

The background image shows a character in a dark, long coat standing in a dimly lit, industrial or futuristic environment. The scene is filled with complex machinery, pipes, and glowing light sources, creating a moody and atmospheric setting. The character is positioned on the left side of the frame, looking towards the right.

# Imitation of Human Behavior in 3D-Shooter Game

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**Can't Kill Progress**

# THINGS TO DO ...

- Brief Review of Existing 3D-shooters
- Geometry
- Visual Recognition
- Decision Making Model
- Process of Gaming
- Conclusion

# Brief Review of Existing 3D-shooters



Wolfenstein



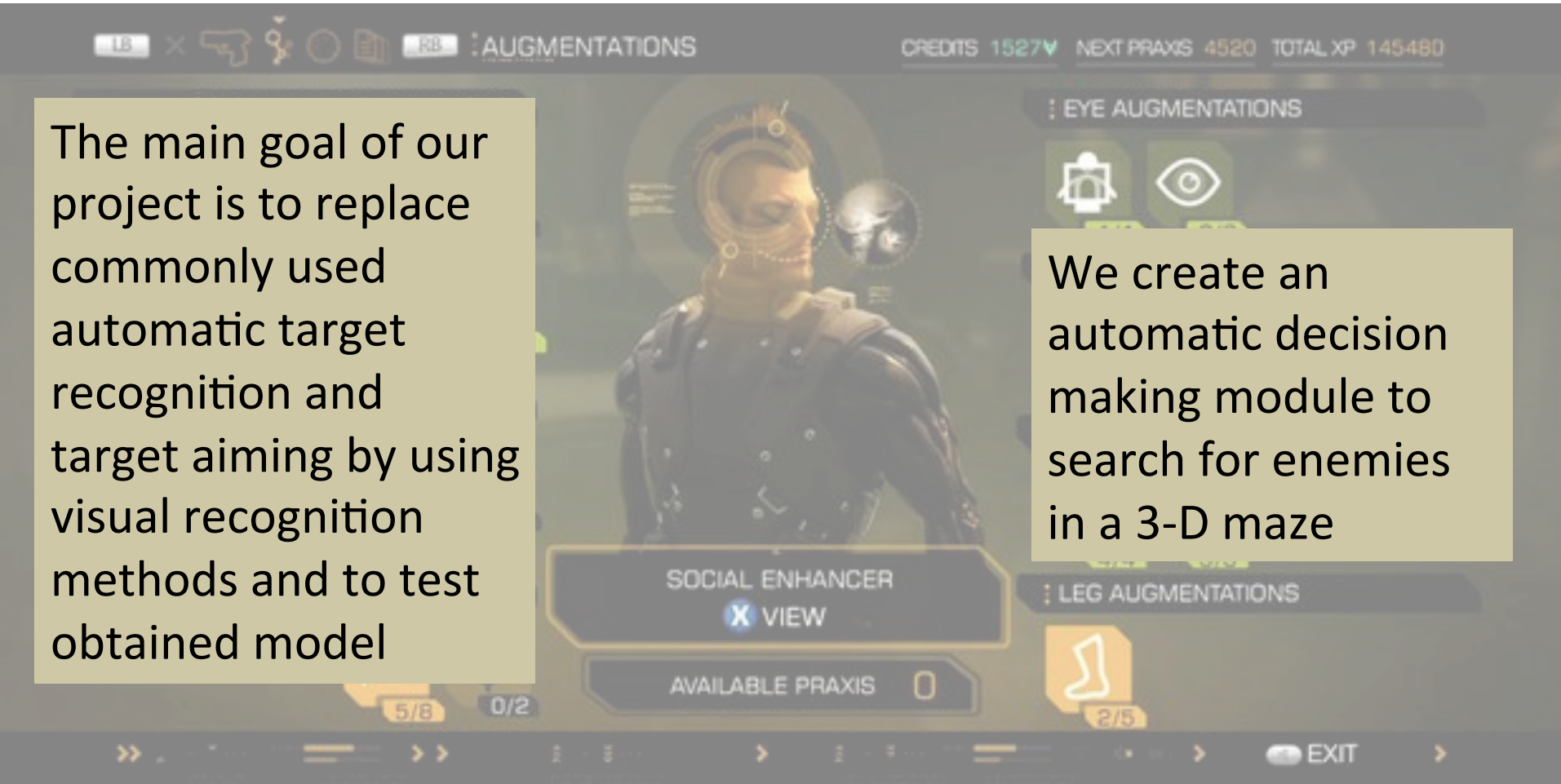
Call of duty: Ghosts

**What is the real difference?**

# Idea

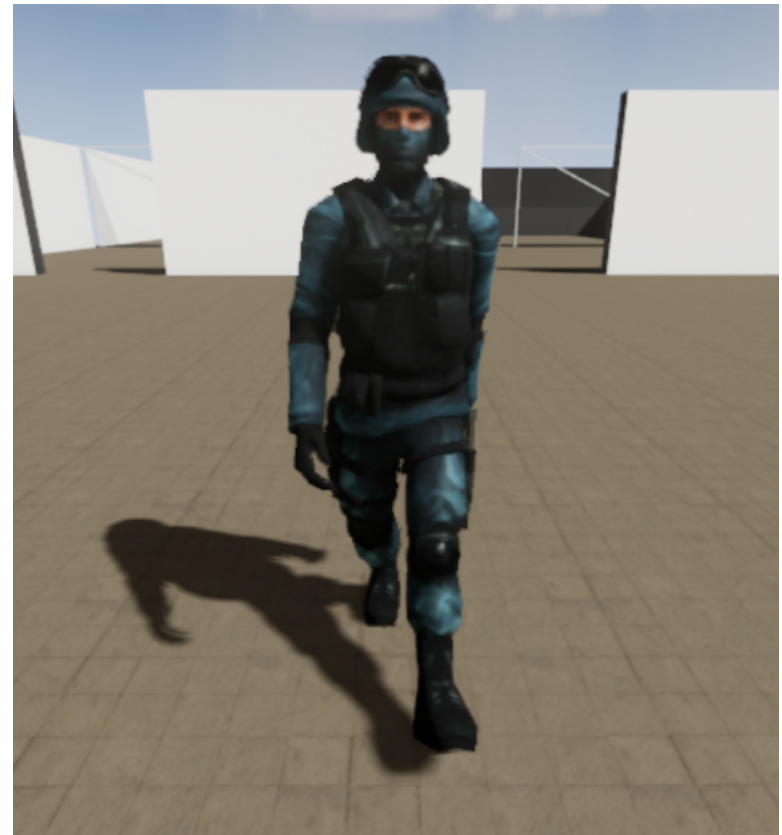
The main goal of our project is to replace commonly used automatic target recognition and target aiming by using visual recognition methods and to test obtained model

We create an automatic decision making module to search for enemies in a 3-D maze

