DETECTION OF CENTRE OF THE LEFT VENTRICLE OF HEARTH IN MRI DATA

Klára Kocmanová, Veronika Hluší, Tereza Rumlerová

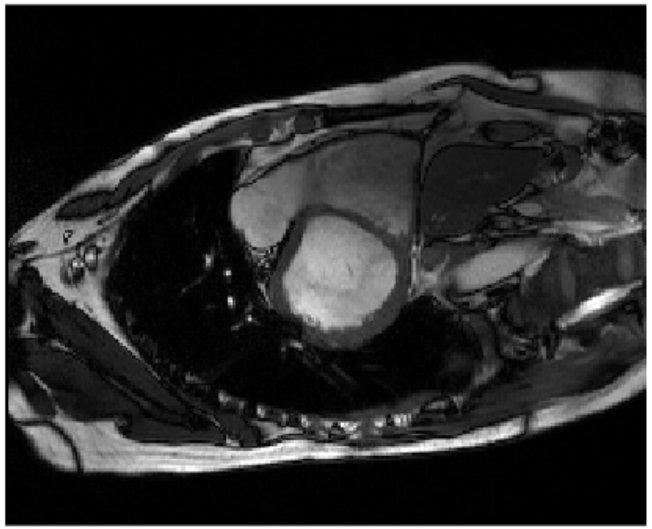
GOALS OF THE PROJECT

- Design and implement automatic algorithm for detection of centre of the left ventricle of hearth in 2D slice of MRI data
- Validate the proposed algorithm on the given publicly available dataset and statistically evaluate the accuracy of the detection using available ground truth masks

