Phase 3 write up

Zhao Yan & Cong Du

Our approach is first do the registration, by calculating the geometric mean of the product of diagonals and use the ratio between quads as the scale factor. And the rotation is calculated through average of the angle difference of the four diagonals. We also calculated the centroid of each quad by divide the quad to two pairs of triangles, calculate the centroid of the triangles and use the intersection of tri\_centroid diagonals as the quad centroid.

We can get a quad called A’B’C’D’ solely from the registration process, and we perform lpm on the four edges (from the centroid to the vertices of one quad) to get a morphing vector, and then we use the four centroid to create a Neville curve, thus at each time point we can add the morphing vector to the centroid on the Neville curve to get the temp result of the morphing quad.

We noticed there is still residual from the registration and the key frame quad, thus the residuals are eliminated by linearly distribute to each time step (scale the residual vector by time), and stretch the temp result mentioned above.

The result is quite smooth, with centroid on a Neville curve, the transformation is more steady.