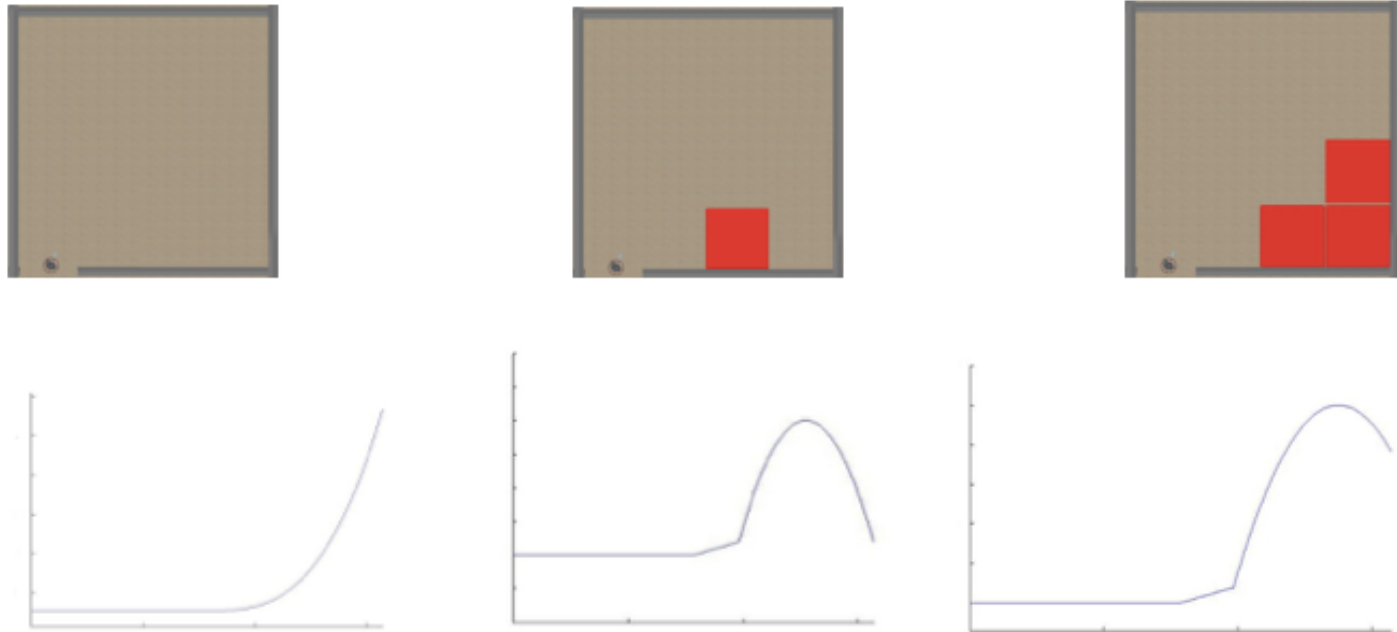


# Geometry

- Types of the objects:
  - walls, boxes
  - columns, doorways
- Processing the queue:
  - finding element with maximal priority
  - recalculating dangerous zones
  - comparing the first K queue elements