IMPLEMENTED ALGORITHM

1. Image segmentation

Original image



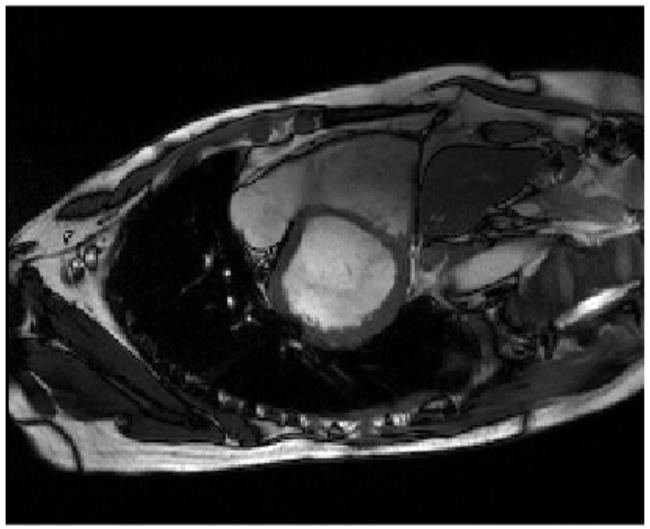
Otsu thresholding

Segmented image

IMPLEMENTED ALGORITHM

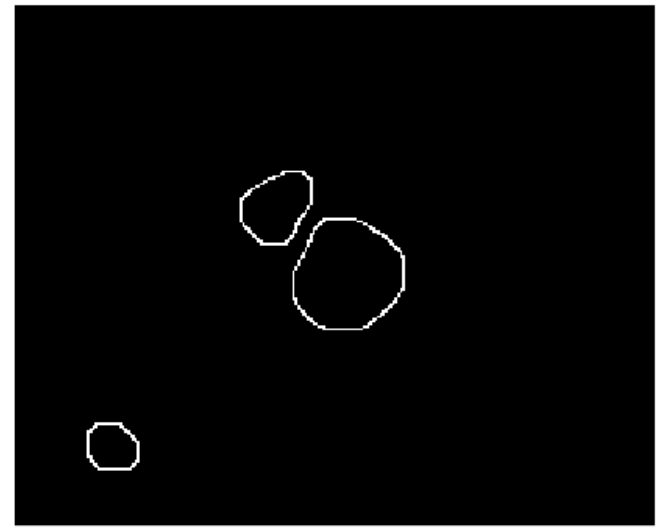
1. Image segmentation
2. Edge detection

Original image



Segmented image

