**A Major Project Report on**

# VIDEO ANALYSIS FOR WEAPON DETECTION AND ALERTING

**Submitted to**

**Jawaharlal Nehru Technological University, Hyderabad**

***Submitted in partial fulfillment of requirements for the award of the degree of***

## BACHELOR OF TECHNOLOGY

**in**

## COMPUTER SCIENCE AND ENGINEERING

**By**

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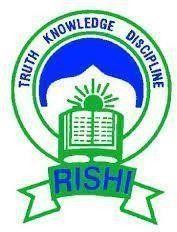
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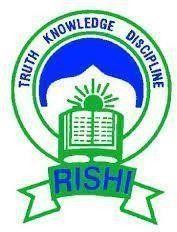
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**2024-2025**

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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**CERTIFICATE**

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# Vision & Mission of the Department

### Vision of the Department

To promote center of excellence in sustainable academic environment to impart technical skillsand strong research platform to prepare global leaders

### Mission of the Department

1. To create good academic platform with modern teaching and learning methodologies.
2. To enhance leadership qualities with ethics, values and sense of teamwork for professional excellence.
3. To inculcate research culture by encouraging projects in advanced technologies through industry interactions.

# PROGRAM OUTCOMES (POs)

1.**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

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5. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
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**10.Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**11.Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**12.Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**Program specific outcomes (PSO’s)**

**PSO 1**: Improve the student’s ability to decipher the basic principles and methodology of computer systems. Improve the students’ ability to absorb facts and technical ideas in order to build and develop software.

**PSO 2**: The capacity to create novel job routes as an entrepreneur using modern computer languages and evolving technologies like SDLC, Python, Machine Learning, Social Networks, Cyber Security, Mobile Apps etc.

**Programme Educational objectives (PEO’S)**

**PEO – 1**: Engineering graduates with excellent fundamental and technical skills will have successful careers in industry, meeting the needs of Indian and worldwide firms.

**PEO – 2**: With determination, development, self-reliance, leadership, morality, and moral principles, engineering graduates will become successful entrepreneurs who will leverage employability.

**PEO – 3**: To support personal and organisational progress, engineering graduates will pursue higher education and engage in lifelong learning.

**VIDEO ANALYSIS FOR WEAPON DETECTION AND ALERTING**

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# ABSTRACT

With the rise in security concerns and violent incidents involving weapons in public and private spaces, there is an increasing demand for intelligent surveillance systems that can automatically detect potential threats. This project, titled *"*Video Analysis for Weapon Detection and Alerting*"*, aims to develop a system that uses video feed analysis to identify the presence of weapons such as guns and knives in real time. By integrating computer vision and deep learning techniques, particularly convolutional neural networks (CNNs), the system can recognize weapons from video frames with high accuracy. Once a weapon is detected, the system triggers instant alerts to notify security personnel or law enforcement agencies, allowing for quick intervention and potentially preventing escalation.

The solution is designed to be both efficient and scalable, suitable for deployment in environments such as schools, airports, malls, and other sensitive areas. Technologies like OpenCV for video processing and TensorFlow or PyTorch for model development form the backbone of the system. The use of pretrained models such as YOLO (You Only Look Once) or SSD (Single Shot Detector) helps in achieving real-time performance with minimal latency. This project not only reduces the burden of manual surveillance but also enhances safety by enabling a proactive approach to threat detection through automation.

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# LIST OF ACRONYMS

|  |  |  |
| --- | --- | --- |
| **SN NO** | **Acronyms** | **Description** |
| 1 | NLP | Natural Language Processing |
| 2 | UML | Unified Modified Language |
| 3 | CNN | Convolutional Neural Network |
| 4 | API | Application Programming Interface |
| 5 | YOLO | You Only Look Once |
| 6 | PDBC | Python Database Connnection |
| 7 | CCTV | Closed Circuit Television |
| 8 | SQL | Structured Query Language |
| 9 | URL | Uniform Resource Locator |
| 10 | SQLITE | Structured Query Language-Lite |

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