

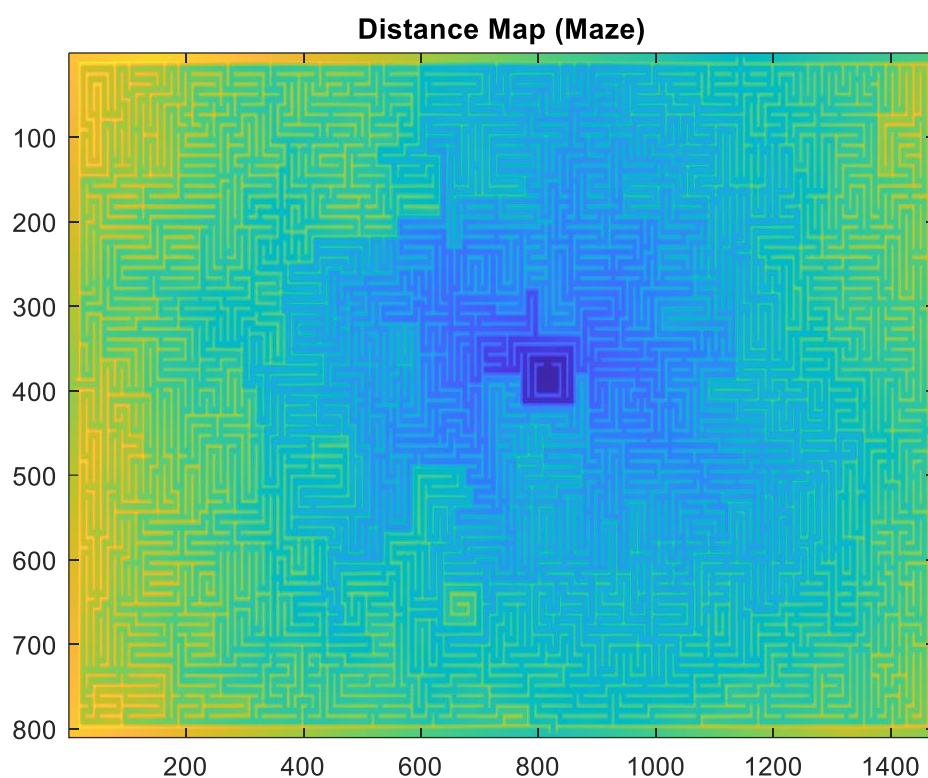
HOMEWORK 3

Important Note

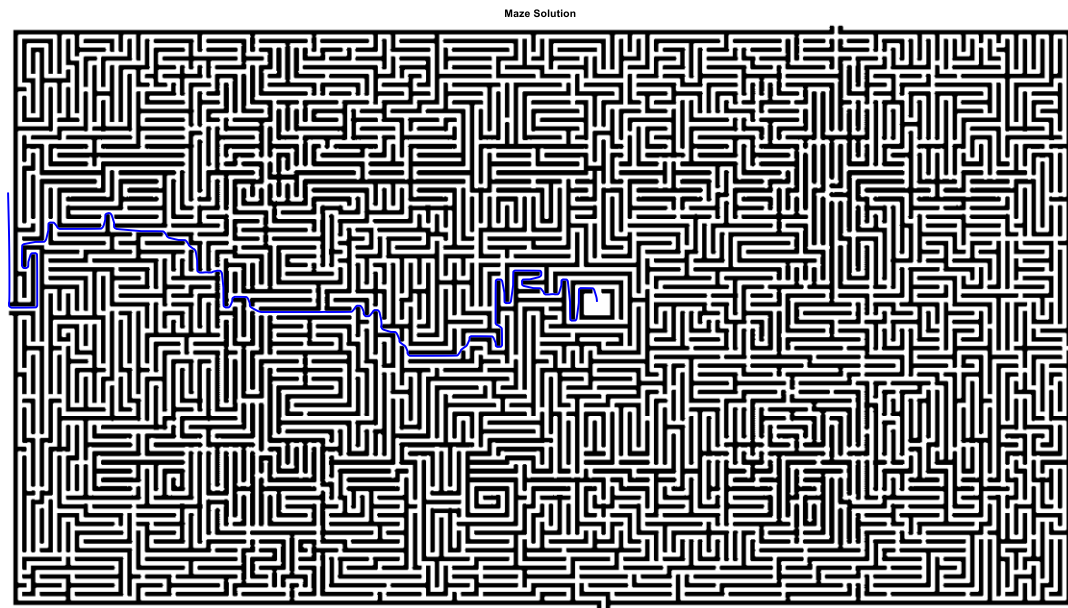
- A CMake project is provided to assist you to generate a project for building the MEX file.
- An already built binary MEX file is also provided.
- The original C++ code is provided (I have used the modern C++ MEX interface)

