EE641 HW1

problem 1

1.

lowest scale → small object

middle scale → medium object

highest scale → large object

2.

- positives are assigned when IoU ≥ threshold

anchors whose size are close to

ground truth sizes produce more positive

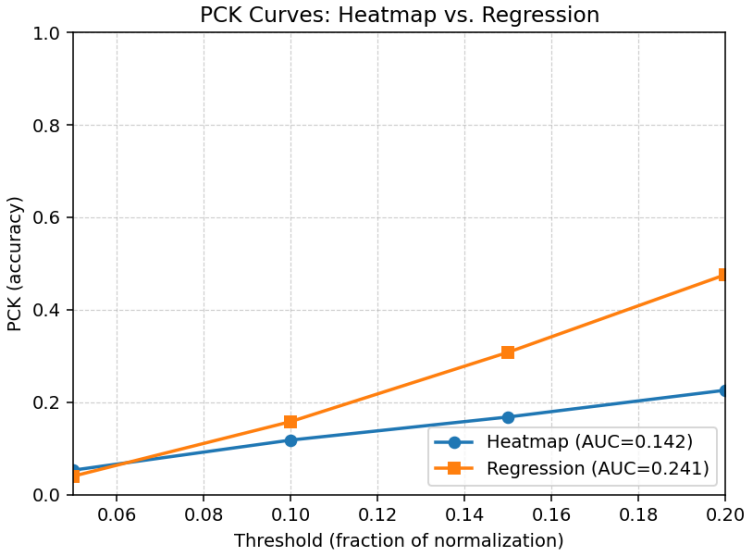
- small scale → small object

large scale → large object

- trade offs

problem 2

1.

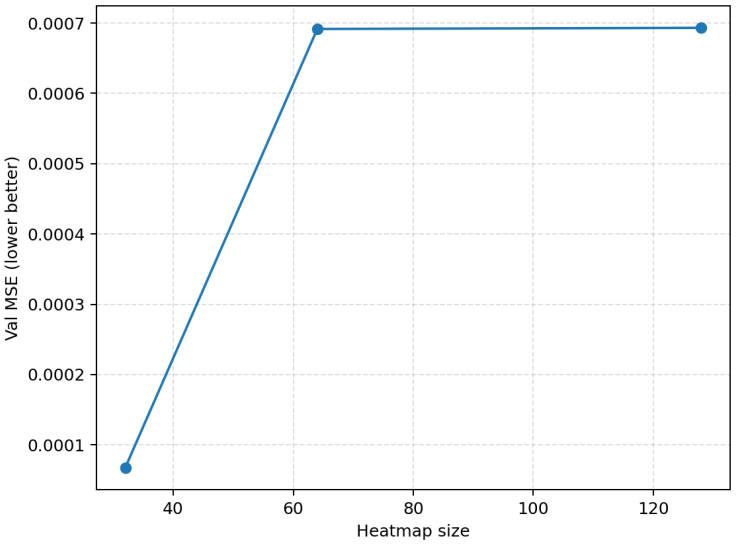


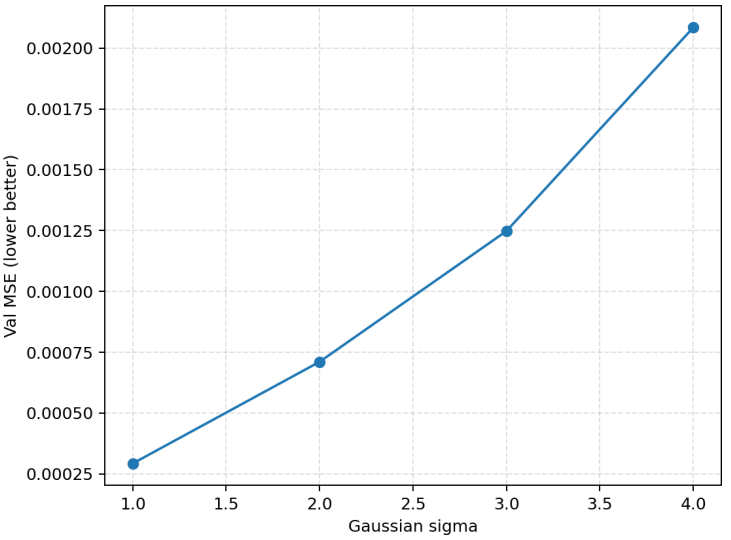
2.

heatmap approach works worse

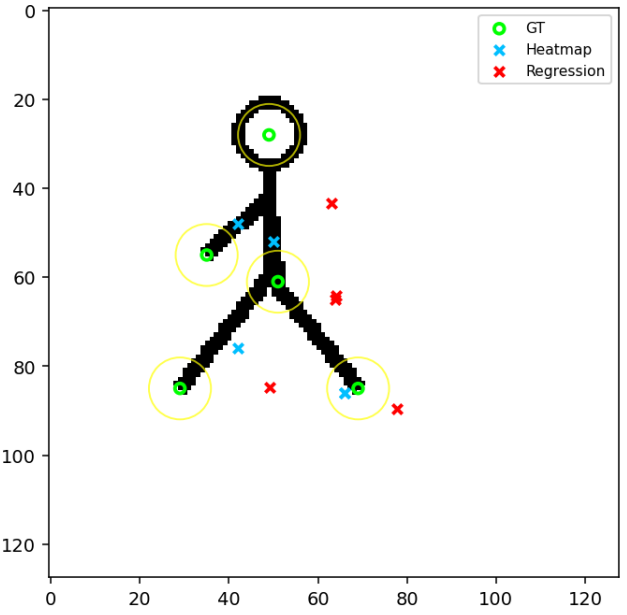
- peak picking bias
  hard argmax ignores distribution shape
- class / area imbalance

3.


Val MSE (lower better)
0.0007
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
40
60
80
100
120
Heatmap size


Val MSE (lower better)
0.00200
0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0.00025
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Gaussian sigma

4.


GT
Heatmap
Regression
0
20
40
60
80
100
120