# The Development of Real-Time Firearm Detection with CCTV in Tensorflow

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# Definition of the Problem

From Research conducted by others, it is clear that most focused on accuracy rather than speed.

This created a problem of time, where detection can occur minutes after a firearm has been drawn.

This does not help us

# Motivation & Significance of the Study

Most criminals use firearms to show dominance, making the victims vulnerable

Victims are in shock and are unable to hit a panic button or call 911

1 single camera can save lives

1 single camera can stop a terrorist attack

1 single camera can stop a relative of yours being murdered

# Hypothesis & Research Questions

How can real time fire arm detection be used against crime?

What is the best model for better Detection Time?

What is the best model for better accuracy ?

The software will be a step forward in day to day security teams, and help fight against armed crime.

# Literature Review

Already in place - sliding window approach takes 4-15 seconds per frame. Making the detection delayed.

Overfeat-3 with custom data set of 3000 images, using sliding window.

Having a good custom data can change the results dramatically.

# Methodology

-Build Custom Data Set based on two replicas owned for testing

-Use a faster model for detection

-Create a test environment for the real-time object detection

# Prototype (Link to Youtube)

https://www.youtube.com/watch?v=xZ3Y_6tqT9c&feature=youtu.be

# Results & Conclusion

MobileNet was one of the quickest.

Custom data set is required

Data collection is the most important step.

Having good hardware makes training and testing quicker

# Future Improvements

Spending more time on collecting images for custom data set

Having better hardware to speed up training & testing

Focus on being of aid rather than be responsible for a false alarm due to many variables such as:

Lighting, quality, position, hue alteration etc etc

# End