Problem 1

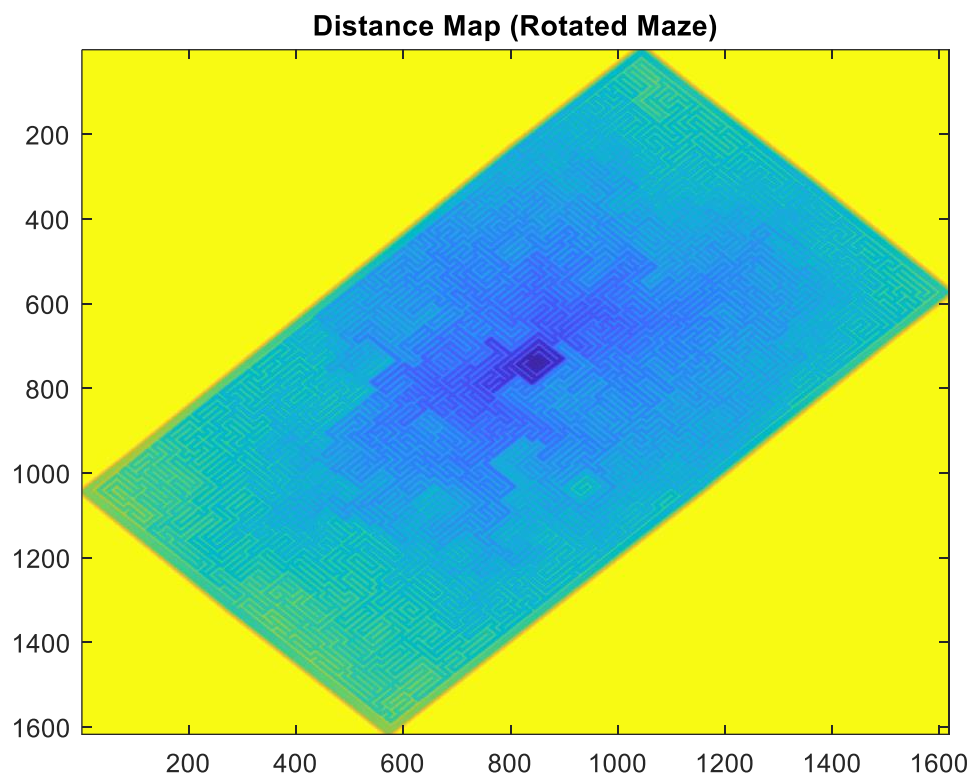
`maze_dist.mat`



Solved Maze

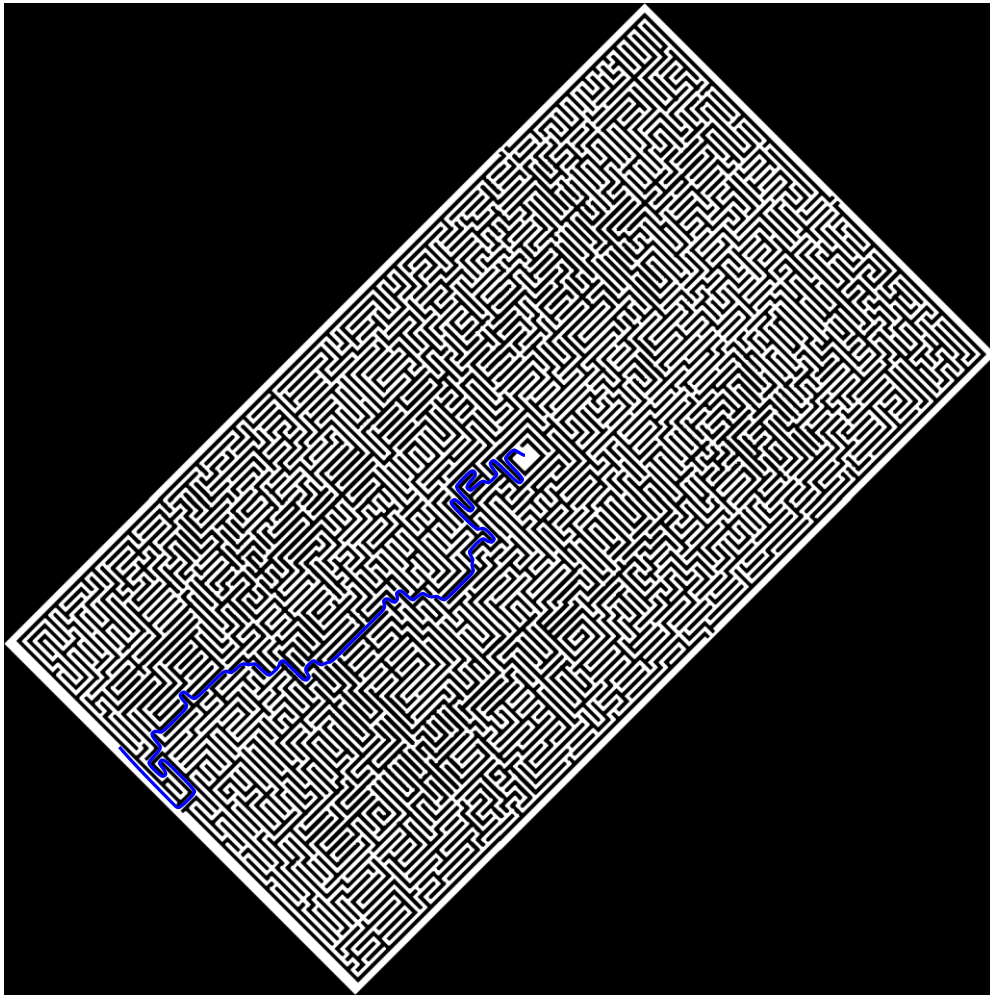


