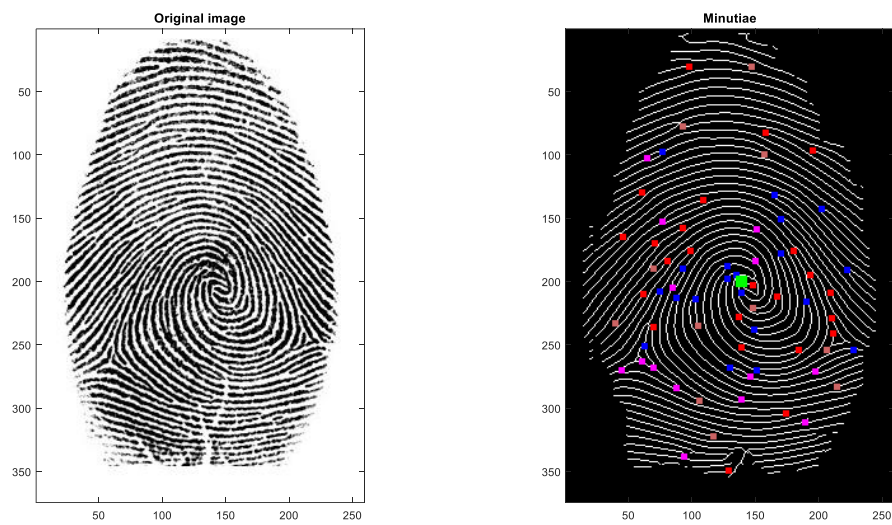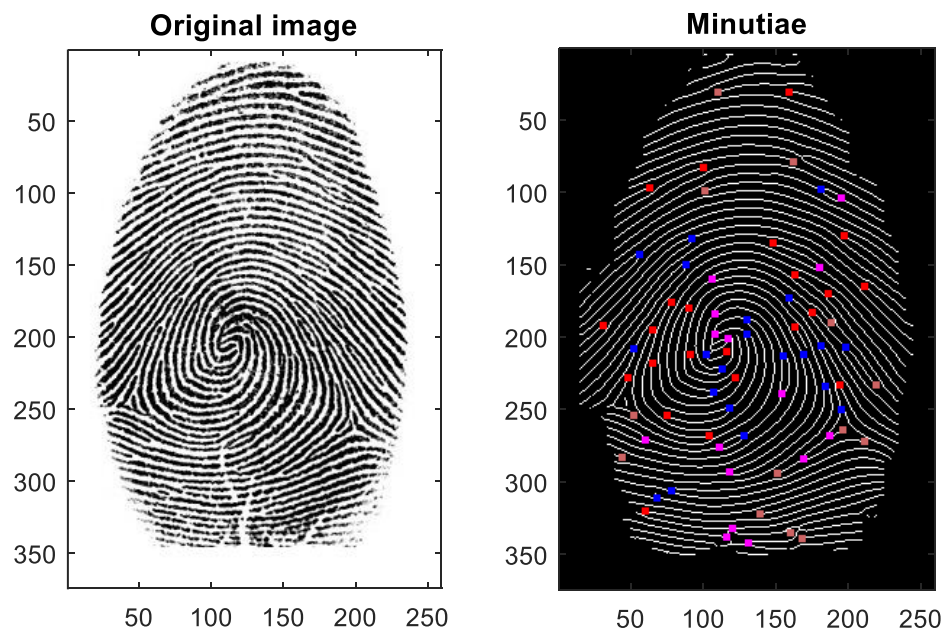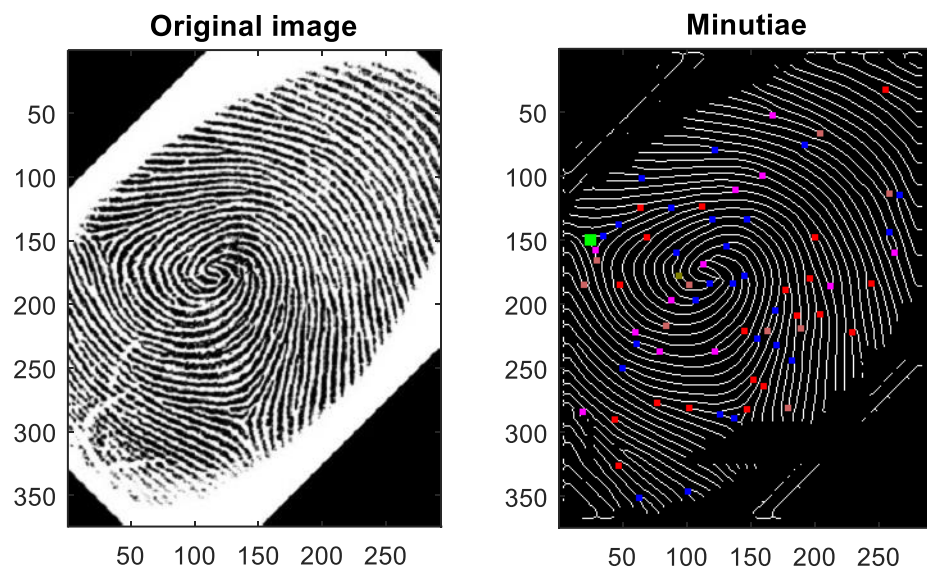# Results:

7 test samples, 21 combinations of fingerprints. Program was run to calculate Similarity measure and find the match between each pair.

