

(i.e. detecting activity as a security threat when it is not) or false negatives (i.e. failing to detect a real security threat). To mitigate this risk, the system should incorporate robust machine learning algorithms and be continually trained on real-world data to improve accuracy.

- **System downtime:** The system could experience downtime due to hardware failures, network outages, or software bugs. To mitigate this risk, the system should be designed with redundancy and failover mechanisms to ensure continuity of surveillance operations.
- **Integration with existing systems:** The system may face challenges in integrating with existing security systems or infrastructure. To mitigate this risk, the system should be designed with flexibility and modularity, allowing for easy integration and customization.

6.5 Future Work: A section detailing future work and potential enhancements to the system, such as incorporating new algorithms or integrating with other security systems.

- **Integration with other sensors:** The system can be expanded to incorporate other types of sensors, such as audio or environmental sensors, to provide a more comprehensive view of the surveillance environment.
- **Multi-camera tracking:** The system can be enhanced to track individuals across multiple camera feeds, enabling more accurate and comprehensive monitoring of their movements and behavior.
- **Automated threat assessment:** The system can be improved with machine learning algorithms to automatically assess the threat level of an observed activity, enabling more rapid and targeted responses to potential security threats.
- **Facial recognition:** The system can be enhanced with facial recognition technology to identify individuals and track their movements, providing more granular control over access to secure areas.
- **Cloud-based storage and processing:** The system can be adapted to store and process surveillance data in the cloud, enabling more scalable and cost-effective deployments for larger or more complex security environments.
- **Edge computing:** The system can be enhanced with edge computing capabilities, enabling the processing and analysis of surveillance data to be performed closer to the source, reducing latency and improving overall