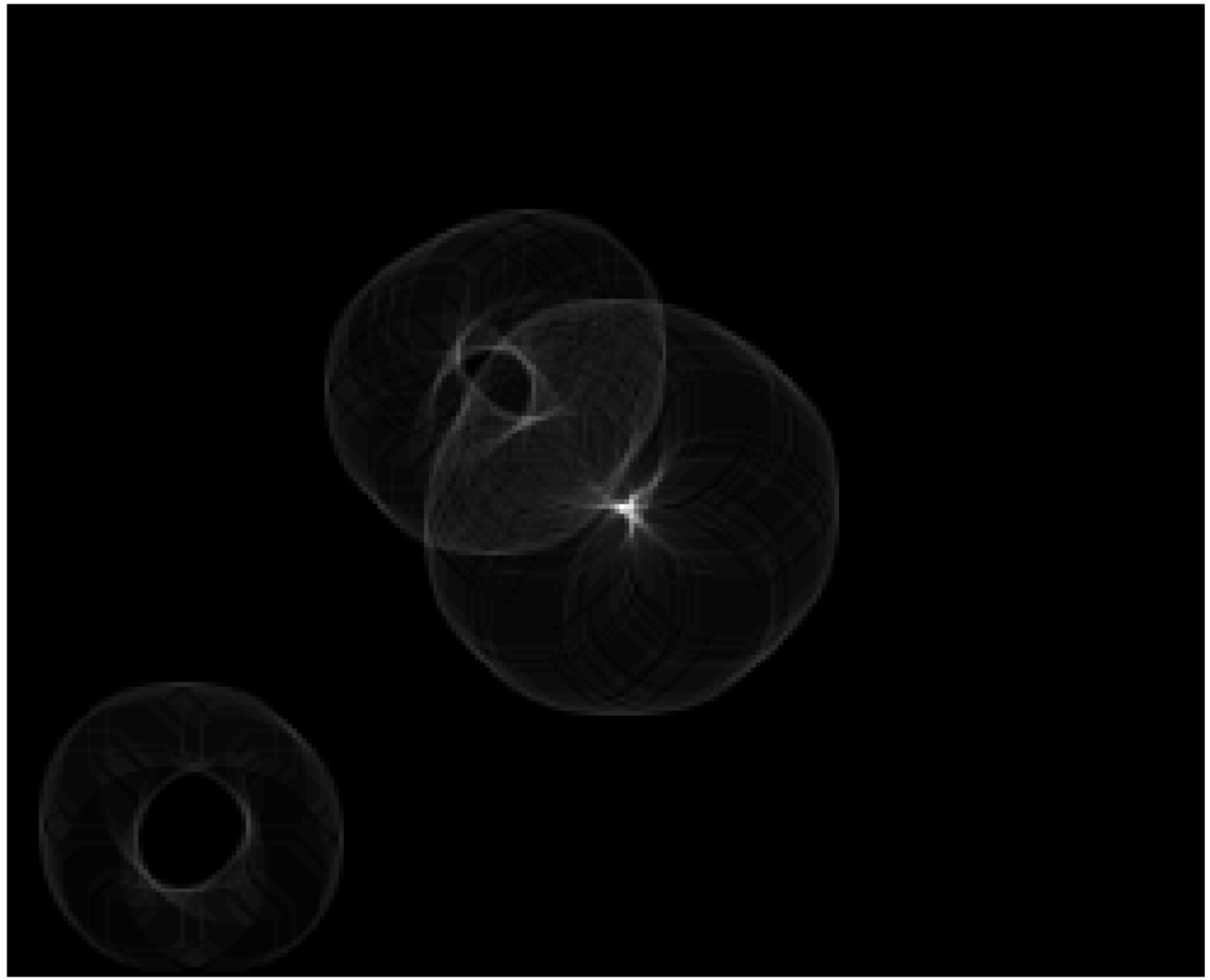
Edge detection



IMPLEMENTED ALGORITHM

1. Image segmentation
2. Edge detection
3. Hough transform

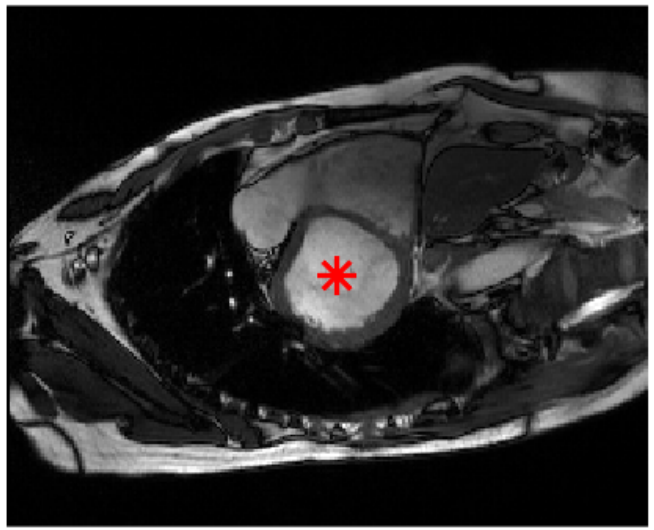
Slice of Hough transform which contains the position of the centre (radius = 18 px)