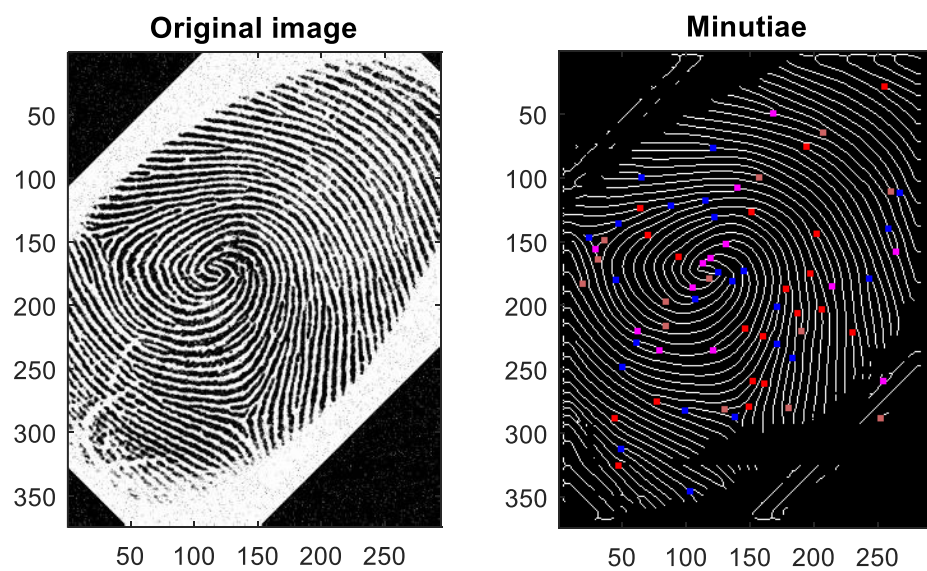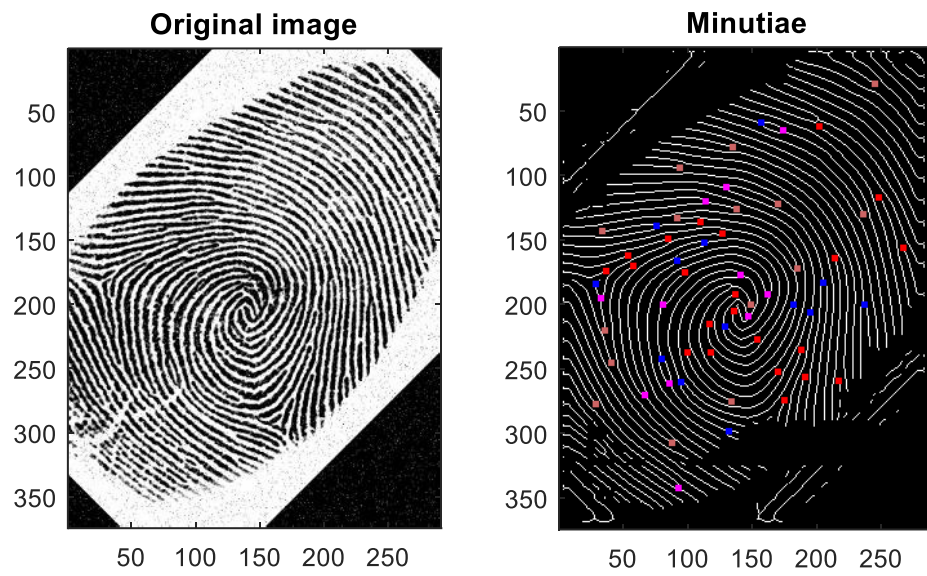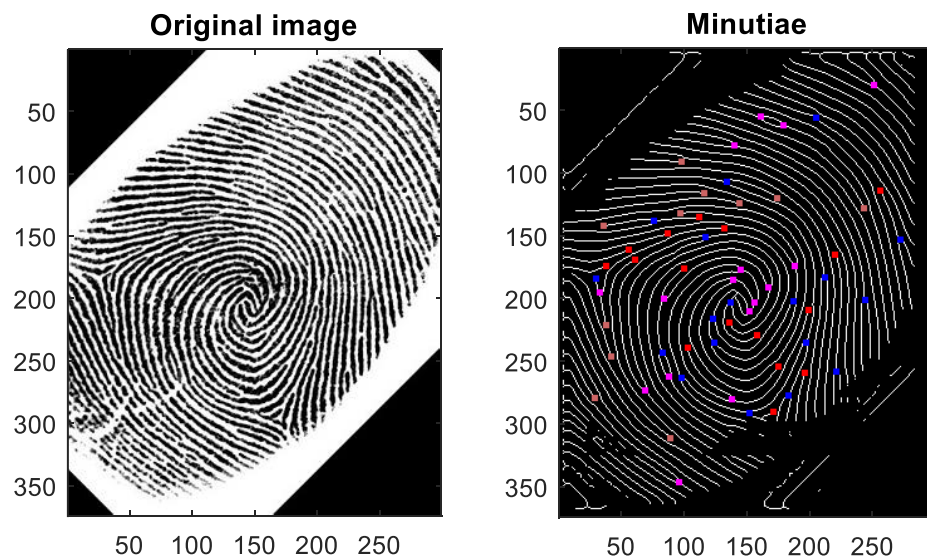For testIm

