

## 4. Hardware and Software Requirements

### Software Requirements:

- **Operating System:** Windows 10 or Linux-based OS (Ubuntu 18.04 or higher recommended)
- **Python:** Version 3.6 or higher
- **OpenCV:** Version 4.5.3 or higher (Python bindings)
- **NumPy:** Version 1.21.0 or higher
- **YOLOv3:** A pre-trained object detection model
- **TensorFlow:** Version 2.5.0 or higher (optional, for advanced machine learning tasks)
- **Twilio:** Version 6.64.0 or higher (optional, for SMS or whatsapp alerts)

### Hardware Requirements:

- **CPU:** Intel Core i5 or higher (recommended)
- **RAM:** 8 GB or higher (recommended)
- **Graphics Card:** NVIDIA GPU with CUDA support (optional, for faster object detection)
- **Storage:** 50 GB or higher (depending on the size of the video dataset)
- **Camera:** IP cameras or CCTV cameras with RTSP protocol support

**Note:** *The specific hardware and software requirements may vary depending on the complexity of the system and the size of the video dataset. It is recommended to perform a feasibility study and consult with technical experts to determine the optimal hardware and software configuration for the Smart Surveillance System.*