Ömer Faruk Özdemir, 2016400048, farukozderim@gmail.com, cmpe58z, Assingment 1

Finding EER

Starting from maximum similarity value I jump to left (max-min)/10 by (max-min)/10. If FAR becomes bigger than FFR I change the value of jump with -0.5*jump and continue jumping until FFR becomes bigger than FFR, then change the value of jump with -0.5*jump.

Algorithm continues like this until |FAR-FFR|<precision. I used precision value 10**-2 and it can be changed at top of the code.

I used a similar technique for finding FAR values' thresholds. Its precision can also be changed at top of the code.

I used resolution variable for FAR/GAR plot's resolution. It can also be changed at top of the code.

DATA1

EER:	3.66%	Threshold:	-78.1805078125
FFR	1.02%	At FAR value	10%
FFR	12.13%	At FAR value	1%
FFR	35.75%	At FAR value	0.1%

Precise Calculated Values:

FAR: 0.035892929292929296 -- FRR: 0.037333333333333336 -- Threshold: -78.1805078125

EER: 0.03661313131313132 -- Threshold: -78.1805078125

0.1 FAR and corresponding FFR:

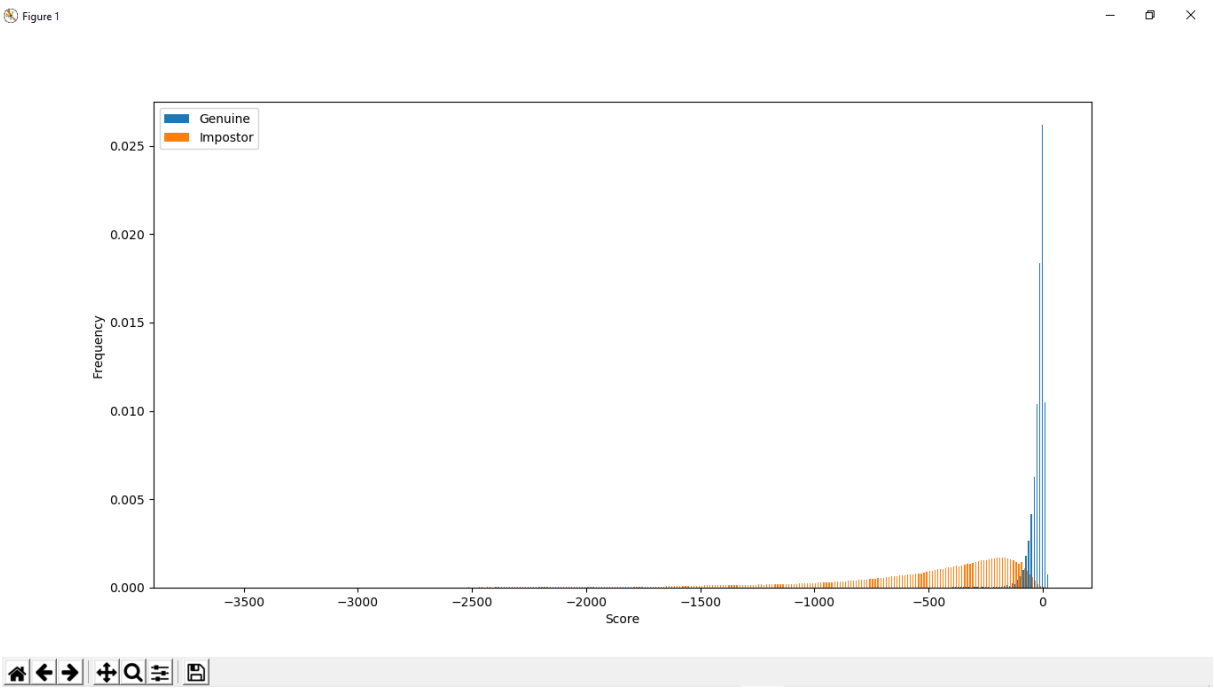
FAR: 0.10079595959595959 – FFR: 0.010222222222222223