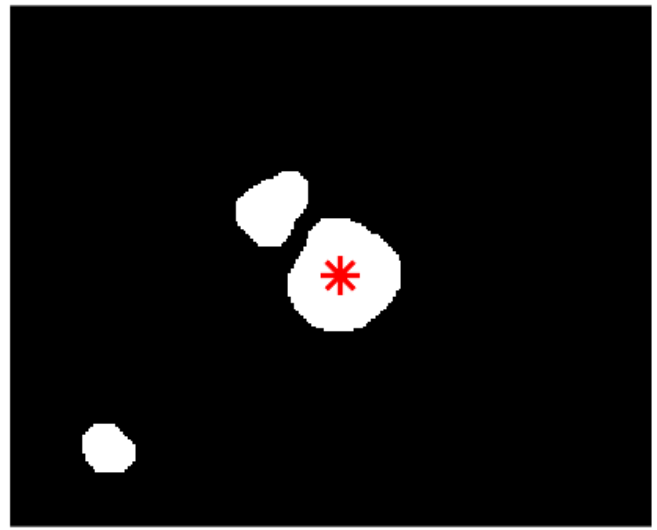
IMPLEMENTED ALGORITHM

1. Image segmentation
2. Edge detection
3. Hough transform
4. Detection of the centre of the left ventricle

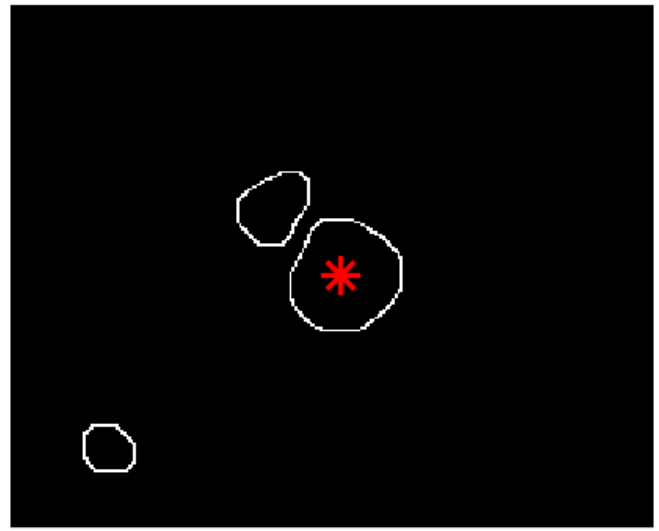
Original image



Segmented image

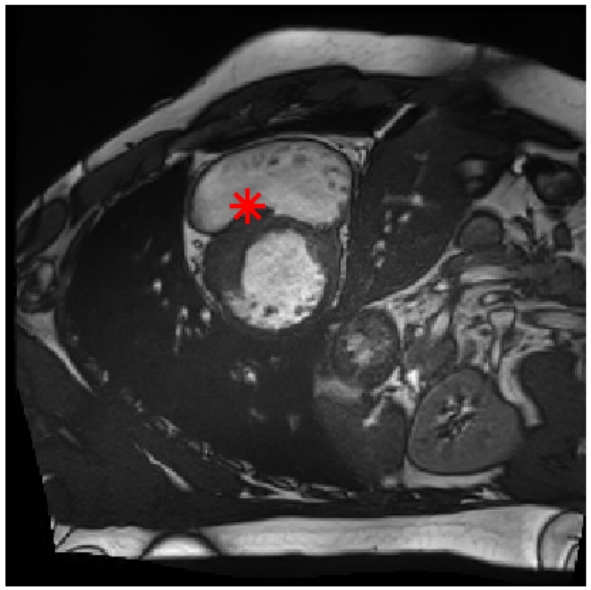


Edge detection

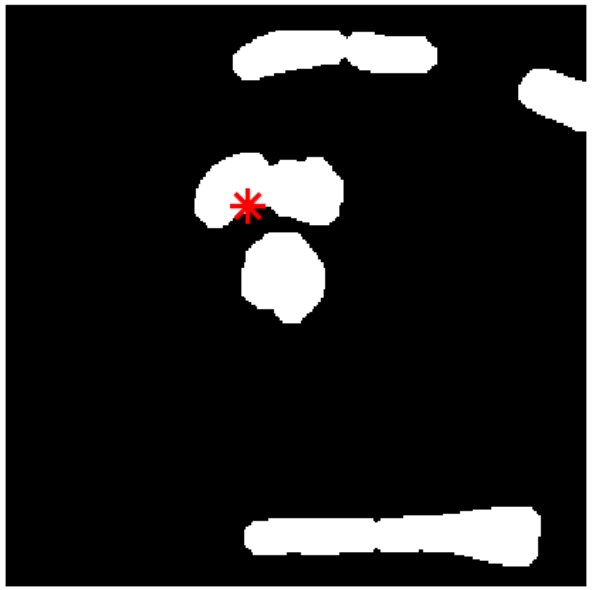


