

Collision Detection

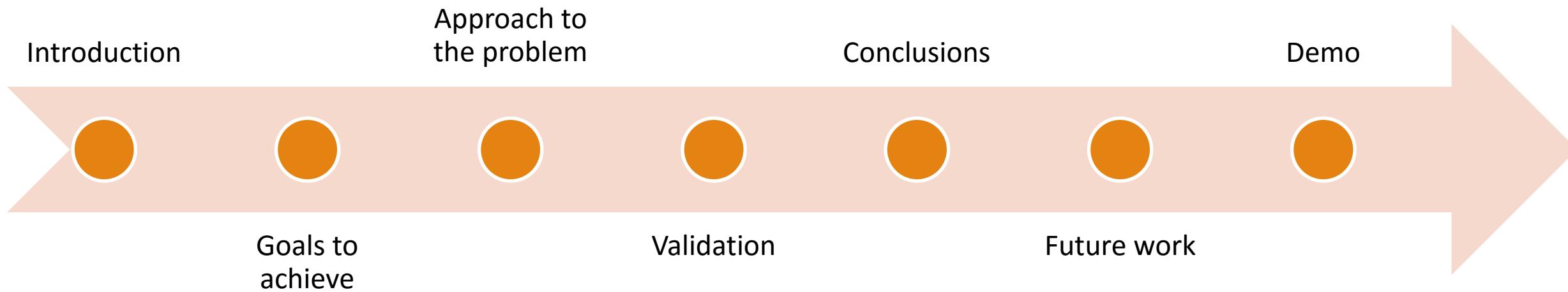
Computer Vision
University of Minho

BRUNO BARBOSA (A67646)

CARLOS GONÇALVES (A67650)

RAFAEL ANTUNES (A67711)

Structure of the presentation

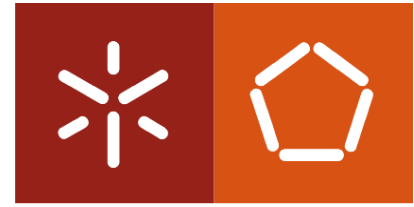


Introduction



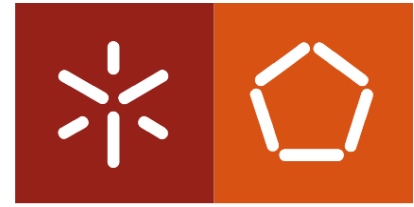
- The collision detection is a computational problem which identifies when a object hits another.
- Our work was done using videos where the objects move forward, backward and sideways, or a combination of these.
- So in our case, a collision means that a object is very close to the camera;

Introduction



- It is also important to study the videos' elements that influence the most its performance.
- From what we will see, in some situations is hard to figure if there was, or not, a collision;
- We developed this project using MATLAB.

Goals to achieve



Identify

Translations
(left and
right)

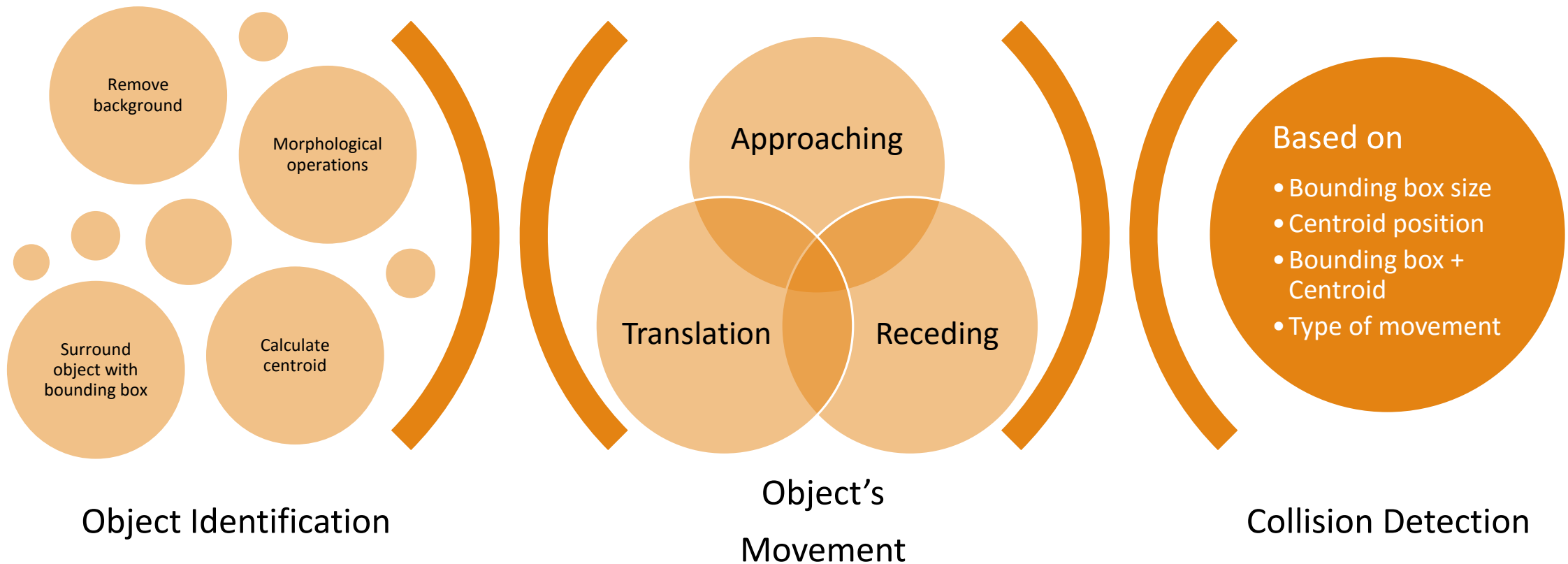
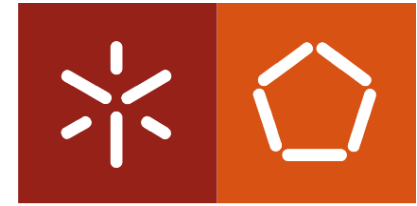
Approaching