For testImflip

Original image
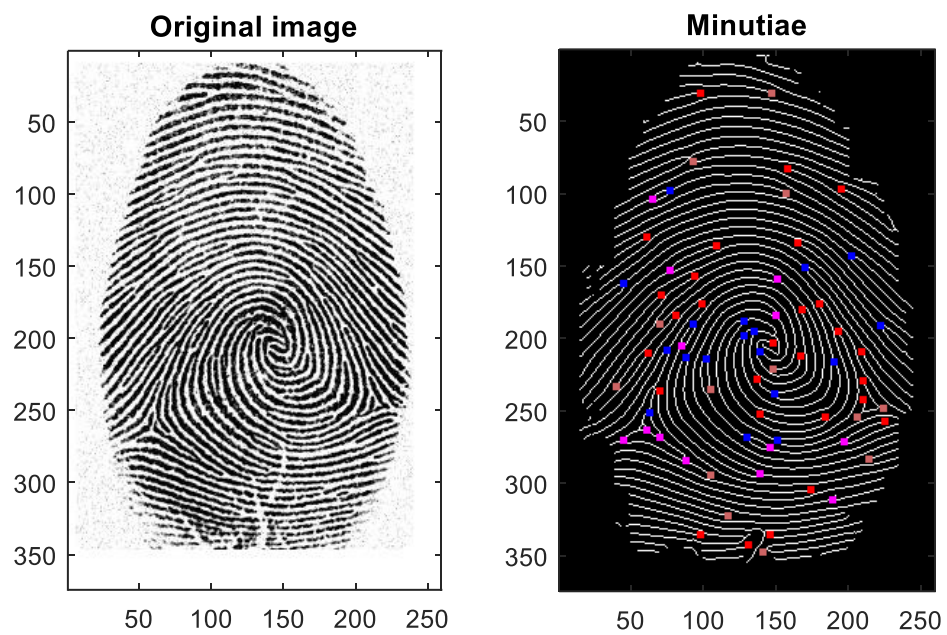
Minutiae

For testImfliprot

Original image

Minutiae

For testImfliprotSP

Original image   **Minutiae**

For testImflipSP

Original image   **Minutiae**

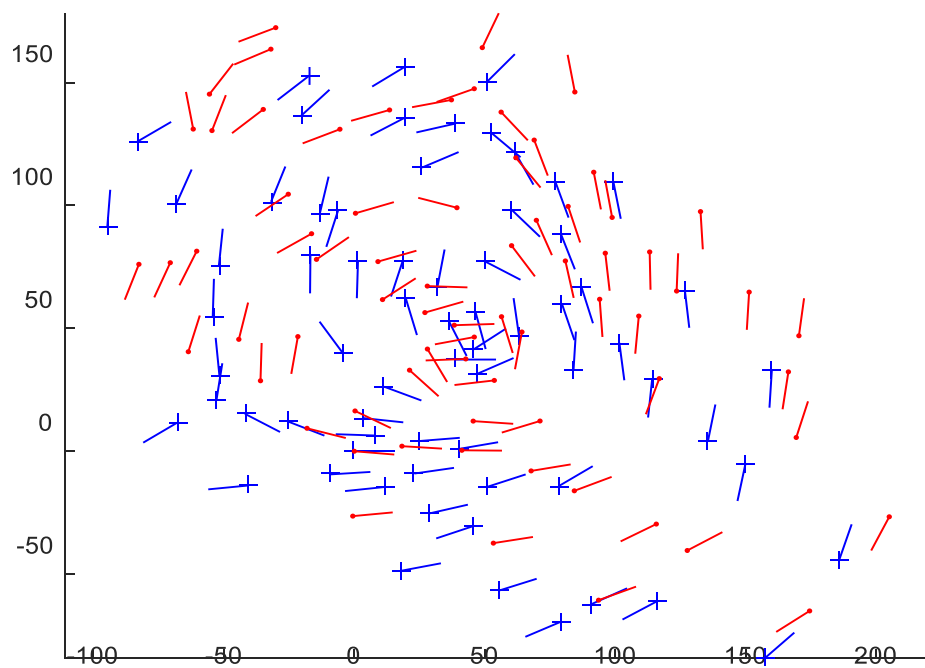For testImrot

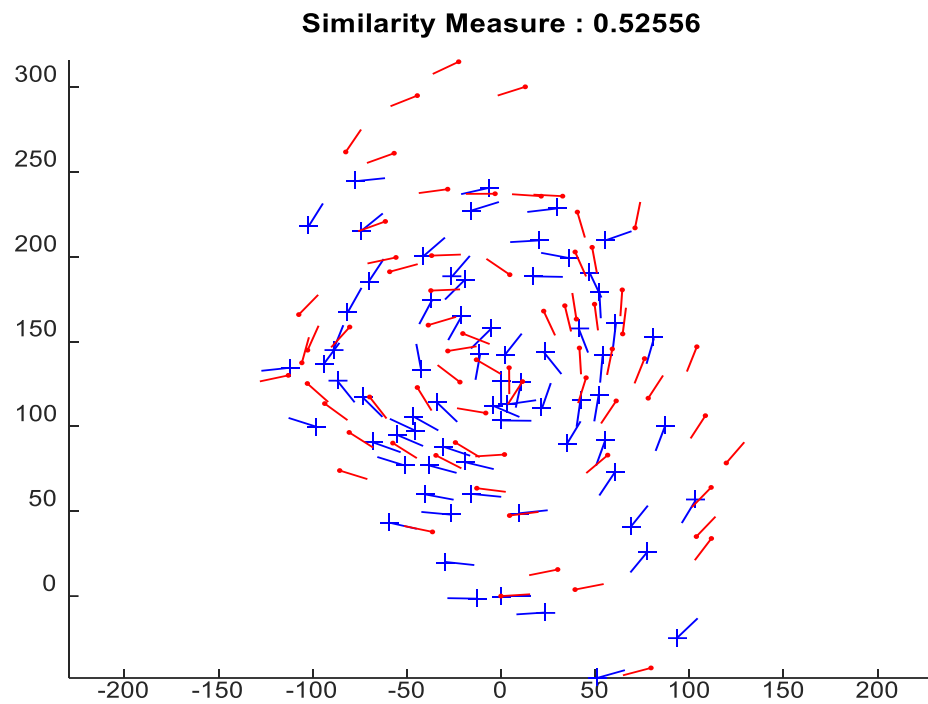**Original image**

Minutiae

For testImSP

COMPARISON:

1. **testIm vs testImflip**

Similarity Measure : 0.38307

Similarity measure = 0.38307, and hence not a MATCH

2. testlm vs testlmfliprot

Similarity Measure : 0.52556
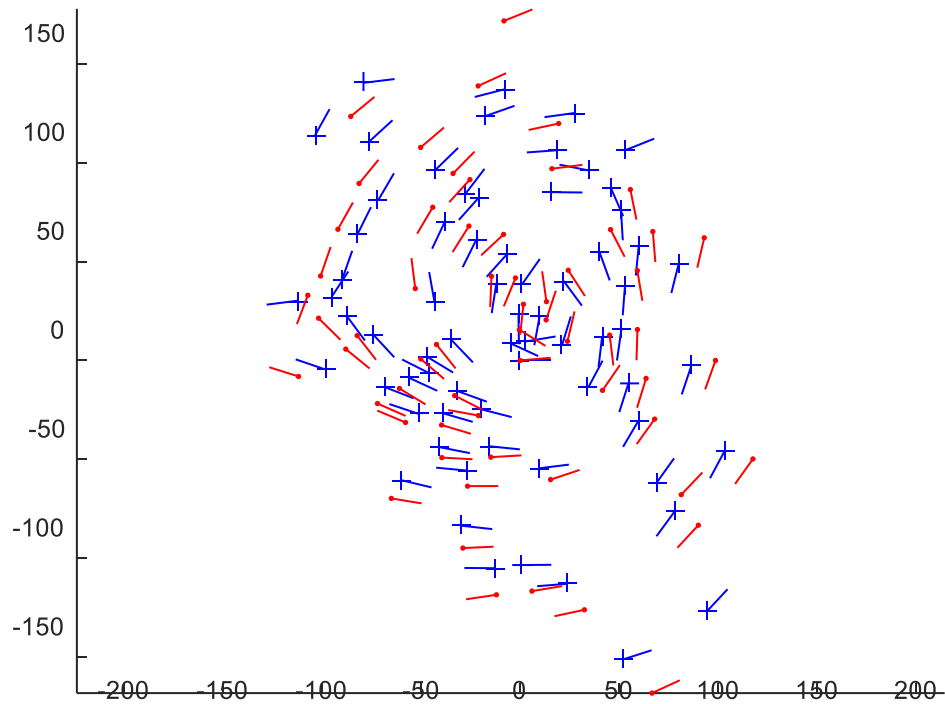

It's a MATCH

3. testlm vs testlmfliprotSP

Similarity Measure : 0.54678
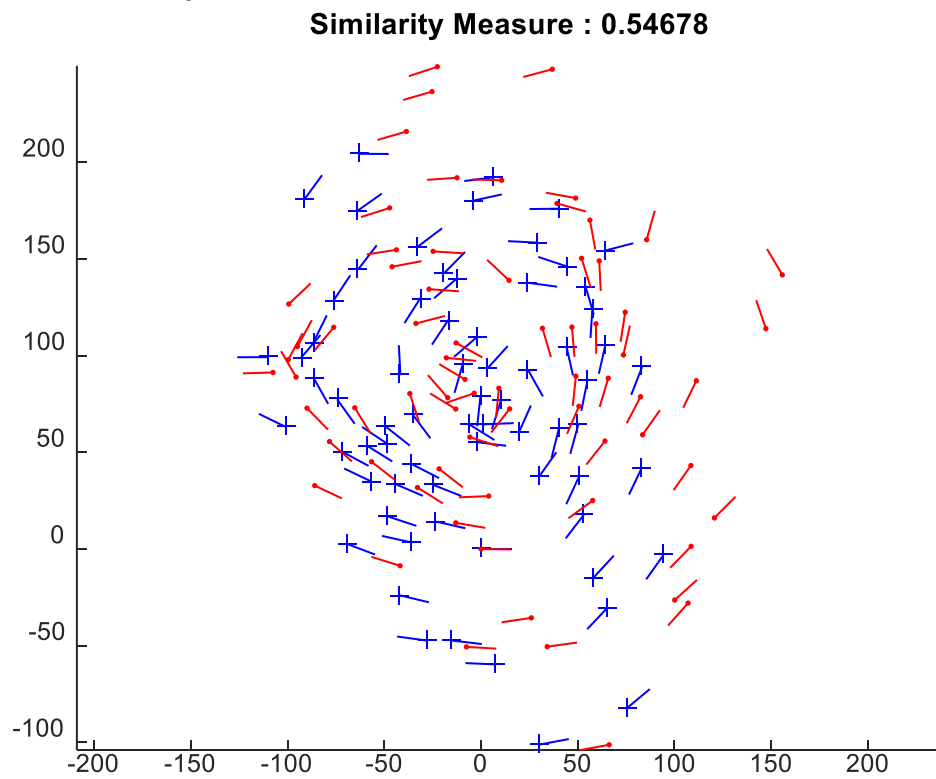
It's a MATCH