EXAMPLE OF A WRONG DETECTION

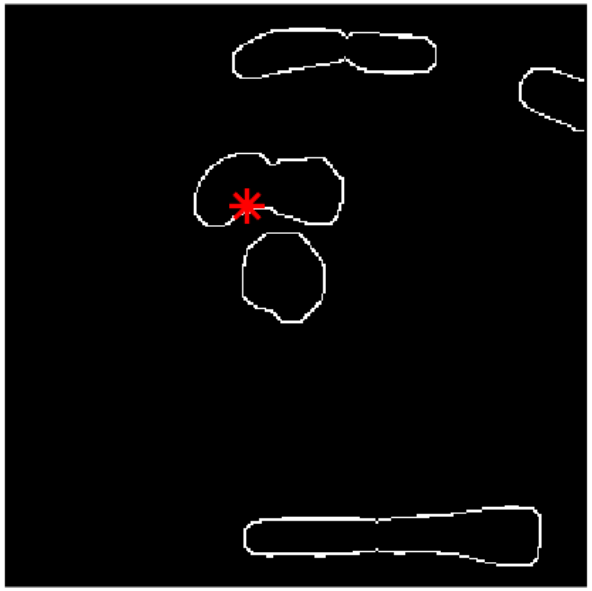
Original image



Segmented image



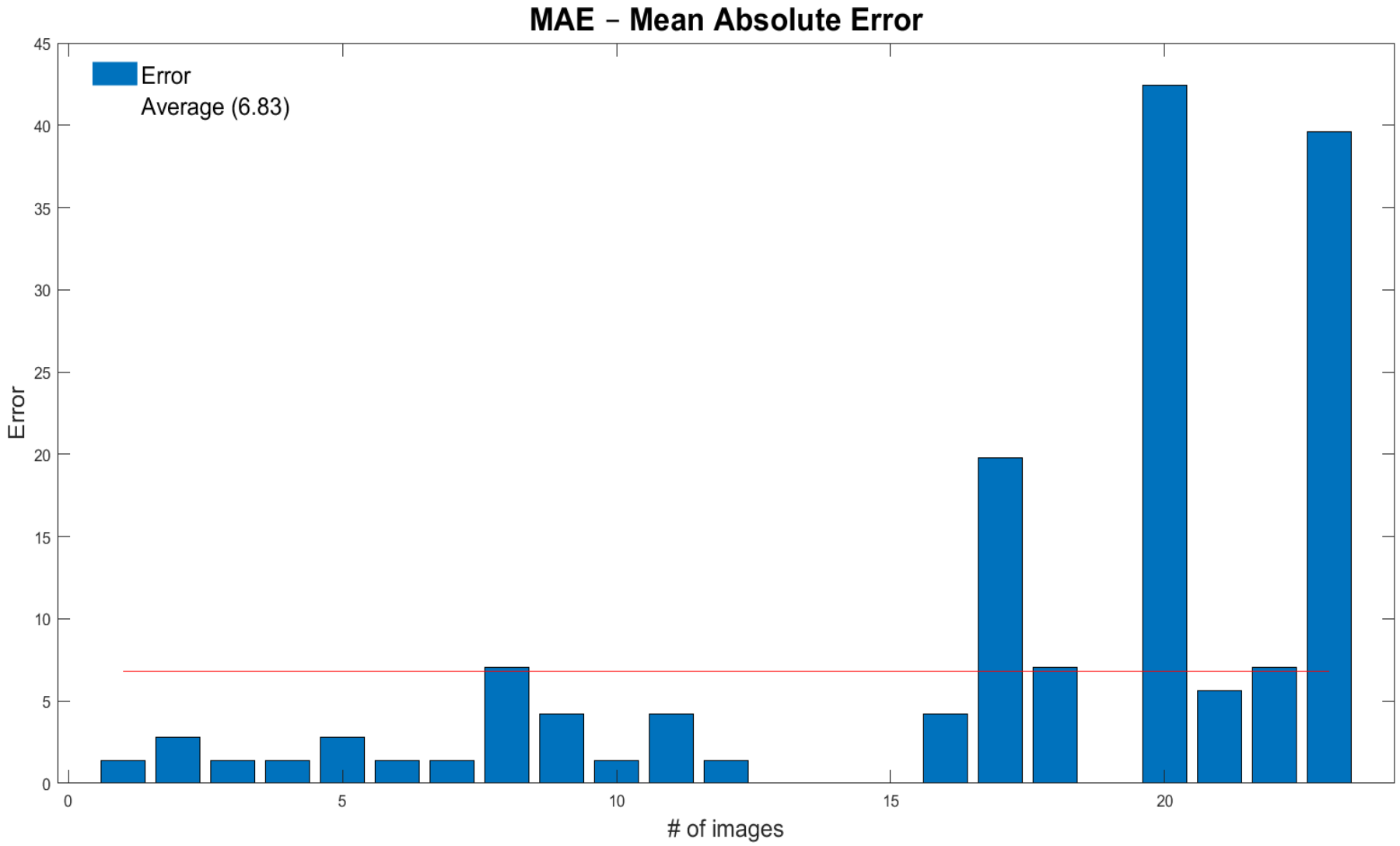
Edge detection



RESULTS

MEAN ABSOLUTE ERROR:

6,83 px



DETECTION OF CENTRE OF THE LEFT VENTRICLE OF HEARTH IN MRI DATA

Klára Kocmanová, Veronika Hluší, Tereza Rumlerová