0.01 FAR and corresponding FFR:

FAR: 0.010004040404040404 – FFR: 0.12133333333333333

0.001 FAR and corresponding FFR:

FAR: 0.0009919191919191919 – FFR: 0.35755555555555557



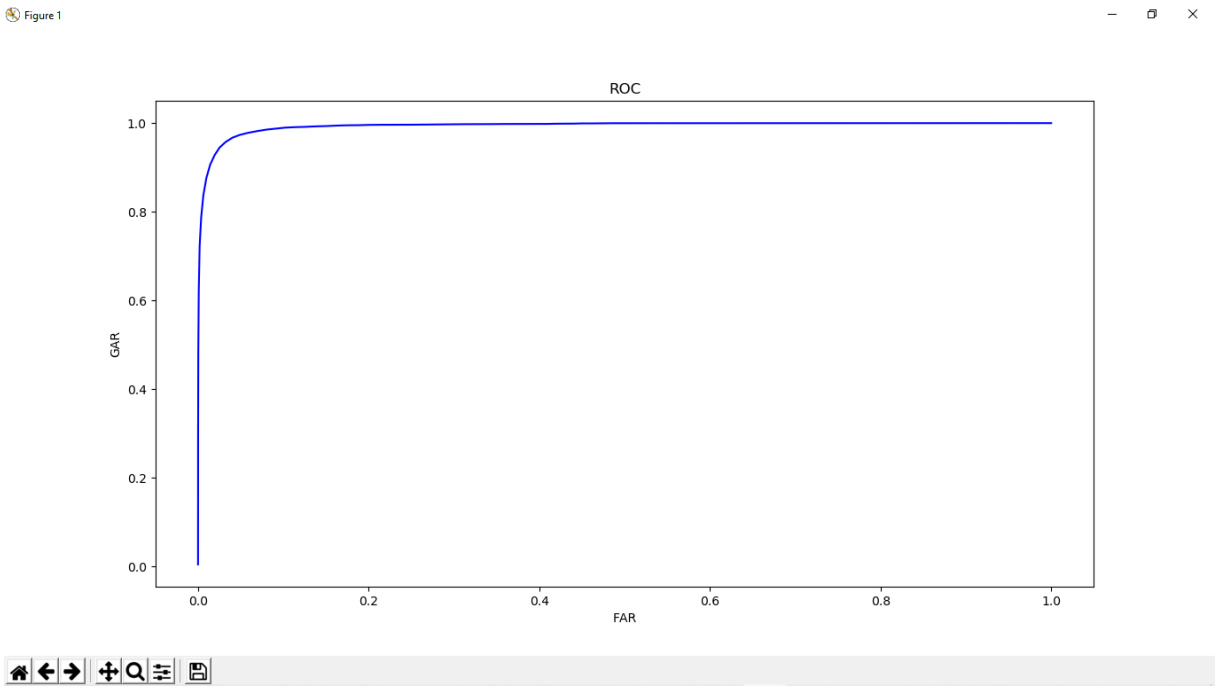


Figure 1
ROC
GAR
FAR
0.0
0.2
0.4
0.6
0.8
1.0

Data2

EER:	2.295%	Threshold:	0.69995100004
FFR	0.0666%	At FAR value	10%
FFR	10.0444%	At FAR value	1%
FFR	56.0444%	At FAR value	0.1%

Precise Calculated Values:

FAR: 0.02325050505050505 FRR: 0.02266666666666667 Threshold: 0.69995100004

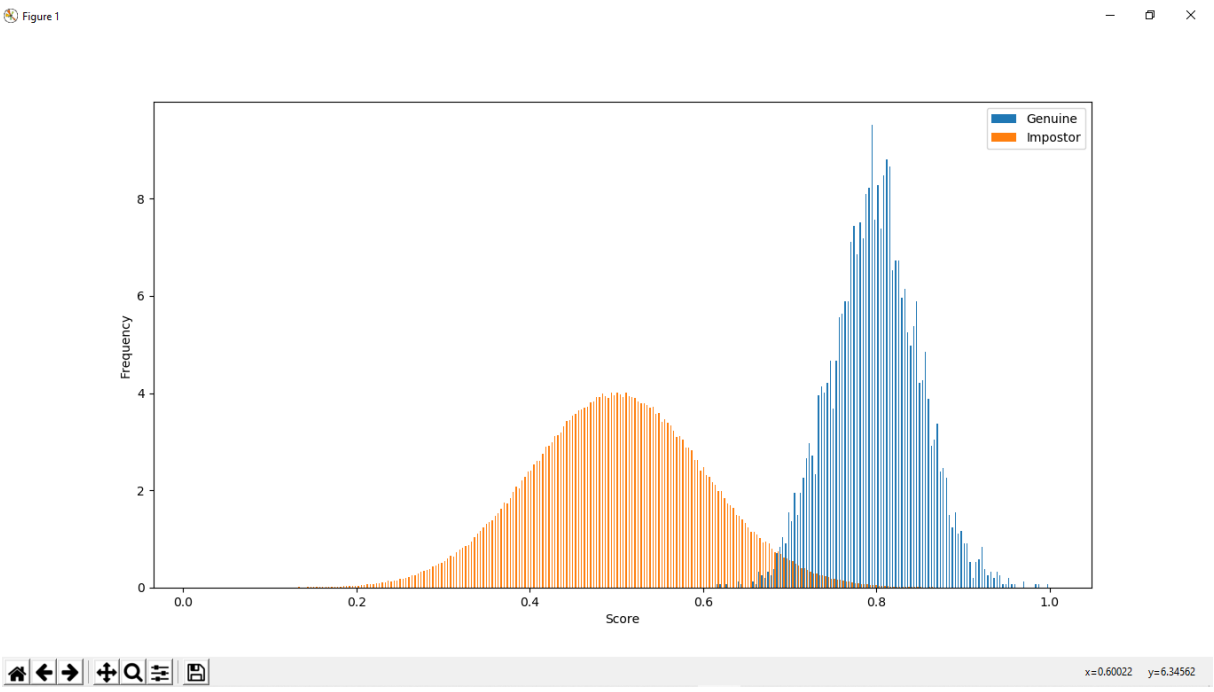
EER: 0.02295858585858586

EER value, threshold: 0.02295858585858586 0.69995100004

0.1 FAR and corresponding FFR: 0.10047272727272727 - 0.0006666666666666666

0.01 FAR and corresponding FFR: 0.01002020202020202 - 0.10044444444444445

0.001 FAR and corresponding FFR: 0.001 - 0.5604444444444444



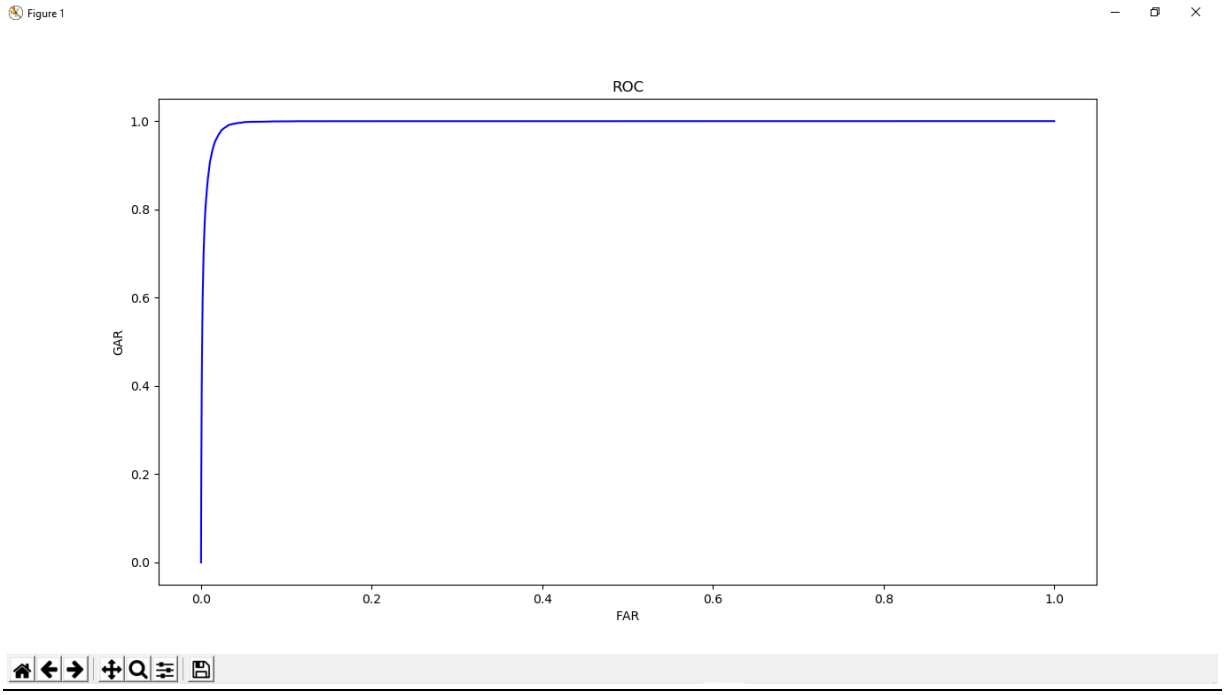


Figure 1
ROC
GAR
FAR
0.0
0.2
0.4
0.6
0.8
1.0

DATA 3

EER:	11.6969%	Threshold:	0. 5776692187500001
FFR	14.6666%	At FAR value	10%
FFR	69.3777 %	At FAR value	1%
FFR	94.7555%	At FAR value	0.1%