Receding

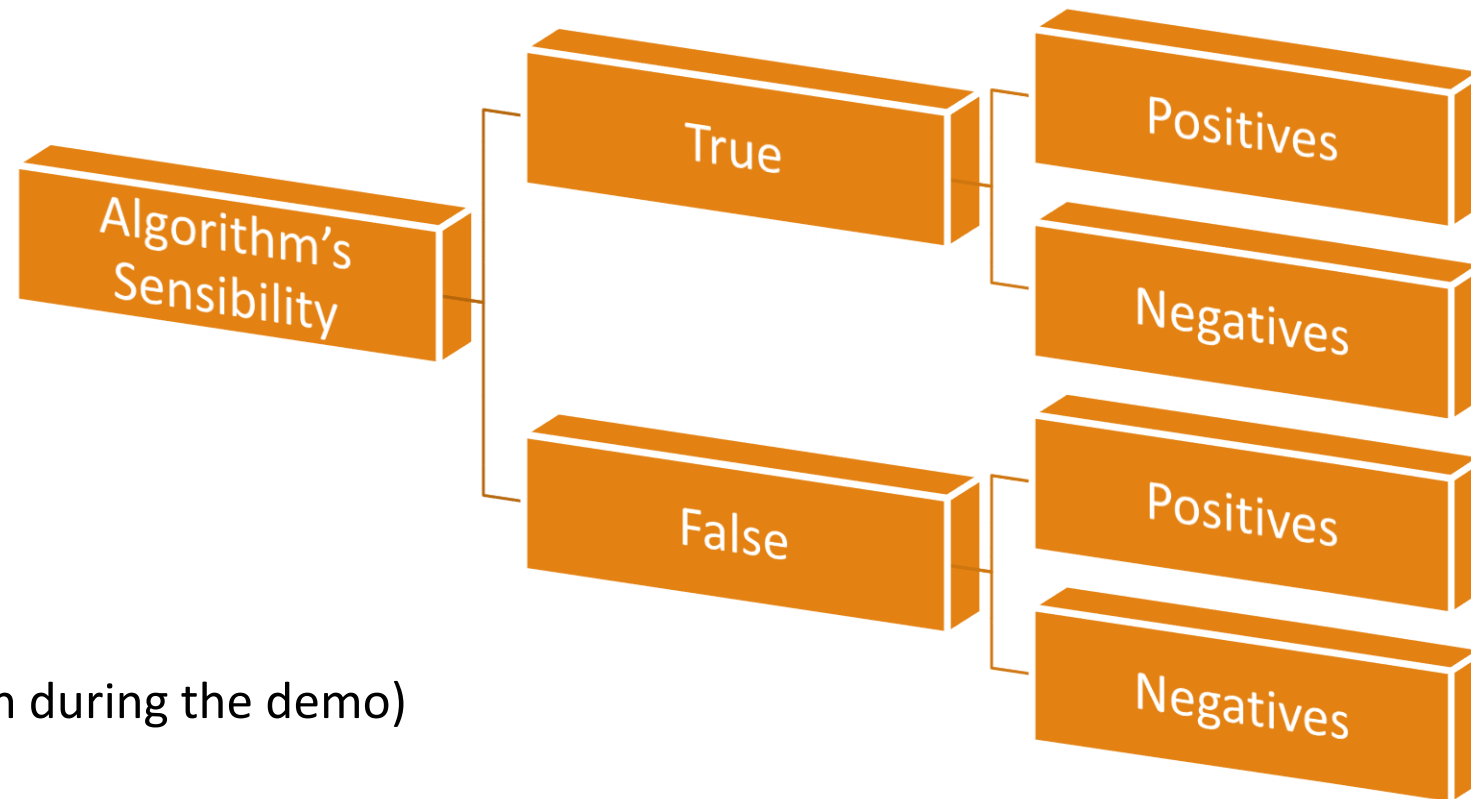
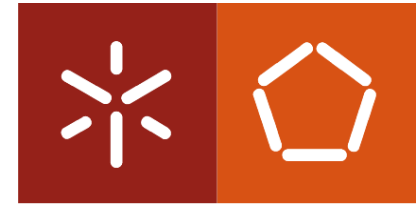
Combined
Movements

Collisions

Approach to the problem



Validation



(Will be shown during the demo)

Conclusions



- From this work we conclude that are many factors that influence the collision detection.
- These factors can be:
 - Lighting conditions;
 - Input video's quality;
 - Background noise;
 - Frame rate;
 - Object to be detected;
 - Algorithm used;
 - Algorithm's tuning.

Future work



- Expand to real time situations (stream);
- Improve the computational processing through a parallel implementation;
- Adapt to a real world problem like a camera placed in a car;
- Tune up for generic situations;
- Identify the shape, texture and the angle of movement.

Demo