4. testlm vs testlmflipSP

SM = 0.86317, It's a MATCH

5. testlm vs testlmrot

Similarity Measure : 0.70904
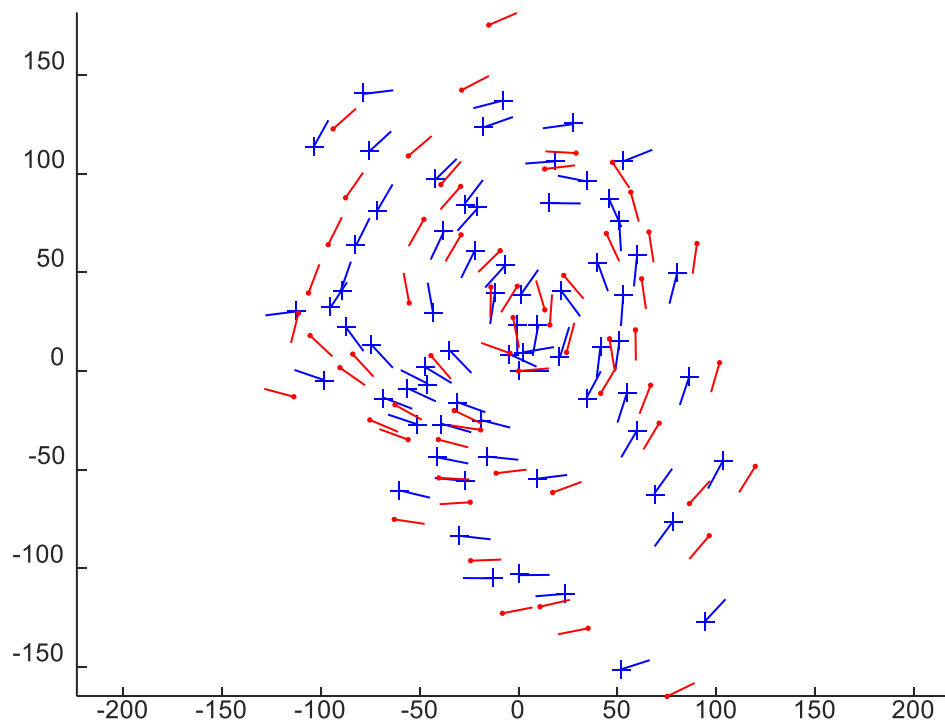
It's a MATCH

6. testIm vs testImSP

Similarity Measure : 0.95057

It's a MATCH
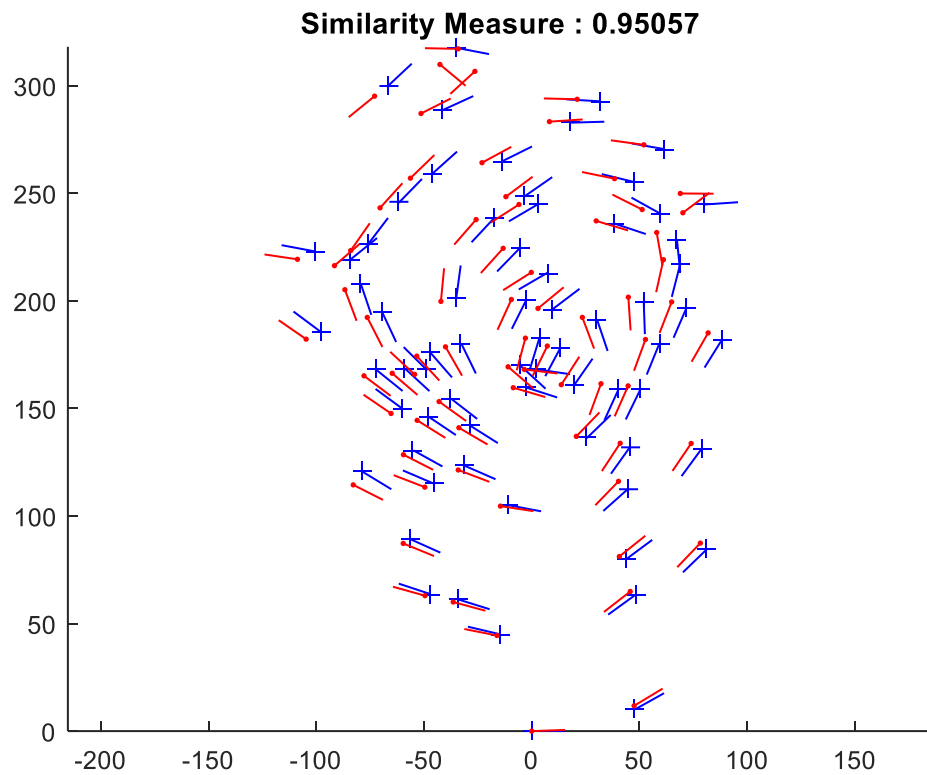
7. testImflip vs testImfliprot

Similarity Measure : 0.78604
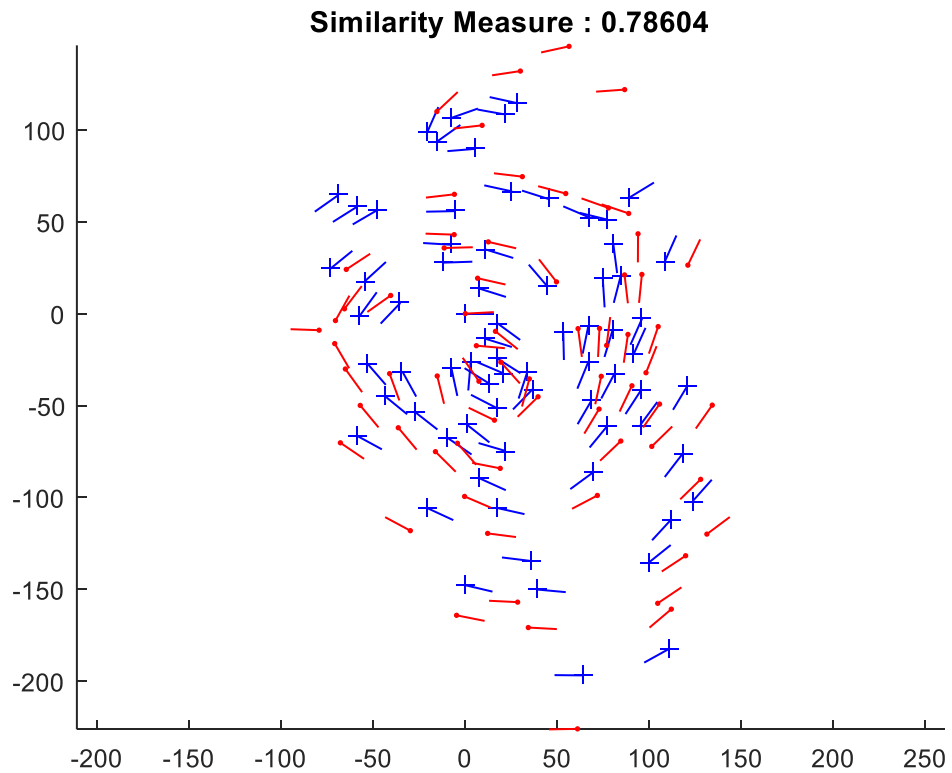
It's a MATCH

8. testImflip vs testImfliprotSP

Similarity Measure : 0.74655
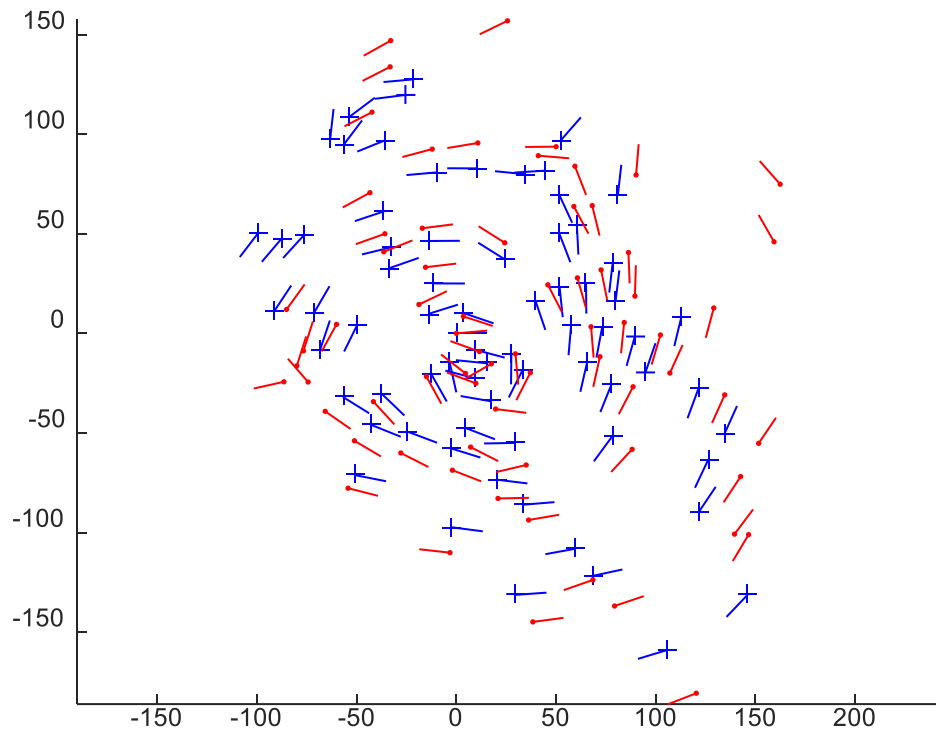
It's a MATCH

