

FOUR WEEKLY EXPECTED OUTCOMES FOLLOW-UP REPORT

#	PO Ref	LO Ref		Structured Training Program Items	Activity Carried Out Under <i>(You may generate a list of activities carried out and the list number can be mentioned here. A single activity can be considered for more than one learning outcome achievement)</i>
		No.	Scale (H,L,M or N/A)		
1	P01	LO2	H	Implementation of an algorithm which relates to preprocessing stage of object detection.	* In order to carry out object detection, images must be preprocessed. An algorithm required for a sub stage of that was implemented using "C" programming language to work in microcontroller.
		LO3	L	Discussion on how to choose a proper hardware platform for an industrial product development.	* Investigated about reliable hardware development platforms for an industrial level projects.
		LO4	L	Benchmarking performance of an algorithm using different hardware platforms.	* Learnt what to consider when choosing a development platform. * Compared timing requirement of an algorithm using a microcontroller, Raspberry Pi Single Board computer and a personal computer. (SBC) *
2	P02	LO1	L	Investigation on getting a Raspberry Pi (SBC) ready for specifically computer vision and Deep learning.	* Investigated different methods of installing "OpenCV" open source computer vision library on the Raspberry Pi, in such a way that software is optimized for computer vision.
		LO4	L	Demonstration of a basic object detection model that runs on Raspberry Pi.	* Implemented a paper related to object detection and demonstrated the results to the supervisor for his feedback. * Debugged and fine tuned the algorithm using other online resources.
3	P03	LO4	L	Implementation of complete object detection model by referring a research paper.	* Implemented a paper related to object detection using openCV open source computer vision library and with modern "C++" language, for better hardware utilization.
4	P05	LO2	H	use of Raspberry Pi like SBCs for industrial product prototyping.	* Investigated pros and cons of using Raspberry Pi SBC for industrial product prototyping. * Discussed what makes Raspberry Pi a not so good choice for industrial applications.
5	P06	LO3	H	Discussion on respecting the Intellectual properties of other inventors/researchers (IPs)	* Discussed about the necessity of respecting work done by others (IPs), an ethical way to use those and consequences of not respecting those.
		LO4	M	N/A	
		LO5	H	Financial feasibility study on various hardware platforms for rapid, low cost prototyping.	* Carried out a feasibility study on various hardware platforms for rapid prototyping of the object detection model. In such a way that the platform's cost aligns with the allocated budget of the project.

					to manufacture Because we can not continue our products that uses their modules.
6	P07	LO5	L	Evaluation of Raspberry Pi in an industrial level product development using	* Learnt about the importance of considering product support service duration of hardware platforms. Because in case the supplier/manufacturer terminate its production we will be in trouble.
7	P08	LO3	M	Discussion on respecting the intellectual properties of other inventors/researchers.	Discussed about the necessity of respecting work done by others (IPs), ethical ways of using them inside our engineering solutions and consequences of not respecting them.
		LO4	L	Discussion on importance of meeting deadlines when it comes to collaborative tasks.	* Discussed how to manage time and give the maximum dedication towards the allocated tasks in order to achieve the company targets within a given period of time.
8	P09	LO4	H	Discussion with other trainees and supervisor to understand and modify the requirements of interfaces of modules developed by each trainee with other trainees for better understanding.	* For the final system to function as a single unit the interfaces of each sub modules must be compatible. Discussed those being developed by each trainee with other trainees for better understanding.
9	P10	LO1	L	Benchmarking performance of an algorithm using different hardware platforms to choose the best.	* Benchmarked timing requirement of an algorithm using a microcontroller and Raspberry Pi in order to choose/select the hardware platform to move forward with.
		LO4	M	Discussion with other trainees and supervisor to understand and modify the requirements of interfaces of the modules being developed by each trainee by the model.	* Presented the workings of object detection model that runs on Raspberry Pi and showed the kind of output generated by each trainee by the model.
		LO5	H	Feasibility study on various available hardware platforms for rapid/low cost prototyping.	* Carried out a feasibility study on various hardware platforms for rapid prototyping which aligns with the budget allocation of the project. * Reported the found details to supervisor.
10	P11	LO1	L	Feasibility study on various hardware platforms for rapid prototyping and low cost prototyping.	* Carried out a feasibility study to choose a low cost hardware platform that aligns with budget allocation of the project.
		LO4 LO5	M L	Evaluation of Raspberry Pi in terms of its support periods to use that inside a product.	* Each device has its own support period after which the manufacturer keeps producing the device, after that there will be no support for that specific device in the market. Learnt the importance of this fact when we are developing a product that uses such a device inside it.
		LO5 LO4	M	Demonstration of the object detection model's performance in terms of time and accuracy.	* Demonstrated the timing requirements and accuracy of the model in order to receive the further instructions to develop the system.

11	P12	LO1	M	Investigation on methods to improve the performance of object detection model to achieve real time behavior	* Learnt about multithreading based C++ programming to improve the efficiency of the object detection algorithm.
		LO3	M	Discussion on specifications to consider when selecting a hardware platform for industrial projects.	* Learnt about the specifications to consider when choosing a hardware platform for industrial product prototyping.
		LO4	H	Benchmarking performance of an algorithm using different hardware platforms.	* Investigation on Pros and Cons of Raspberry Pi's in industrial level products. * Learnt how to properly carry out timing analysis of an algorithm (time required to run an algorithm once using some device).
		LO5	H	Feasibility study on various hardware platforms for rapid and low cost prototyping.	* Learnt about time complexity analyzing in a mathematical way. * In industrial level project time it takes to design and manufacture a product is crucial. Therefore, I had to learn how to choose a hardware platform for rapid prototyping, and at the same time choose it in a way that its cost is aligned with the budget of the project!

Undergraduate				Supervisor	
Name	THALAGALA BoPo			Name	J.A.L. Jayasinghe
Student ID	1806315	Field	EN	Position	L.E. ROBOTICS (PVT.) LTD.
Signature	<u>Piyuman</u>			Signature	<u>Jake</u> Engineer - In - Charge
Date	01/03/2022			Date	09/05/2022