Precise Calculated Values:

FAR: 0.1174949494949495 FRR: 0.11644444444444445 Threshold: 0.5776692187500001

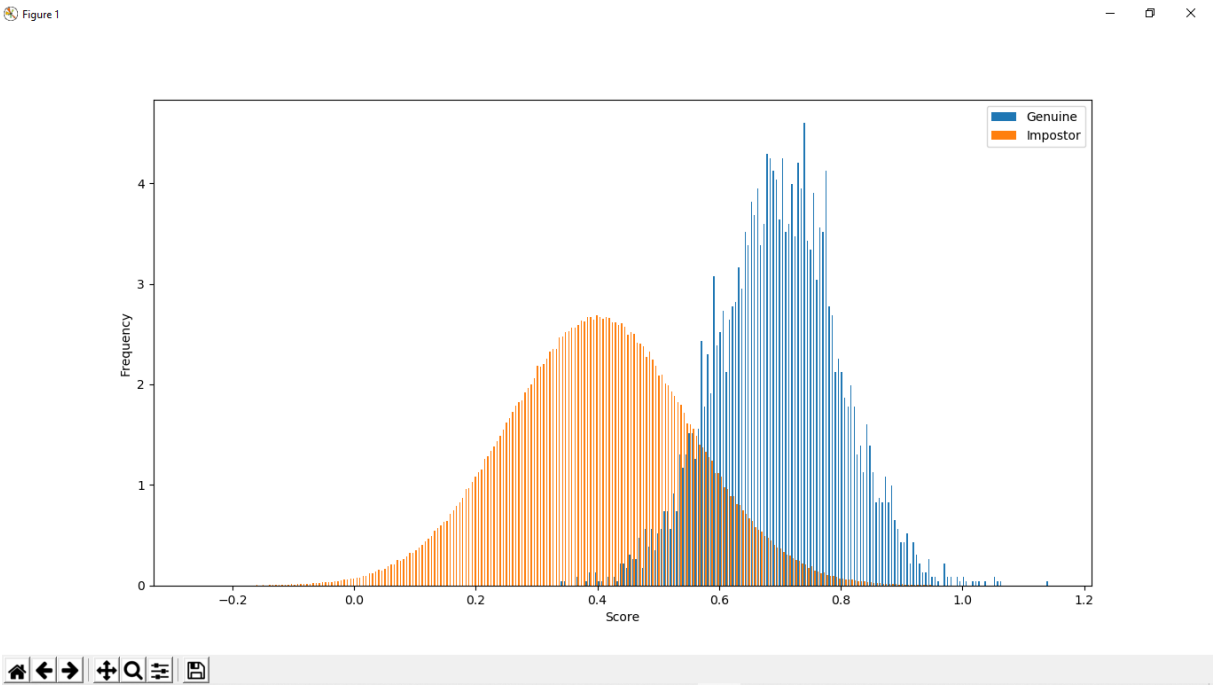
EER: 0.11696969696969697

EER value, threshold: 0.11696969696969697 0.5776692187500001

0.1 FAR and corresponding FFR: 0.09982222222222223 - 0.14666666666666667

0.01 FAR and corresponding FFR: 0.009901010101010101 - 0.6937777777777778