9. testImflip vs testImflipSP

Similarity Measure : 0.48286

It's a MATCH

10. testImflip vs testImrot
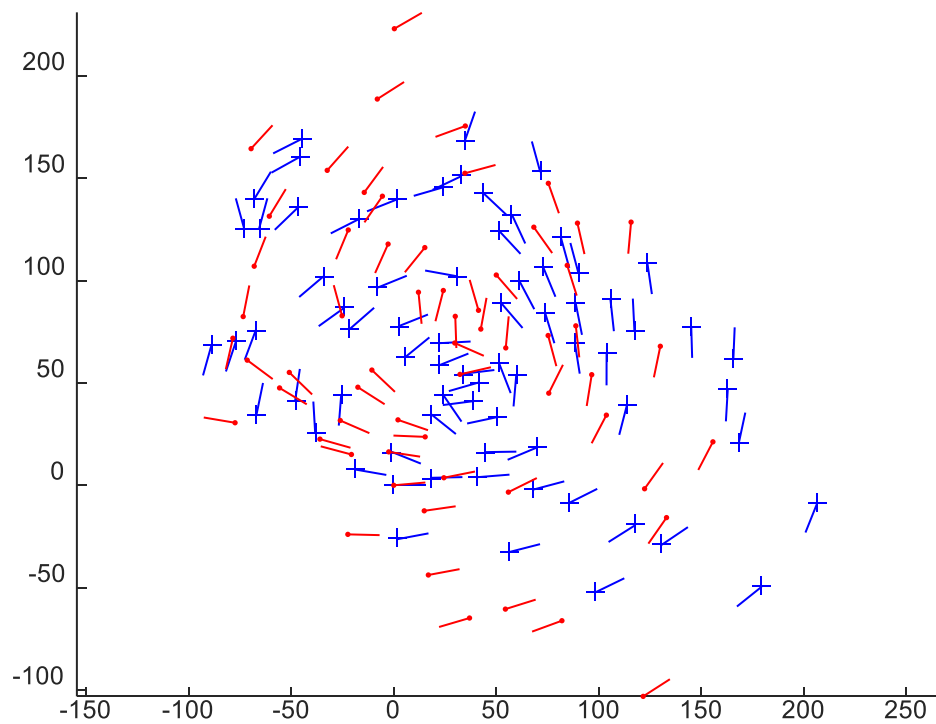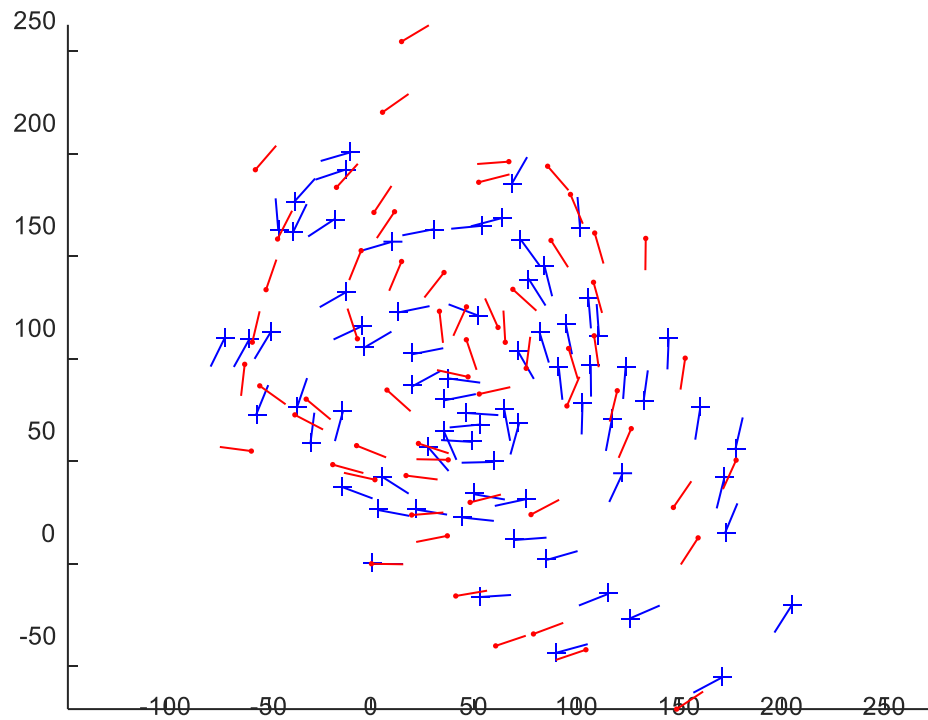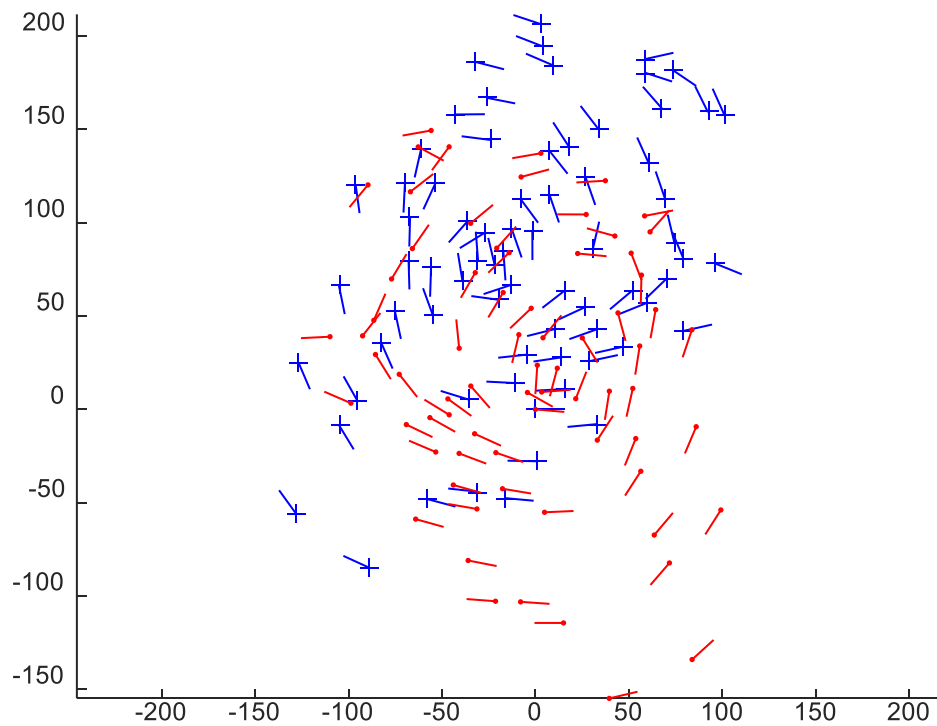
Similarity Measure : 0.49795