maze45_dist.mat

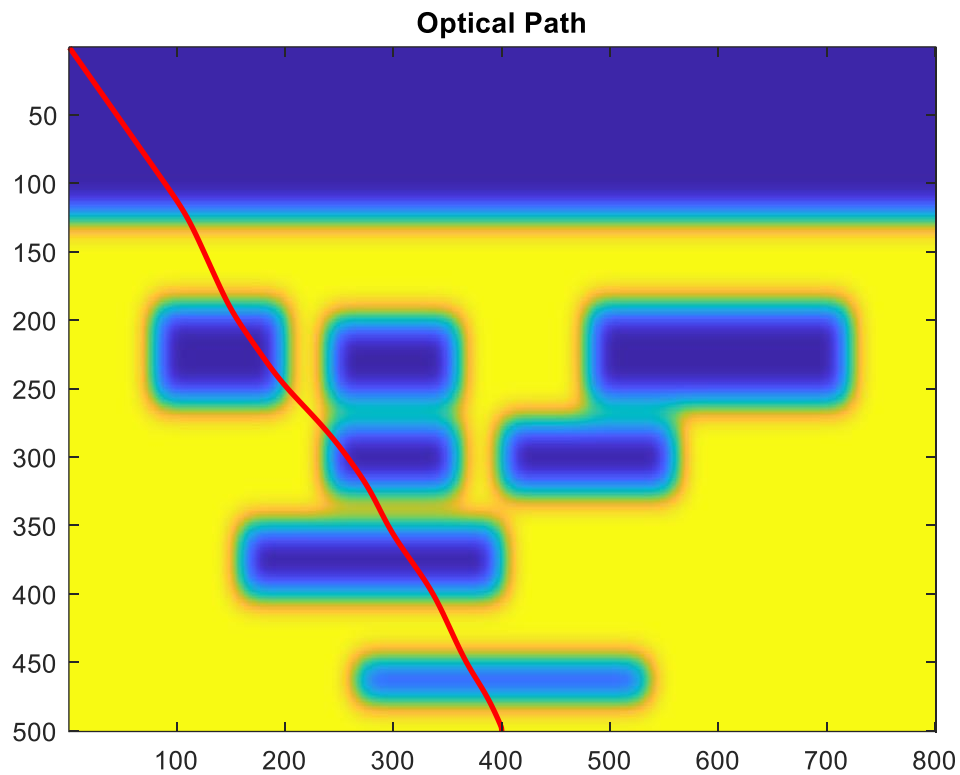


Solved Maze (45 Degrees)

