**RAMRAO ADIK INSTITUTE OF TECHNOLOGY**

**DEPARTMENT OF INSTRUMENTATION ENGINEERING**

**Academic Year 2017-2018**

**Application for project/research proposal**

**Application No: Date:** 09.11.17

**Name of faculty/ Project Investigator: Gargi Phadke**

**Designation: Professor**

**Name of students:** Amol Rajput, Aniket Pawar, Vinit Pimpale

**Contact No: 9594028830**

**Email:** [**gargi.phadke@rait.ac.in**](mailto:gargi.phadke@rait.ac.in)

**Technical Field of Proposal:**

We have chosen Image Processing as our field of Project. We will be making a surveillance system which will detect objects in video and notify the user about any suspicious activity. It will try to overcome all the drawbacks of conventional surveillance system which just records video and consumes available memory of the system.

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| **Title of Project: Real Time Suspicious Activity Detection.** |

**Abstract:**

Today we live in a less secure world. That being said we are constantly under some threat, be it accidents on road or robbery or some bomb blasts in public places etc. There are number of security systems installed at such places to tackle these problems, but instead of giving a notification to the user they only record video and consume memory of the system. It does not give any implication about the incident and they are used for analysis of accidents. To tackle these problems, a Real Time Activity tracker will be useful. This system will have advantage over conventional system as it will continuously monitor the video frame from particular camera or series of camera installed. This can be implemented in any field using less amount of hardware. The system which we are designing is used to monitor the events taking place in frame of camera using image processing. In this project we are using a raspberry pi as our main processor to which camera, monitor and keyboard will be interfaced. The primary function is to detect object and to give message to user. The camera will record video which will be fed to raspberry pi for processing in OpenCV-Python and making an independent system which does not rely on any other system for computational purposes. By using OpenCV-Python we will be able to detect if any foreign object is present or not at given place. If foreign object is identified program will initiate timer to measure time of inactivity, if it is inactive for stipulated period of time program will give a notification. Also it will show the extracted foreground of particular frame which will be useful for detection in future frame. With the help of this system security concerns could be easily dealt with minimal interruptions. Furthermore, this detection could be transferred to remote location

too.

**Project Impact -Expected outcome:**

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| * The system should be able to detect object and locate the object in video frame for analysis. * The system should be able to notify the operator for any possible threat due to some object in the video which exceeded the threshold time. * Implementation of this project might be able to replace the conventional surveillance system which stores loads of data in memory. |

**Time frame estimate/schedule:** 6 months

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| **Budget Estimates – Non Recurring:** |  |  |

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| **Proposed equipment/s** | **No of units** | **Cost in Rs.** | **Remarks** |
| [Raspberry Pi 3 Model B](https://www.hackster.io/raspberry-pi/products/raspberry-pi-3-model-b) | 1 | 2885 |  |
| Monitor | 1 | 3675 |  |
| Keyboard | 1 | 1249 |  |
| Web Camera | 1 | 1299 |  |
| HDMI Cable | 1 | 399 |  |
| USB Extender | 1 | 599 |  |
| Others |  | 700 |  |
| **Total (INR)** |  | **10,806** |  |

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| **Budget Estimates –Recurring** |  |  |

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|  | **Estimate for Year 1 (R1)** |
| Consumables & Contingencies | 650 |
| **Total** | **650** |

**HOD R&D In-charge**

**Appendix**

For Project-I, our work plan was as follows:

* Implementation of the surveillance system on MATLAB.
* Installing operating system and OpenCV on Raspberry Pi.
* Interfacing the web camera to record video for the analysis.

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| **Proposed equipment/s** | **Cost in Rs.** |
| [Raspberry Pi 3 Model B](https://www.hackster.io/raspberry-pi/products/raspberry-pi-3-model-b) | 2885 |
| Web Camera | 1299 |
| HDMI Cable | 399 |
| Others | 700 |
| **Total (INR)** | **5283** |

For Project-II, our work plan will be as follows:

* Designing a standalone system for surveillance system.
* Executing the detection using OpenCV-Python installed on Raspberry Pi.
* Finding and correcting the executional errors

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| **Proposed equipment/s** | **Cost in Rs.** |
| Monitor | 3675 |
| Keyboard | 1249 |
| USB Extender | 599 |
| **Total(INR)** | **5523** |