SM = 0.49795, It's a MATCH

11. testImflip vs testImSP

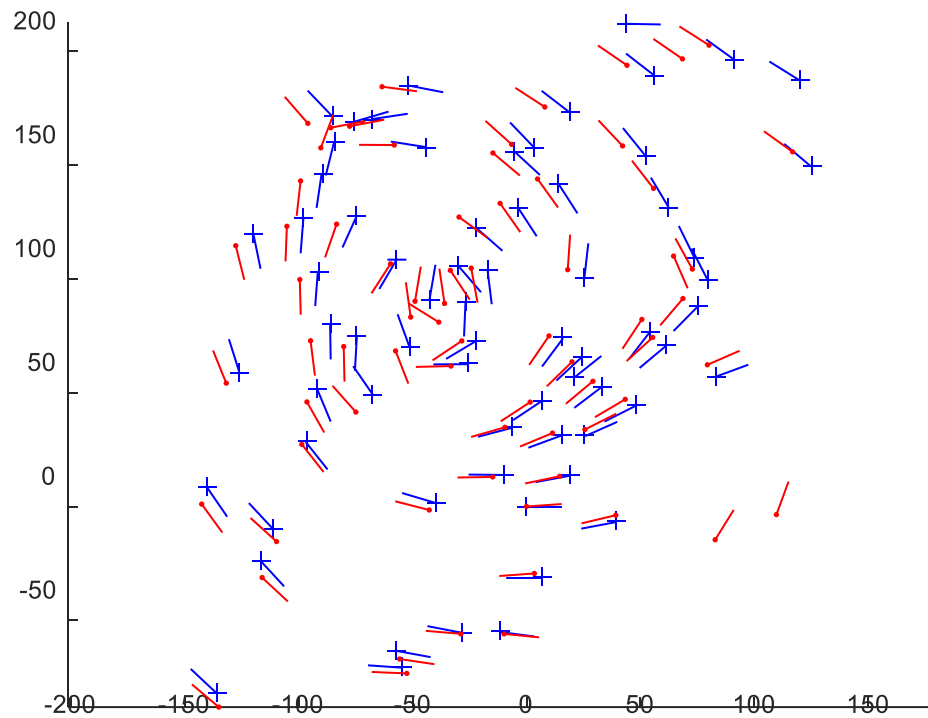**Similarity Measure : 0.40278**

It's NOT A MATCH

12. testImfliprot vs testImfliprotSP

Similarity Measure : 0.92763

SM = 0.92763, It's a MATCH

13. testImfliprot vs testImflipSP

Similarity Measure : 0.45028
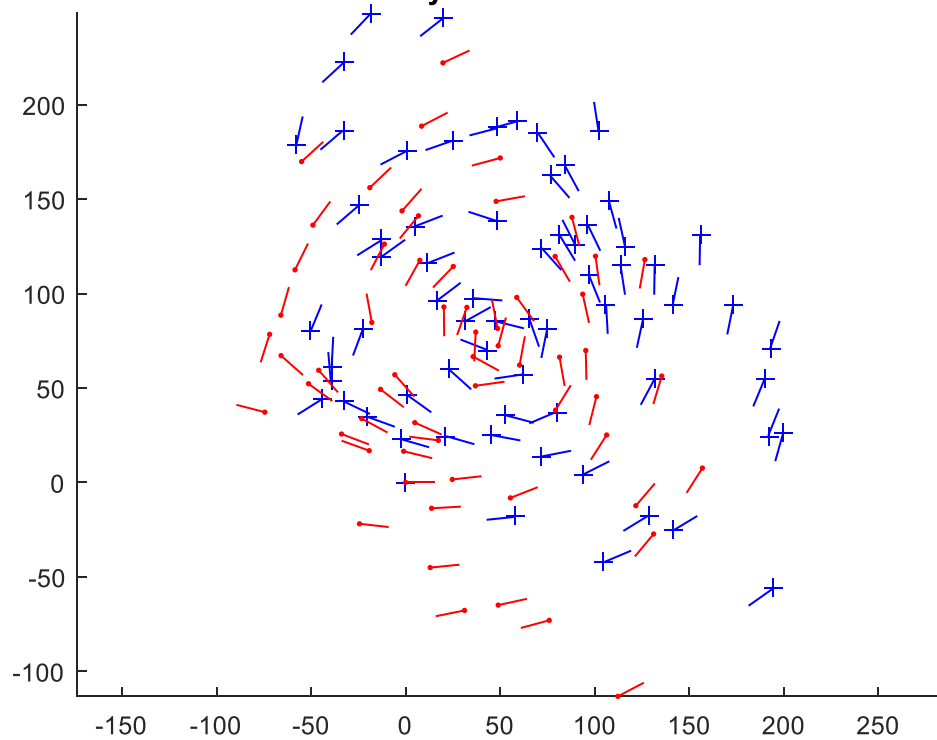
It's NOT A MATCH

14. testImfliprot vs testImrot

SM = 0.38817, It's NOT A MATCH

15. testImfliprot vs testImSP
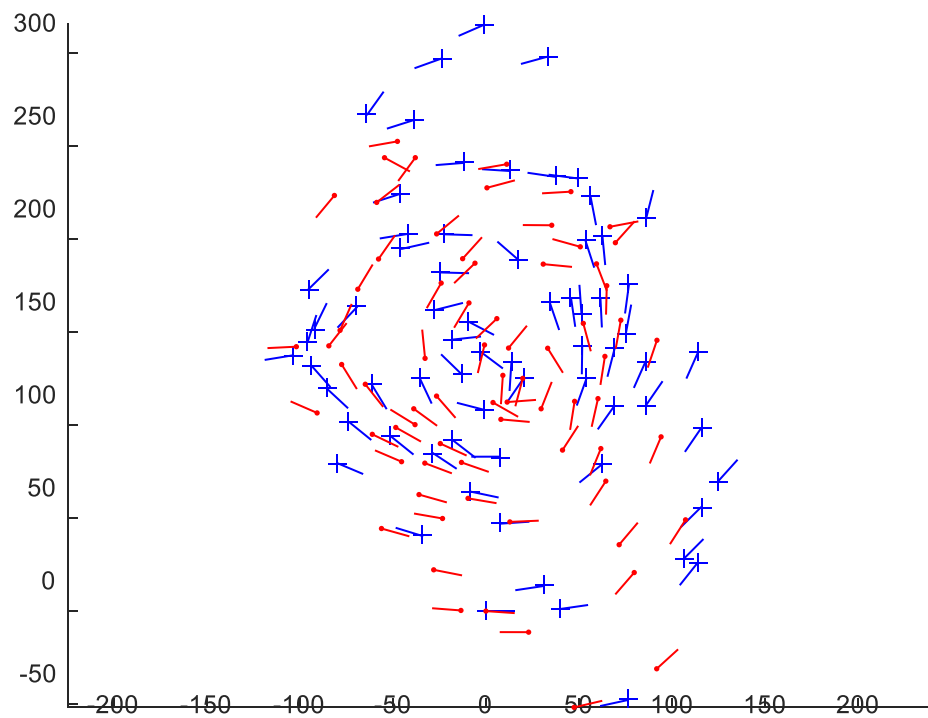
SM = 0.48591, It's a MATCH