Rotated Maze Solution

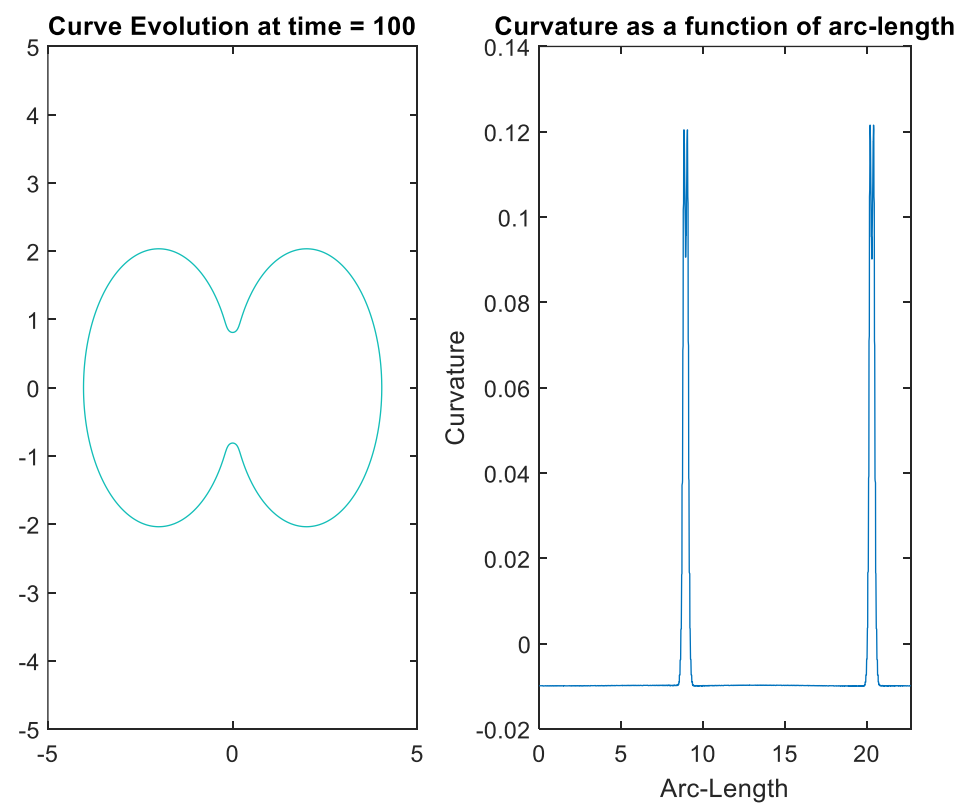
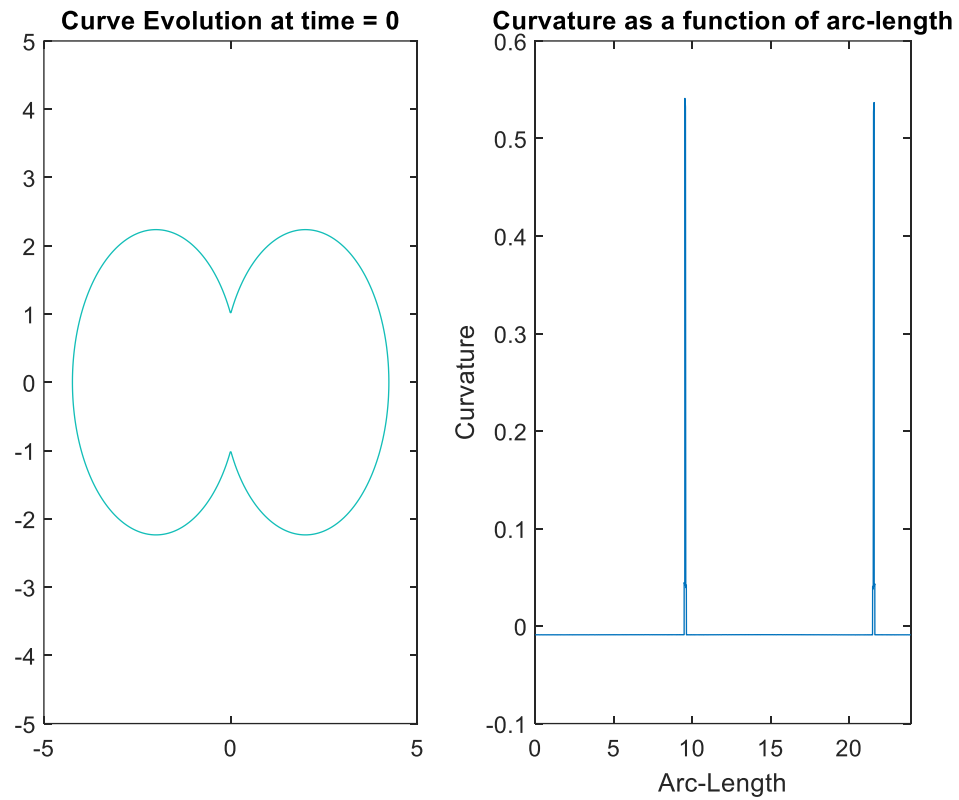


