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**BONAFIDE CERTIFICATE**

Certified that this project report **“DESIGN AND SIMULATION OF SENTINEL GUN ASSITED BY IMAGE PROCESSING FOR DEFENCE APPLICATION”** is the bonafide work of **“A. AJEETH (920415114007), K. BHARANI DHARAN (920415114027), A. THEIR MUTHU SELVAM (920415114101)”** who carried out the project work under my supervision.

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**INTERNAL EXAMINER ENTERNAL EXAMINER**

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**ABSTRACT**

Every year our Indian soldiers have lost their lives due to sudden terrorist ingress and natural calamities. It should be a great lose to our nation. In order to save the life of our soldier, an autonomous guarding system is to be developed which should save the lives of the soldiers. In this project, a versatile gun holder and automatic aiming sentinel gun is designed with the assistance of image processing technology. Web Camera is used along with the gun holder to capture the live videos. This video is then further analyzed for face detection and tracking. Precise coding is made for face detection and tracking algorithms using OpenCV, Spyder software. The output of face detection and tracking of the captured image sequences is then fed to Arduino microcontroller. In Arduino, the face tracking is coupled with the servo motors which directly controls the Gun for tilting, rotation and triggering. Thus, it could fire the enemies automatically when they come into the range of the camera. This work will be useful for our country in Defense Sectors.

**KEYWORDS:** Image Processing, OpenCV, Face Detection, Sentinel Gun, Face Tracking.

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**ABBREVIATIONS**

|  |  |
| --- | --- |
| CPU  MATLAB  OpenCV  2D  WPA | Central Processing Unit  Matrix Laboratory  Open Source Computer Vision Library  Two Dimensional  Wi-Fi Protected Access |
| RGB  KNN  PAN  GPU  CMOS  HTML  BAM  CNNs  PIR  DOF | Red Green Blue  K-Nearest Neighbor  Pan Tilt Zoom  Graphics Processing Unit  Complementary Metal Oxide Semiconductor  Hypertext Markup Language  Bluetooth Access Module  Conventional Neural Networks  Passive Infra-Red  Degree of Freedom |