Using a Siamese Network for Signature Recognition

DIDA 340 Final Presentation

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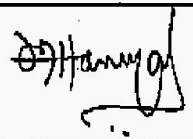
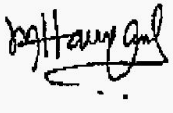
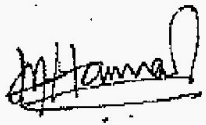
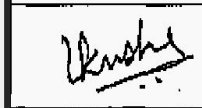
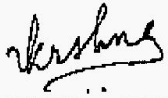
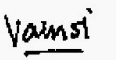
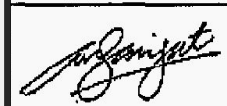
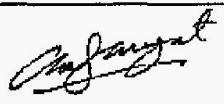
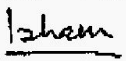
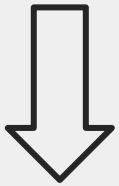
Signature Recognition: Background & Motivation

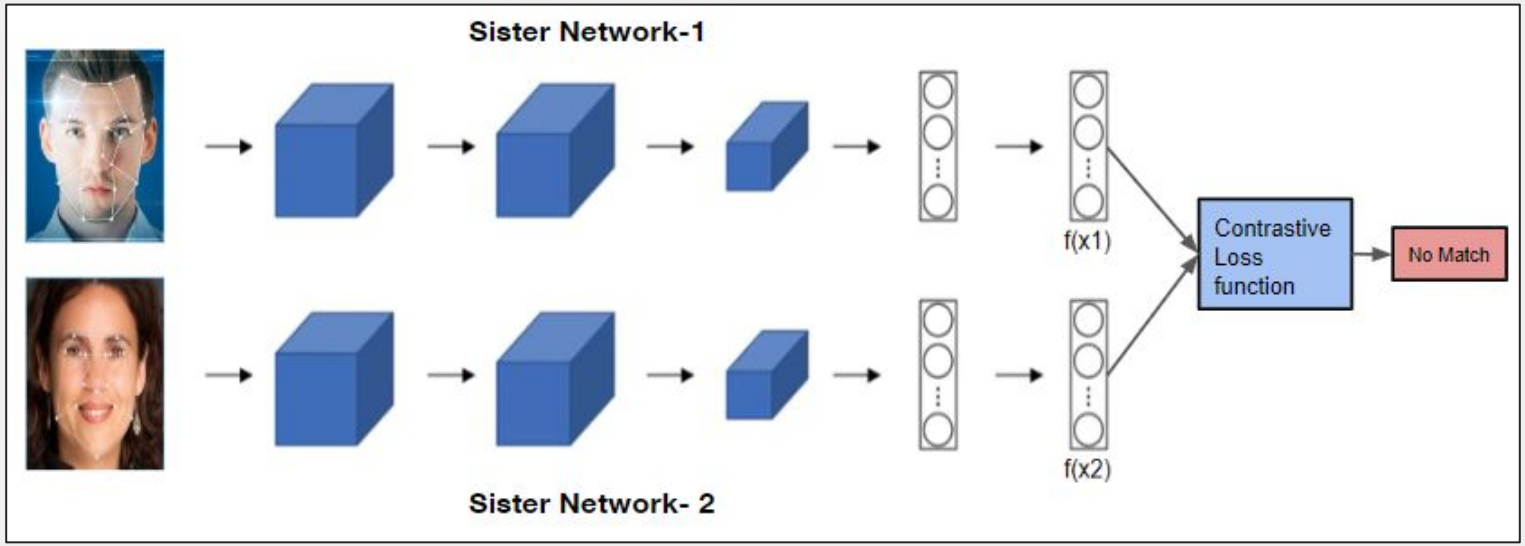
Genuine	Skilled forgery	Unskilled forgery	Random forgery
			
			
			

Risks of identity theft increase



Determine signature belongs to person

Model Architecture Overview



Results

1st Iteration:
Accuracy: 50%

→

2nd Iteration:
Accuracy: 60%

→

3rd Iteration:
Accuracy: 66%

Results of signature prediction output after the 3rd iteration:

epoch	train_loss	valid_loss	accuracy	time
0	0.806403	0.774996	0.650000	00:10
1	0.804662	0.676850	0.633333	00:08
2	0.794107	0.675934	0.433333	00:10
3	0.795250	0.662175	0.516667	00:09
4	0.804606	0.651547	0.600000	00:07
5	0.794394	0.644128	0.666667	00:10
6	0.787892	0.643738	0.600000	00:08
7	0.782463	0.642982	0.616667	00:08
8	0.779361	0.645575	0.650000	00:11
9	0.780222	0.645894	0.666667	00:08

Comparison with Literature

Table 3 Results of all four measures

Databases	Measures	Accuracy	FAR	FRR
GPDS Synthetic Signature Corpus	Geometric Mean, Standard deviation, inter-quartile range and median absolute deviation	77.48	29.23	16.52
MCYT-75 Signature Corpus	Geometric Mean, Standard deviation, inter-quartile range and median absolute deviation	80.73	22.42	13.52
CEDAR Signature Corpus	Geometric Mean, Standard deviation, inter-quartile range and median absolute deviation	100.00	0.00	0.00

epoch	train_loss	valid_loss	accuracy	time
0	0.806403	0.774996	0.650000	00:10
1	0.804662	0.676850	0.633333	00:08
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