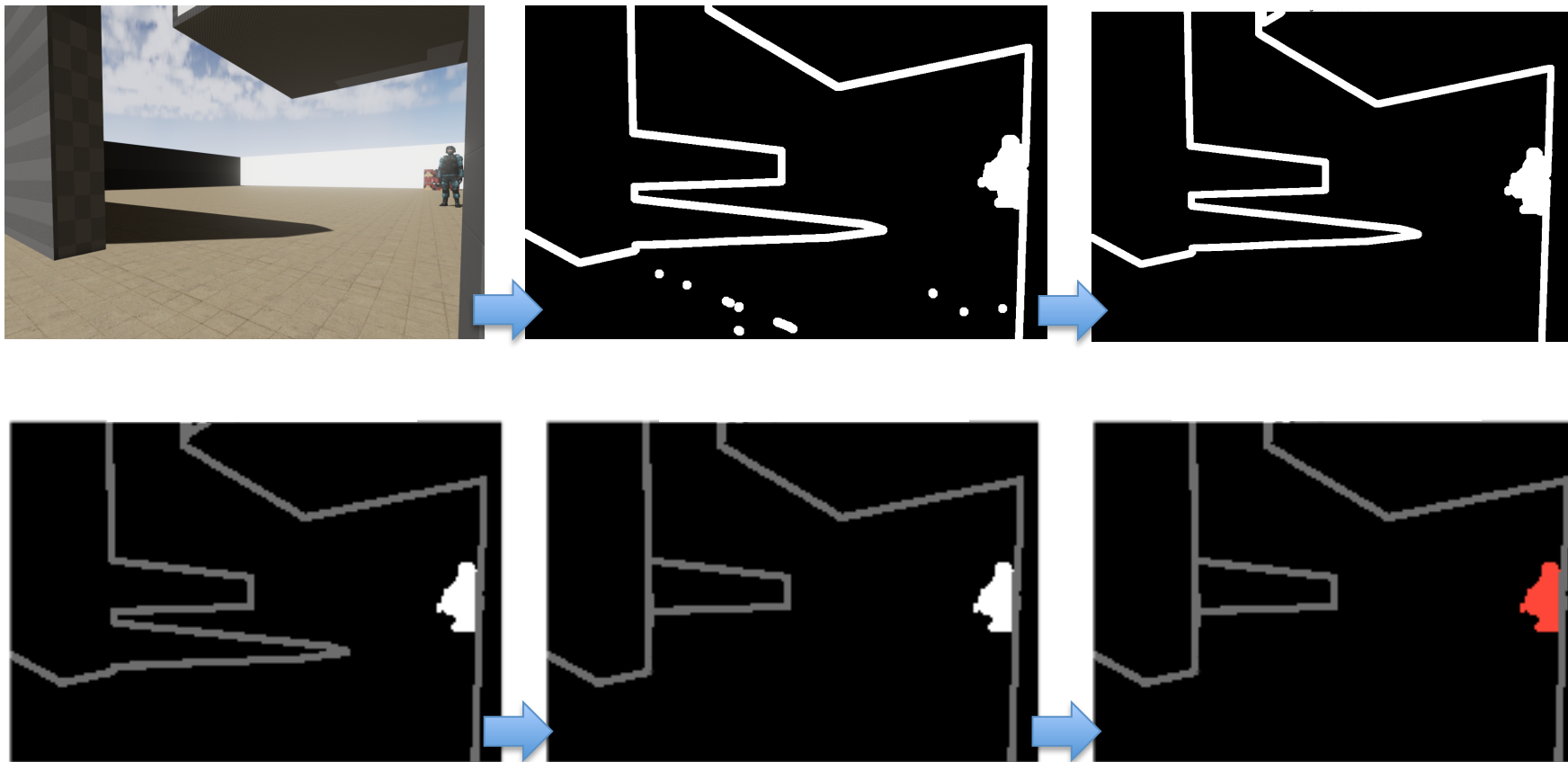
# Example



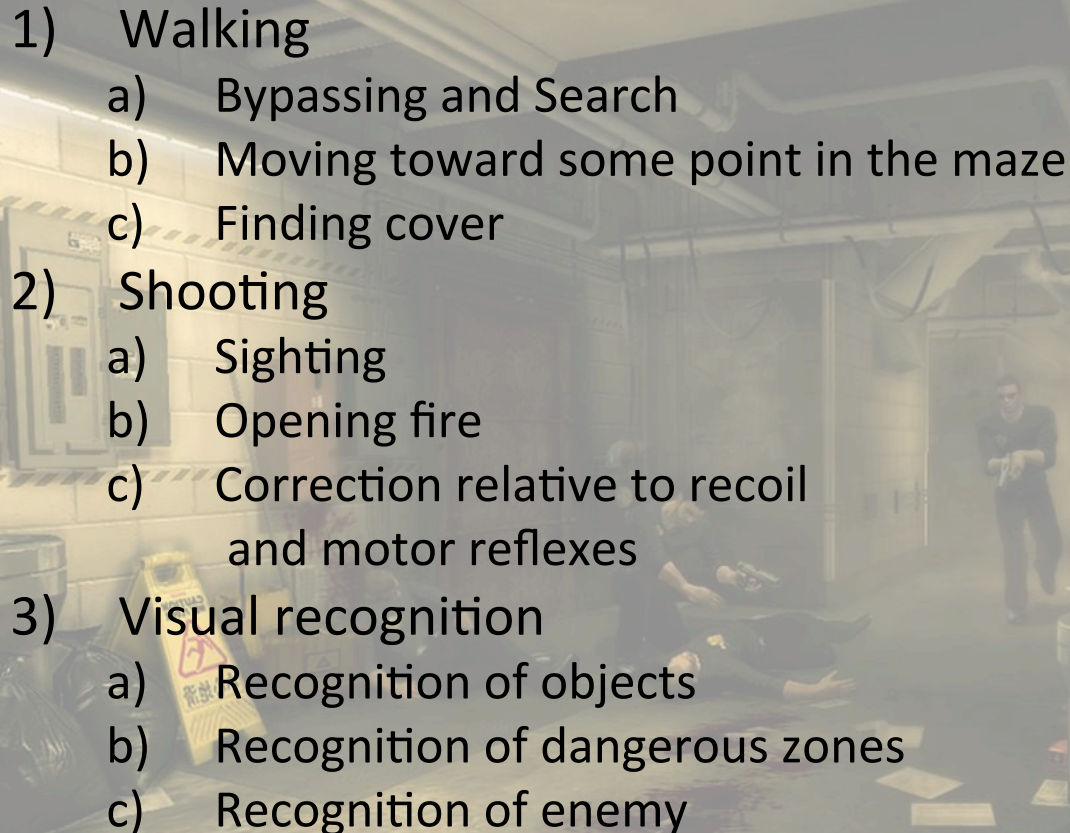
The density functions represent the process of visual recognition of objects when we search for an enemy but have to spend some time on processing object's shapes.