16. testImfliprotSP vs testImflipSP
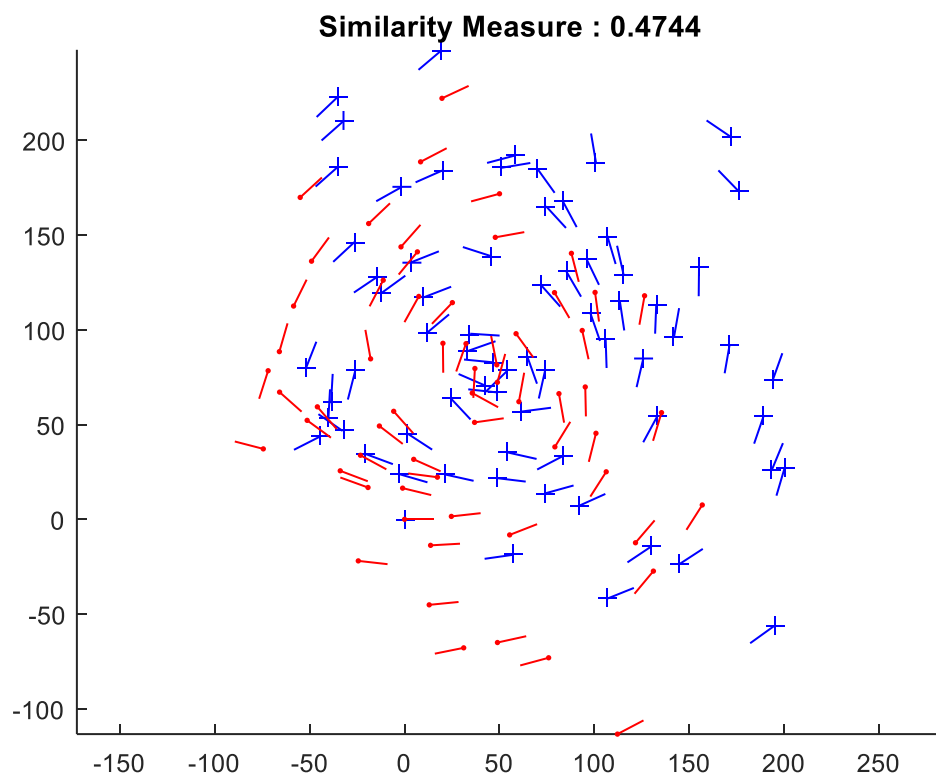
Similarity Measure : 0.4744

It's NOT A MATCH

17. testImfliprotSP vs testImrot
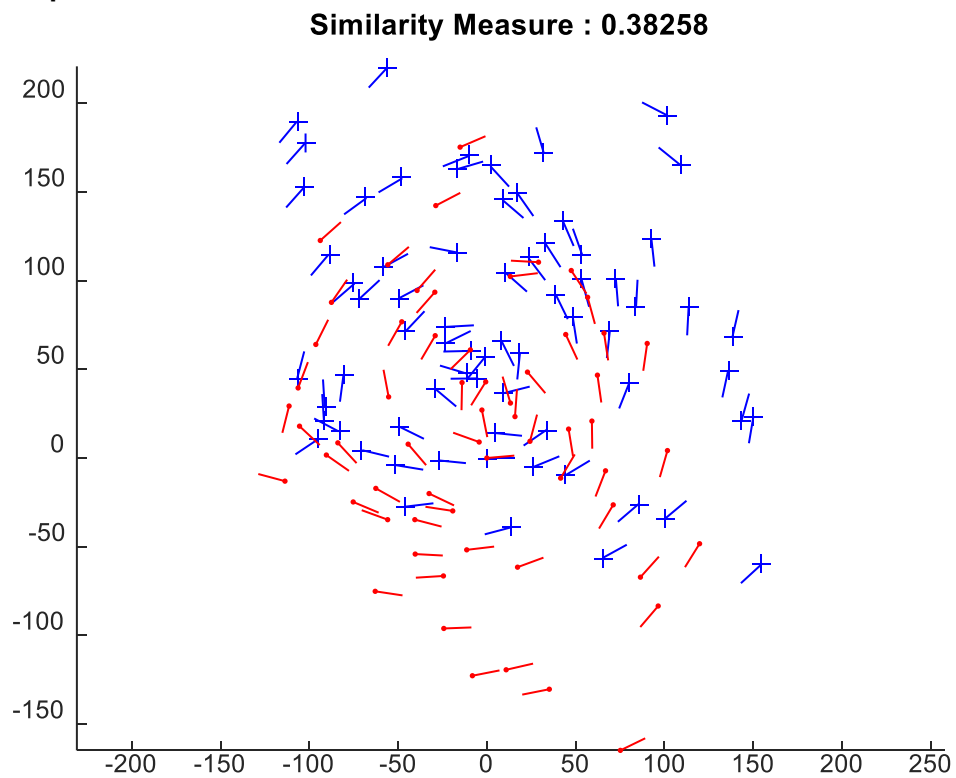
Similarity Measure : 0.38258

It's NOT A MATCH

18. testImfliprotSP vs testImSP

Similarity Measure : 0.50709

It's a MATCH

19. testImflipSP vs testImrot
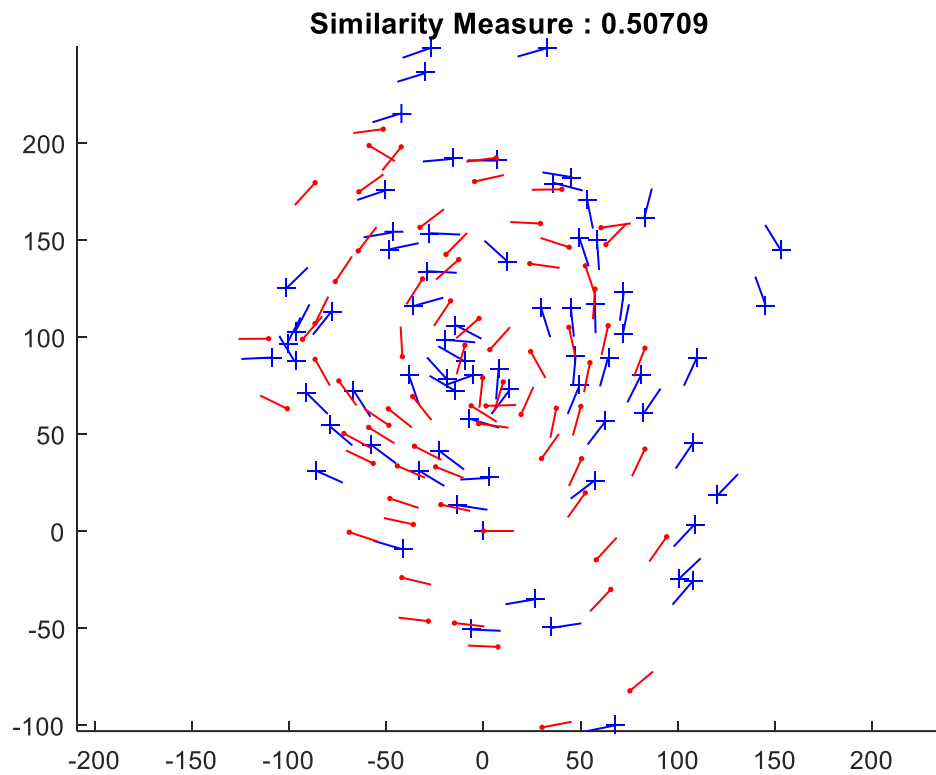
Similarity Measure : 0.95082
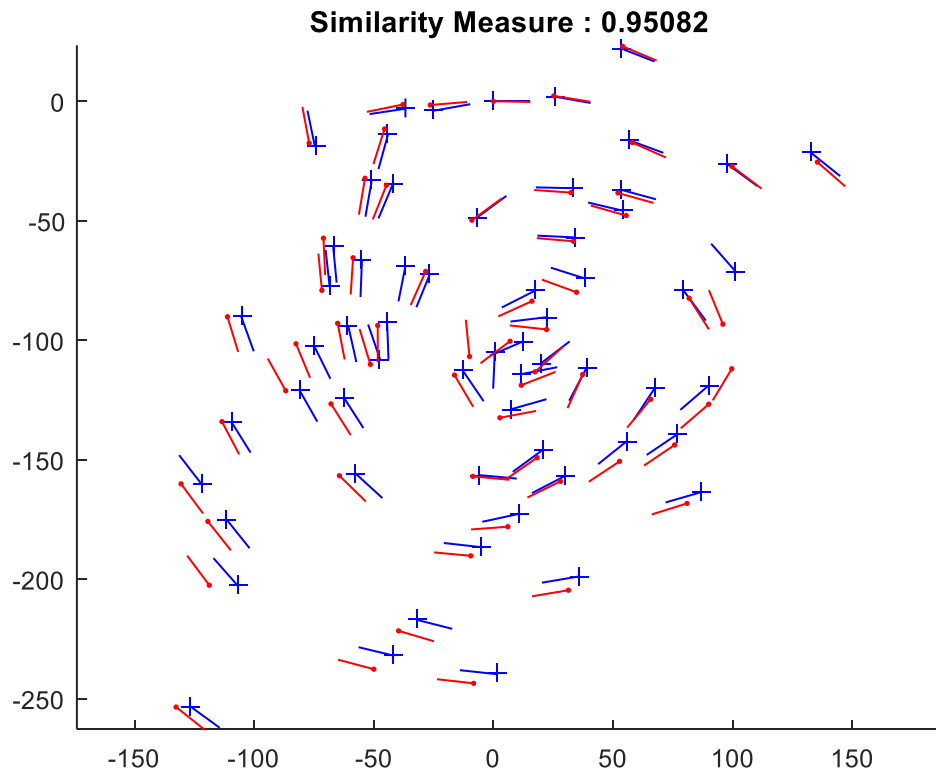
It's a MATCH

