CSCI 4261 – Intro to Computer Vision

Practicum #4

Topic: Simple Registration Algorithm

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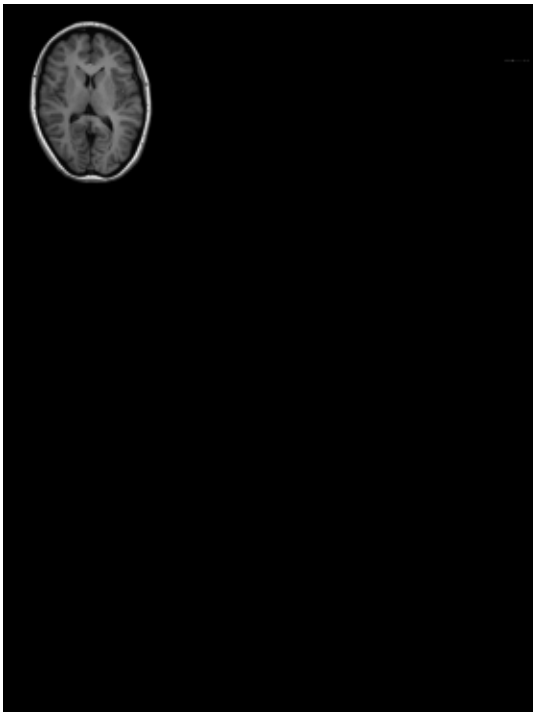
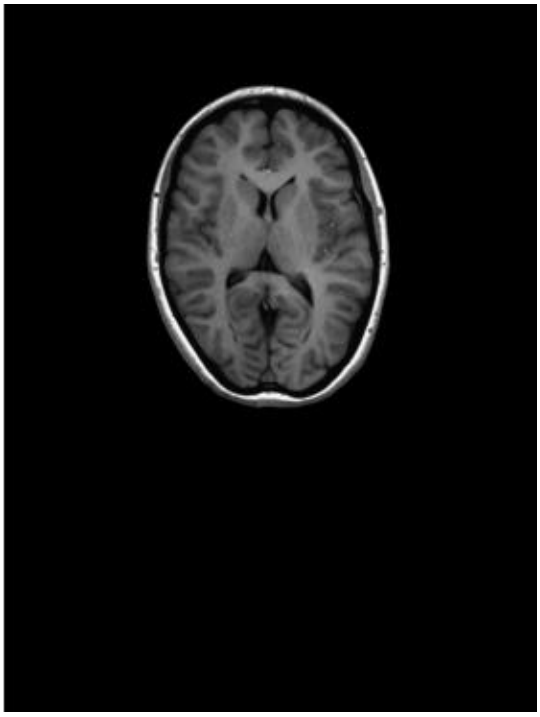
Task 1

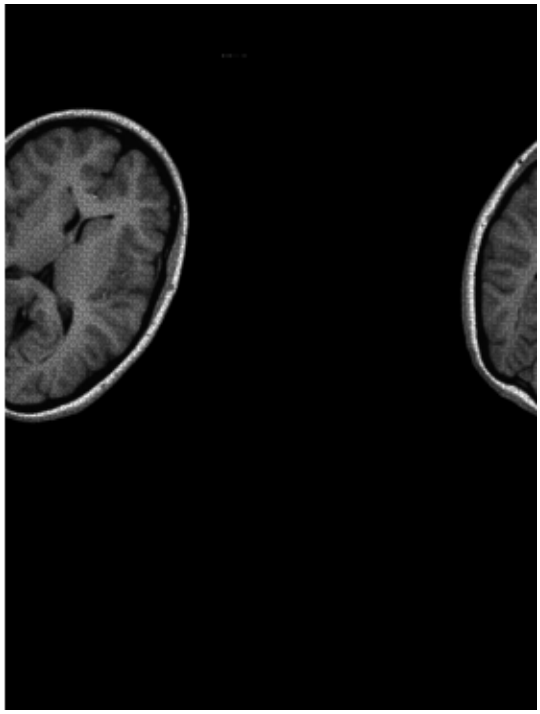
- Scaling 50 percent of img1



- Translated image 50 x-axis and 100 y-axis



- Rotated 30 degrees



Task 2

- Brute force method was used but this didn't produce viable result.
- Optimal matrix is given by:

[[9.99357509e-01, -2.56270491e-04, 1.41125014e+02]

[-4.12301933e-04, 9.99985104e-01, 1.66958293e+02]

[-6.34354593e-07, -3.45377185e-07, 1.00000000e+00]]

Task 3

Using SIFT as feature descriptor provides a performance boost since it uses a Hellinger kernel replacing the standard Euclidean distance. Additionally, Lowe distance ratio is used to filter out false matches and get a more accurate result.

The transformation homographic matrix that aligns img1 with img3 is given below:

[[5.40198507e-01, 5.75145308e-01, -5.11002912e+01]

[-5.87603027e-01, 5.29326928e-01, 3.88231146e+02]

[-1.26814629e-08, 1.72334676e-06, 1.00000000e+00]]