

Project

There are many aspects of curve shortening flow to explore. A nice project would be

- Prove the isoperimetric inequality (at least for convex curves) using curve shortening flow. See
 - M Gage and RS Hamilton, *The heat equation shrinking convex plane curves*, Journal of Differential Geometry 23(1) (1986) 69–96. (See the Main Theorem 1.1 and the first paragraph of Section 5 of the paper.)
 - MA Grayson, *The heat equation shrinks embedded plane curves to round points*, Journal of Differential Geometry 26(2) (1987) 285–314.
- How many other basic facts about CSF can you prove? The first section of the online notes by Prof Robert Haslhofer at the University of Toronto may help:
 - http://www.math.toronto.edu/roberth/pde2/curve_shortening_flow.pdf