Project Initial Idea

My initial project idea is to investigate the use of parallelization in mutation testing tools. If possible, I will try to find an open source mutation testing tool and improve its' performance using parallel methods. There are multiple algorithms and methods used to split work between processors, each containing their own pros and cons. The most popular methods are detailed in a paper by Mateo and Usaola [1], including a novel approach which they propose that allows for tuning the parallel process based on what factors are prioritized (minimizing communication, minimizing difference in finish times, etc). Using this paper, and others, I hope to be able to implement some improvement of an existing mutation testing tool and measure the improvement in performance.

Citations

[1] Mateo, P.R. and Usaola, M.P. (2013), Parallel mutation testing. Softw. Test. Verif. Reliab., 23: 315-350. doi:10.1002/stvr.1471