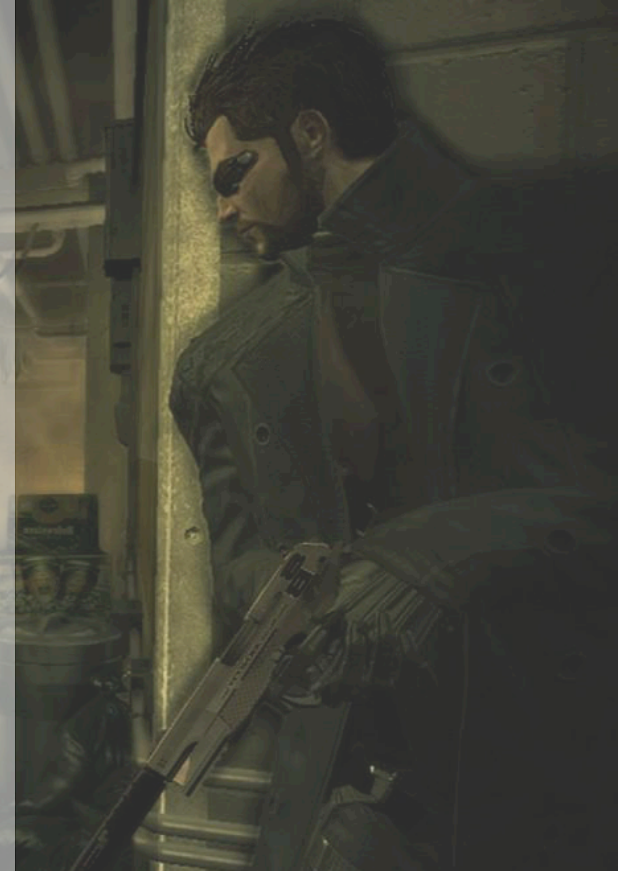


# Visual Recognition



# Decision Making Model

- 
- 1) Walking
    - a) Bypassing and Search
    - b) Moving toward some point in the maze
    - c) Finding cover
  - 2) Shooting
    - a) Sighting
    - b) Opening fire
    - c) Correction relative to recoil and motor reflexes
  - 3) Visual recognition
    - a) Recognition of objects
    - b) Recognition of dangerous zones
    - c) Recognition of enemy

