# **Challenges Faced:**

**Model Selection**: Choosing the appropriate model architecture was a significant challenge. While custom training was an option, time constraints necessitated leveraging pretrained models. Deciding between YOLOv8, YOLOv7 and other models, also selecting the 'n' model over the 's' model required careful consideration.

**Resource Efficiency**: Ensuring that the chosen model was resource-efficient posed a challenge. The model needed to balance speed and accuracy while operating in real-time, especially considering potential hardware limitations.

**Integration**: Initially, I explored creating a web-based interface to showcase the results. However, this approach proved to be slower and resource-intensive, necessitating a shift to direct integration into a Python script for real-time processing.

**Model Evaluation**: Effectively evaluating the model's performance in terms of average FPS, maximum FPS, and minimum FPS presented challenges. Ensuring that the model met the real-time processing requirements while maintaining accuracy was a delicate balance.

**False Positives**: The choice of the 'n' model, while faster, occasionally resulted in more false positives. Addressing this challenge required careful tuning and post-processing techniques to reduce false detections.

**Limited Timeframe**: The project had a tight deadline of 48 hours, making time management and decision-making critical. Finding efficient solutions within this timeframe while meeting all project requirements required effective prioritization.