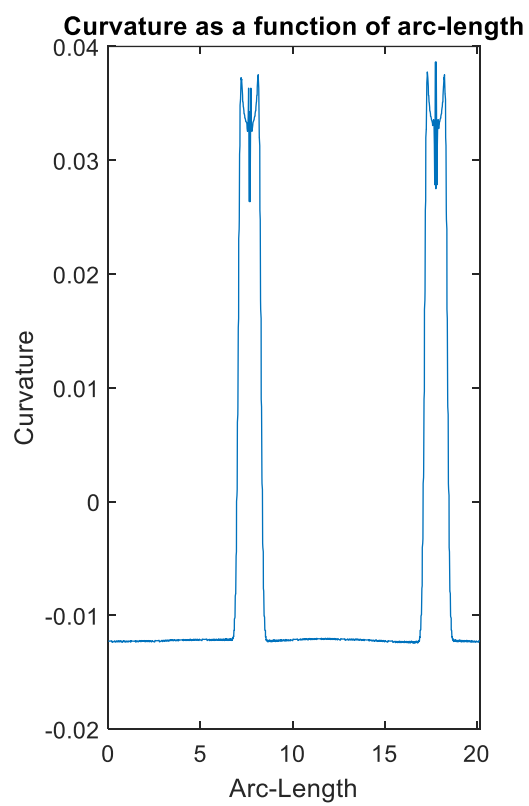
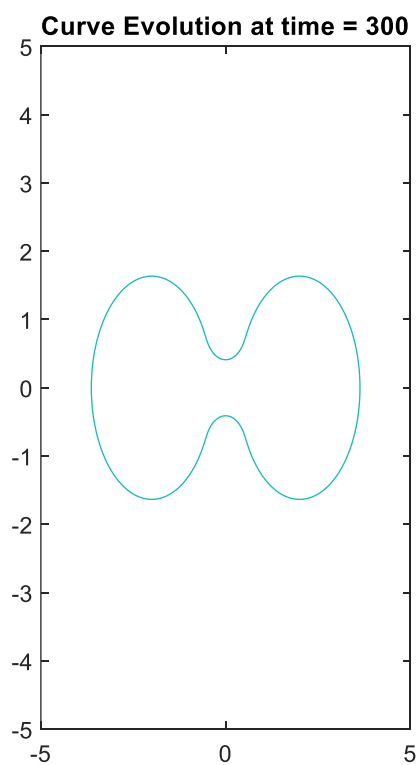
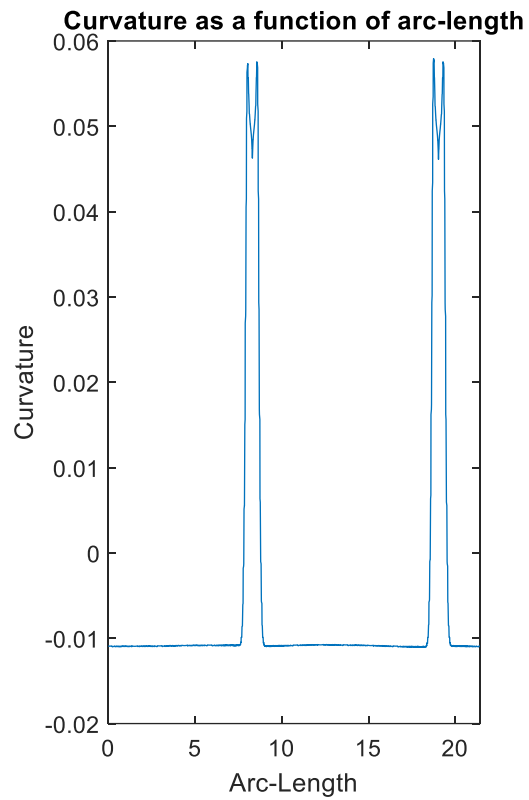
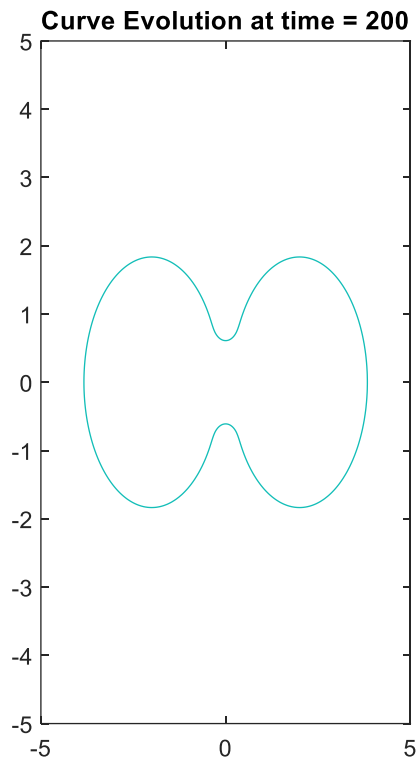
Optical Path