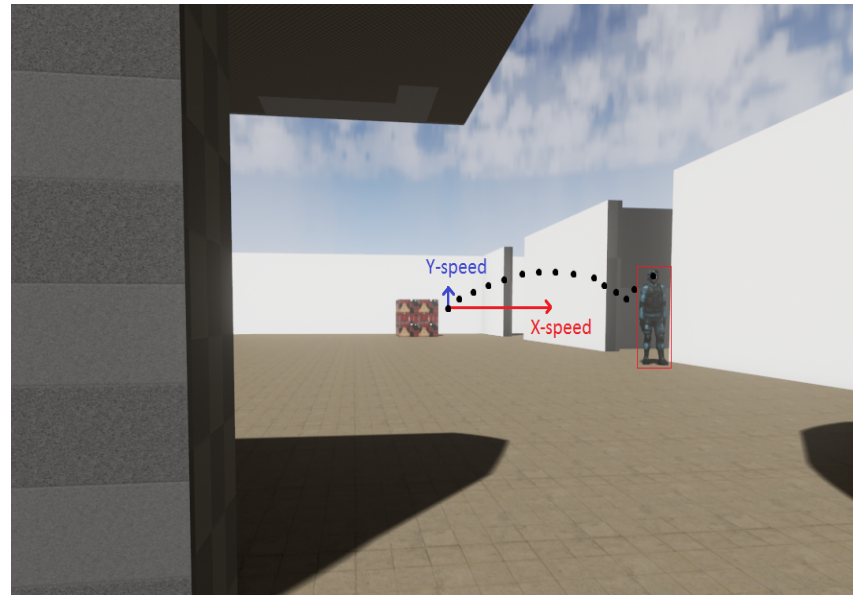
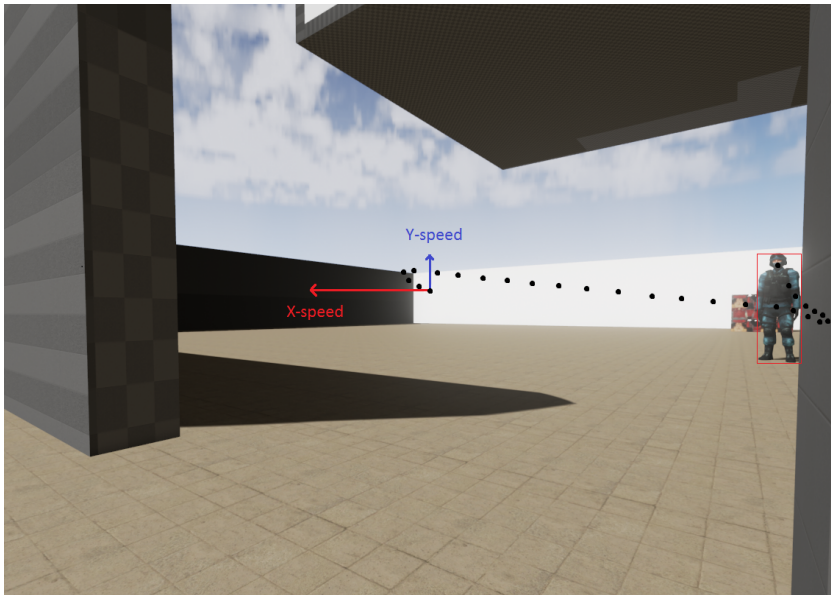


**1a)  $\wedge$  3c)  $\rightarrow$  2a)  $\wedge$  2b)  $\wedge$  2c)** (shooting after enemy recognition)



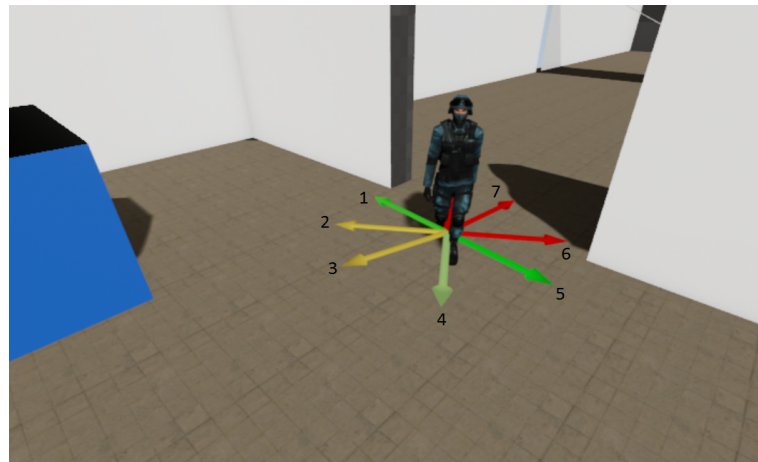
# Process of Gaming

- The relative error depends on:
  - the angle between BOT's rotation movements and direction on the target
  - X-speed
  - Y-speed



# Conclusion

In the current state we evaluate the parameters to identify the dangerous zones and to sight on enemy. We proceed with the comparison of the methods of visual recognition to improve our model.



# Thank you for attention!

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