in the camera frame	2	120	120	
2.4	Write test to see if the input video is valid	2	120	120	
2.5	Write test to check if accuracy is above threshold	1	60	60	
2.6	Obtain prelabelled testing data	1	180	120	
2.7	Clean testing data	1	120	60	
2.8	Setup links to download cleaned testing data	1	30	30	
2.9	Import ground truth information from testing data	2	60	60	
3	Write test to check ground truth info with obtained bounding box	1	30	30	
3.1	Configure doxygen file to add all class & main files	1	15	10	
3.2	Generate HTML & Latex Deoxygen Files	1	15	15	
3.3	Updet the Readme with Activity Diagrams	1	15	15	
3.4	Update Valgrind run file path	1	10	10	
3.5	Change OpenCV dependency in ReadMe	1	20	20	
3.6	BUG: Fix the incorrect downloading of .caffe & .prototxt files	1	45	30	
3.7	Add JsonCPP to readme & travis	1	30	15	
3.9	Add project video, AIP Sheet in ReadMe	1	10	10	

Index	Information
	Target Time
	Revised Target Time
	Actual Time Taken
	New Task Added

Iteration 1 Backlog

- ~41 Hours total
- ~28 Hours completed
- ~13 Hours remaining

Unique ID	Task	Target time (minutes)	Actual Time	Status
1	**Plan and Design**	**600**	**480**	complete
A1.2	Update UML Diagrams	30	45	complete
A1.4	Add output folders for cpplint & cppcheck	30	10	complete
A3.1	Configure doxygen file to add all class & main files	15	10	complete
A3.2	Generate HTML & Latex Deoxygen Files	15	10	complete
A1.7	Setup github project license	15	25	complete
A1.9	Setup links to download the specific mobilenet version	30	45	complete
A3.3	Updet the Readme with Activity Diagrams	15	15	complete
B1.1	Add OpenCV Dependency in CMake	30	20	complete
B1.2	Define Obstacle Class Attributes	30	15	complete
B1.3	Define position of camera with respect to robot's cordinate frame.	60	30	complete
B1.4	Define camera to robot transformation matrix.	120	30	complete
B1.5	Create method to convert positions from camera to robot frame.	60	180	complete
B1.8	Define Camera attributes.	30	15	complete
B2.1	Define Detector attributes.	30	15	complete
B2.7	Remove Obstacle as an input for GetRobotFrameCoordinates method.	30	10	complete
B2.9	Add eigan as dependancy in readme.md and cmake	30	15	complete
B3	Change data type from vector int to vector double	15	10	complete
B3.1	Change return type to be x,y position or vector<x,y>	15	10	complete
B3.2	Add Eigan as dependancy in travis yml	30	15	complete
B3.3	Update UML with new return type (Obstacle)	15	15	complete
A3.4	Update Valgrind run file path	10	10	complete
B1.9	Get initialization values for all camera attributes. Camera	30	10	complete
B2	Initialize all camera attributes with actual camera parameters.	30	10	complete
B2.2	Write method to load the config file for the model	15	20	complete
B2.3	Write method to load model for object detection.	5	5	complete
B2.4	Write method for processing video files.	90	60	complete
B2.5	Write method for detecting the bounding boxes using dlib.	90	120	complete
B3.5	Update Obstacle class to have setter for obstacle width and height	10	10	complete
B3.6	Make setter for Obstacle width and height	10	10	complete
A2.6	Obtain prelabelled testing data	180	120	complete
A2.7	Clean testing data	120	60	complete
A2.5	Write test to check ground truth info with obtained bounding box	60	60	complete
A3.7	Add JSON dependency to Travis & Readme	30	15	complete
A2.8	Setup links to download cleaned testing data	30	30	complete
B2.2	Write method to load the config file for the model	15	20	complete
A3.6	BUG: Fix the incorrect downloading of .caffe & .prototxt files	45	30	complete

Iteration 2 Backlog

Group Name: MT 06, Group Members: Sameer Pusegaonkar, Shon Cortes Vision System for MediBot Iteration Backlog 2					
Item ID	**Unique ID**	**Task**	**Target time (minutes)**	**Actual Time**	**Status**
	2	**Implementation**	**920**		
A	1.3	Update ReadMe.MD (run/install instructions)	120		
A	2	Setup bash script for downloading testing data	30		
A	2.1	Create user defined parser for confidence, number of humans, etc	60		
A	2.3	Write tests for converting bounding boxes to positions in the camera frame	120		
A	2.4	Write test to see if the input video is valid	120		
A	2.9	Import ground truth information from testing data	60		
A	3	Write test to check ground truth info with obtained bounding box	30		
A	3.5	Change OpenCV dependency in ReadMe	20		
A	3.9	Add project video, AIP Sheet in ReadMe	10		
B	1	Add DLib Dependency in CMake	30		
B	1.6	Derive formula for converting bounding boxes to position in camera frame.	60		
B	1.7	Create method to convert from bounding boxes to camera frame.	120		
B	2.6	Write a main.cpp to demonstrate full implamentation of API.	60		
B	2.8	Film Project update video.	60		
B	3.8	Add float horizontal_fov to obstacle horizontal position method	10		
B	3.9	Update UML with float horizontal_fov	10		