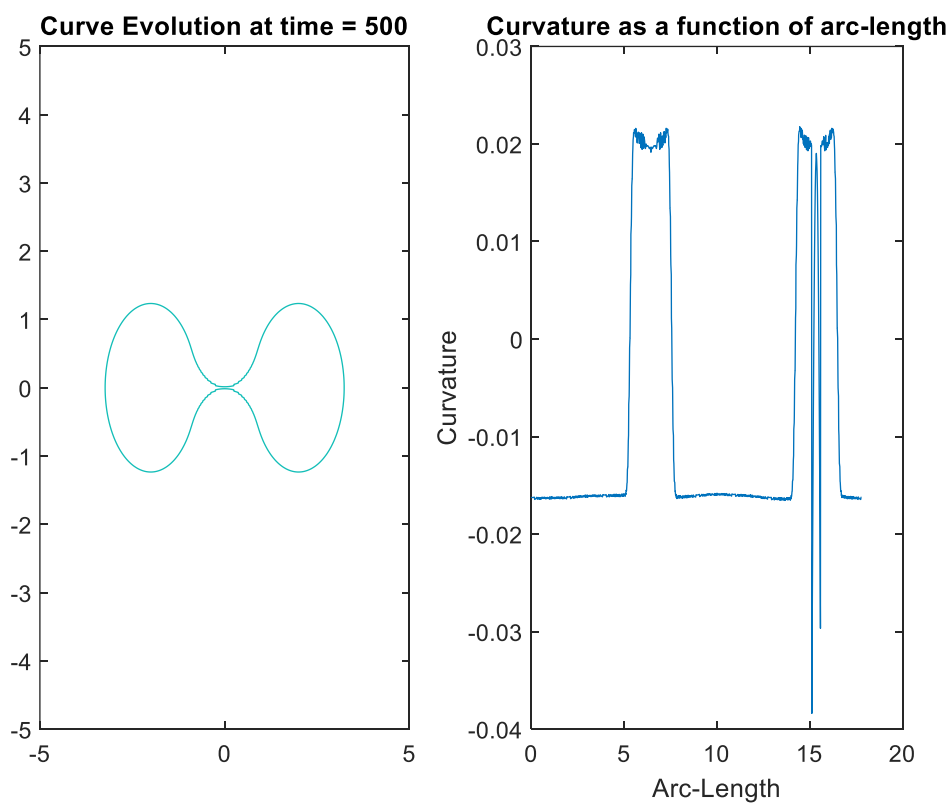
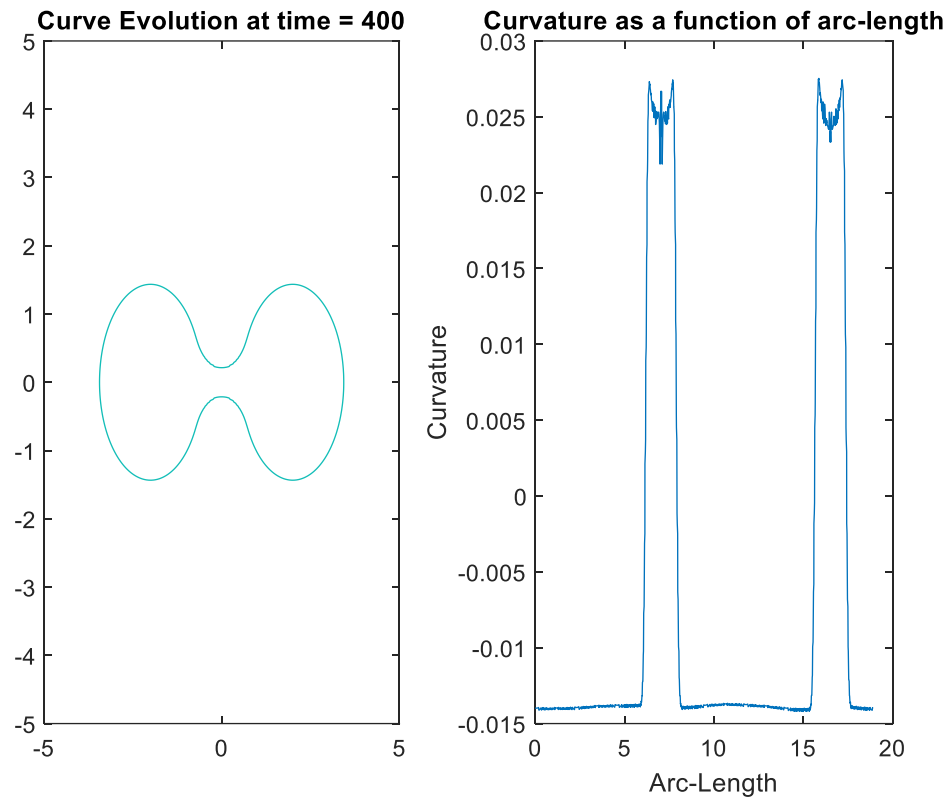


Problem 2

Below are my results for curve evolution using the level sets method:







As we can see, the signature is looking like an electric pulse wave, of which its width is widening as the evolution progress. At time zero, the curve has almost equal curvature everywhere, except for the singular points – therefore, the pulse of the signature is very narrow, and the DC level is very

low, since the radius of the two circles is relatively large. Later, as the time progress, the radius of the two circles shrinks, and the singularities are getting smoothed – therefore, the DC level of the pulse is climbing up (smaller radius) and the pulse width widens (continues varying curvature).