20. testImflipSP vs testImSP

Similarity Measure : 0.79973
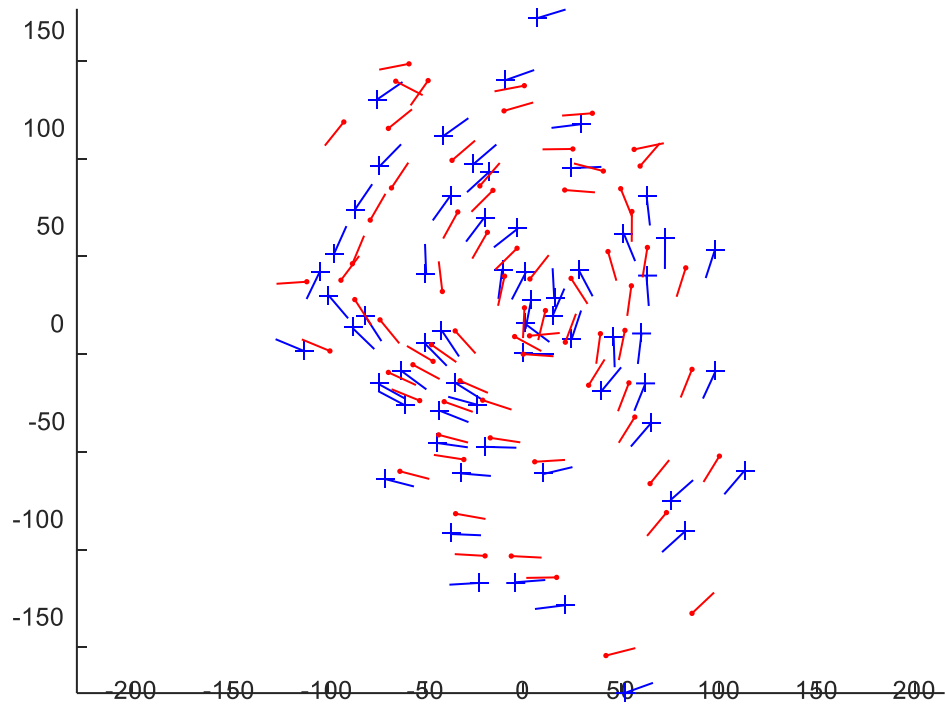
SM = 0.79973, It's a MATCH

21. testImrot vs testImSP

Similarity Measure : 0.63375

It's a MATCH

Conclusion:

Except for the instances where two fingerprint images are exactly flipped with respect to each other, all other combinations come out to be a MATCH. That's because algorithm used here checks for the similarity between two images based on the position of minutiae as well as their 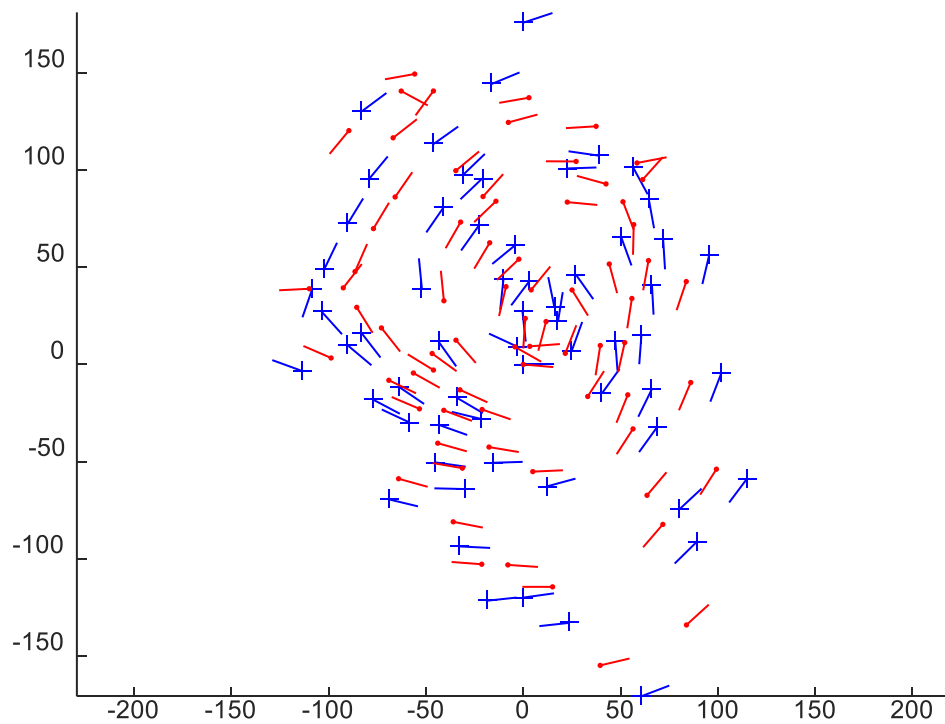orientation. Since in an exact flipped combination, both position and orientation are opposite with respect to the line about which the image is flipped, similarity measure has a very low value which results in NO MATCH. Considering the logic also, it can be seen that comparison between a fingerprint and its flipped image is not a MATCH, unless otherwise we observe the features and flip the image before importing it for the process.

We get 6 such flipped pairs in the test samples taken

1. testIm vs testImflip
2. testImflip vs testImSP
3. testImfliprot vs testImflipSP
4. testImfliprot vs testImrot
5. testImfliprotSP vs testImflipSP
6. testImfliprotSP vs testImrot

Thus the fingerprint matching process was carried out on the test samples given and It was found that the algorithm works really well for all the samples.