0.001 FAR and corresponding FFR: 0.0010080808080808082 - 0.9475555555555556



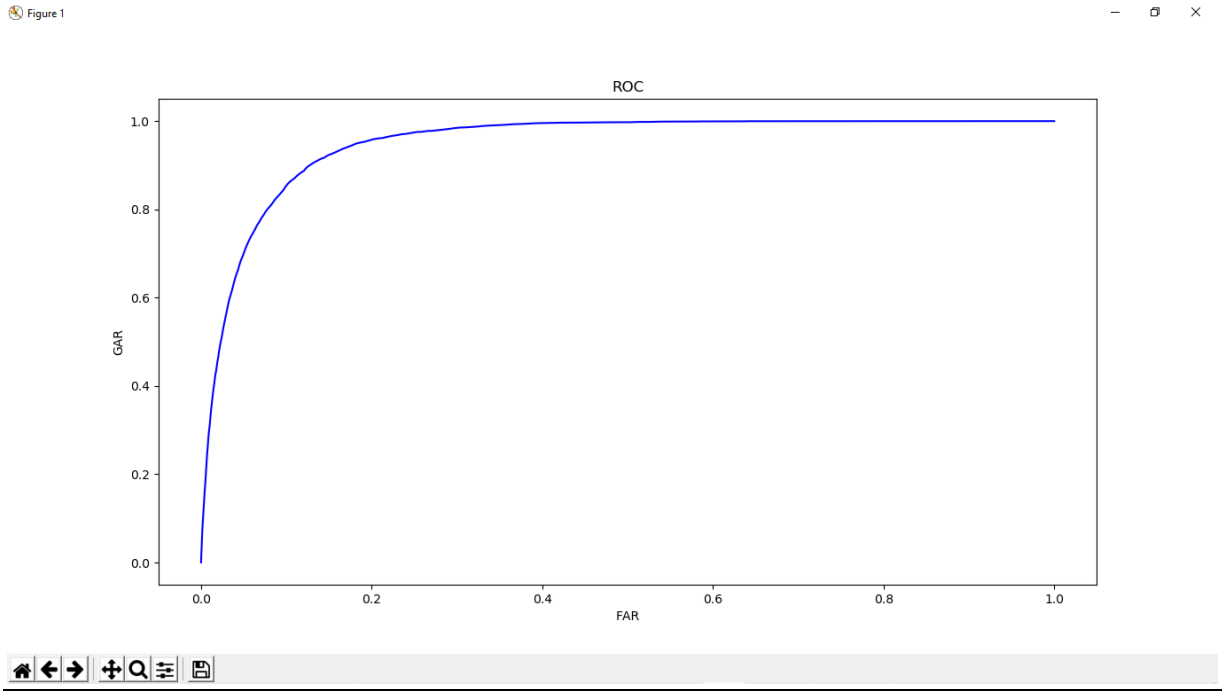


Figure 1
ROC
GAR
FAR
0.0
0.2
0.4
0.6
0.8
1.0

DATA 4:

EER:	0.9563%	Threshold:	0.5806875000625003
FFR	0%	At FAR value	10%
FFR	1.6222%	At FAR value	1%
FFR	97.0444%	At FAR value	0.1%

Precise Calculated Values:

FAR: 0.011793939393939395 FRR: 0.007333333333333333 Threshold: 0.5806875000625003

