

A DETAILED SUMMARY ON
Major Project [ETMJ100]

SUBMITTED TO



AMITY UNIVESITY UTTAR PRADESH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE
OF

BACHELOR OF TECHNOLOGY

IN

INFORMATION TECHNOLOGY

BY

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(2015-19)

UNDER GUIDANCE OF

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AMITY UNIVESITY UTTAR PRADESH



Project Synopsis B.Tech (IT)

Project Title - AI and IoT based personal assistant and care taker

Academic Session - 2018-19

Proposed Project Supervisor - Mr. Vikas Deep, Dr. Purushottam Sharma

Project Team-

Programme:- B.Tech IT (2015-19)		Year/Semester:-2018-19	
Sr.No.	Enrollment No.	Name	Signature
1	A2305315020	Rashbir Singh	

Objective

To develop an AI, IoT, Computer Vision, NLP and Android based physical assistant to allow user to control environment by thinking, help people with vision disability and help the slow learners or people with special abilities.

Abstract

The motive of the project is to use latest technologies and trends to help the human. Combining technology with human biology and allow person to control and manipulate the environment with thoughts. For the purpose the proposed project will be using computer vision for the object detection and send that data for analysis further that data will be used along with the data of concentration which will be fetched in real time using EEG and an AND condition will be used to turn detected object ON/OFF without the persons physical movement.

For the command and control infrared led be used that will send the control commands to different appliances remotely and wirelessly.

The motive is also to help the people visual ability to help crossing road and work as a therapy dog. Using computer vision and IoT to detect the surrounding and inform the user.

The motive is also to accept commands using NLP only when the specific person command it to do which will be detected using computer vision.

Use of inhouse cloud server in the project reduces the cost of the project while making it more robust and increasing the scope, as the in house cloud which can be accessed and its hardware can be used to control the lights and hence also providing complete home automation based on IoT solution.

So with this one can even control devices remotely without actually tampering with the switch board and appliances wires.

Methodology to be adopted

1. Use of computer vision - OpenCV and resnet.
2. Use of IoT with the help of embedded microprocessors - Raspberry pi.
3. Use of biosensors like EEG.
4. Programming language that will be used will be python for data analysis and algorithm designing.

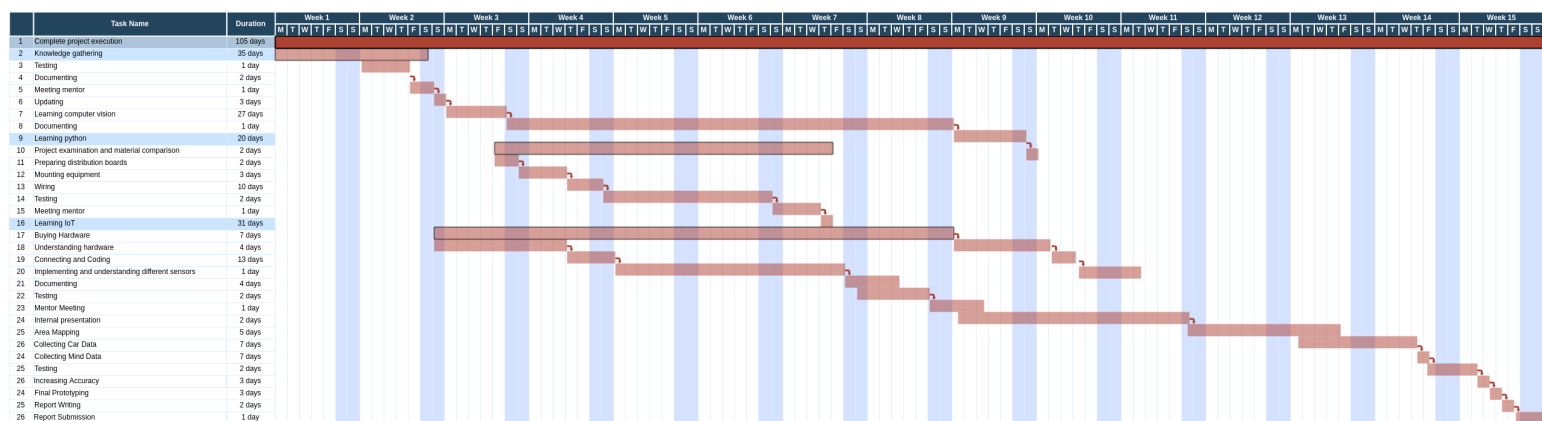
Resource requirement

1. Raspberry pi
2. Anaconda
3. Android Studio
4. EEG
5. Biosensors
6. Camera, etc.

Justification of the project

- The project will help people with special abilities, visual impairment and physical disabilities.
- The project can help the human kind a lot and can help the human civilisation to get a step closer to human-computer interface.

PERT Chart/Project Plan (For Both Semesters)



105 Days

References

1. Bradski, G. R. (1998). Computer vision face tracking for use in a perceptual user interface.

2. Kendall, A. G., Salvapantula, N. N., & Stol, K. A. (2014, May). On-board object tracking control of a quadcopter with monocular vision. In *Unmanned Aircraft Systems (ICUAS), 2014 International Conference on* (pp. 404-411). IEEE.
3. Warren, J. D., Adams, J., & Molle, H. (2011). Arduino for robotics. In *Arduino robotics* (pp. 51-82). Apress, Berkeley, CA.
4. Shah, P., & Vyas, T. (2014). Interfacing of MATLAB with Arduino for Object Detection Algorithm Implementation using Serial Communication. *International Journal of Engineering Research & Technology (IJERT)*, ISSN, 2278-0181.
5. Abaya, W. F., Basa, J., Sy, M., Abad, A. C., & Dadios, E. P. (2014, November). Low cost smart security camera with night vision capability using Raspberry Pi and OpenCV. In *Humanoid, nanotechnology, information technology, communication and control, environment and management (HNICEM), 2014 international conference on* (pp. 1-6). IEEE.
6. Ujjainiya, L., & Chakravarthi, M. K. (2015). Raspberry—Pi Based Cost Effective Vehicle Collision Avoidance System Using Image Processing. *ARPJ. Eng. Appl. Sci*, 10(7).
7. Lienhart, R., & Maydt, J. (2002). An extended set of haar-like features for rapid object detection. In *Image Processing. 2002. Proceedings. 2002 International Conference on* (Vol. 1, pp. I-I). IEEE.
8. Pulli, K., Baksheev, A., Korniyakov, K., & Eruhimov, V. (2012). Real-time computer vision with OpenCV. *Communications of the ACM*, 55(6), 61-69.
9. M. W. Rashad and M. Takruri, "Automatic non-invasive recognition of melanoma using Support Vector Machines," *2016 International Conference on Bio-engineering for Smart Technologies (BioSMART)*, Dubai, 2016, pp. 1-4.
10. Lienhart, R., & Maydt, J. (2002). An extended set of haar-like features for rapid object detection. In *Image Processing. 2002. Proceedings. 2002 International Conference on* (Vol. 1, pp. I-I). IEEE.

Signature(s) of project team:

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Date: August 27, 2018