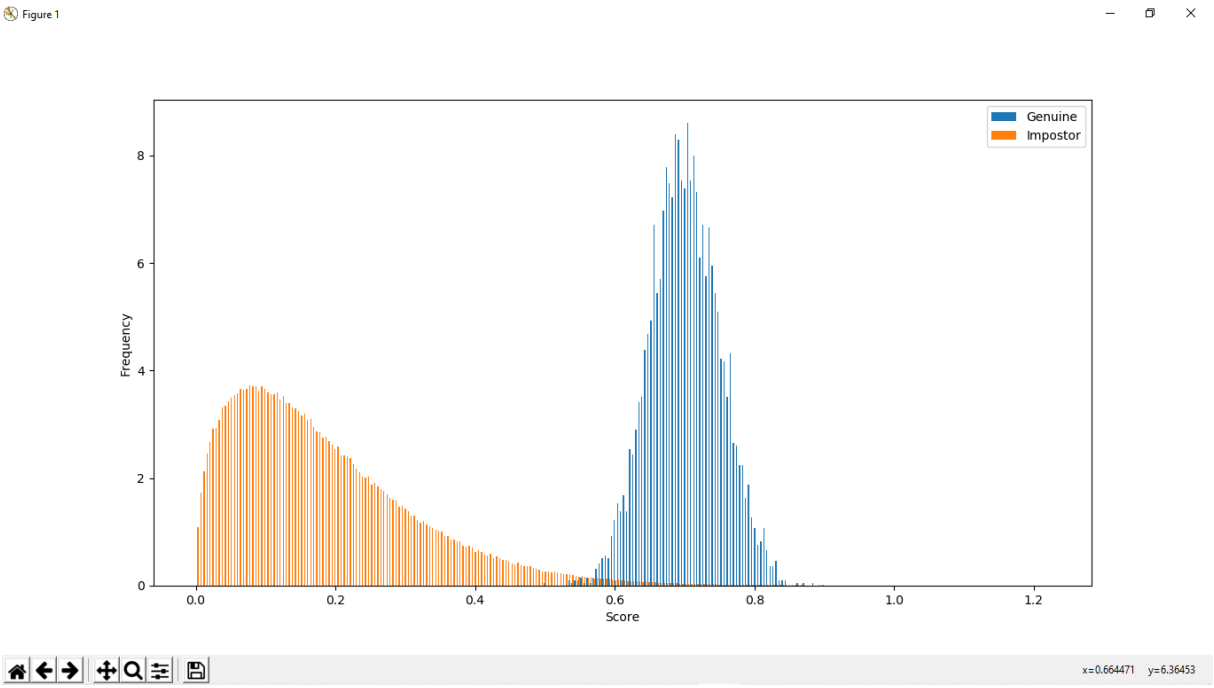
EER: 0.009563636363636364

EER value, threshold: 0.009563636363636364 0.5806875000625003

0.1 FAR and corresponding FFR: 0.1002040404040404 - 0.0

0.01 FAR and corresponding FFR: 0.009903030303030302 - 0.01622222222222222

0.001 FAR and corresponding FFR: 0.001006060606060606 - 0.9704444444444444



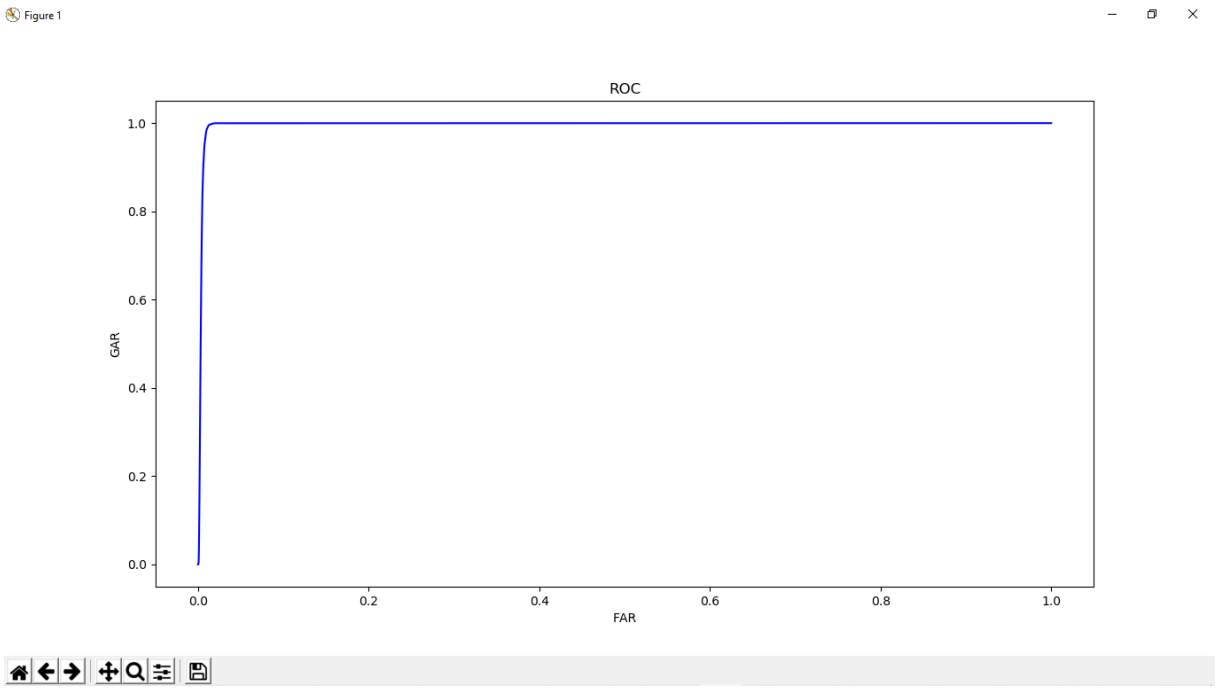


Figure 1
ROC
GAR
FAR
0.0
0.2
0.4
0.6
0.8
1.0