Team Eclipse
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# ECE 454 Lab 2 Report

The final solution for our version of the rotate() function focuses on optimizing cache performance. To do so, the team focused on achieving locality, namely spatial locality since a pixel is not reused as temporal locality, to reduce the cache miss rate. This is mainly done by loop blocking, which divide the 2D array into blocks of size T x T, where T is a defined constant. The team has decided on the size of T to be 32 after several trials of determining the best size to optimize the performance. Following this move, the team also utilized loop-reordering to traverse horizontally instead of vertically to further take advantage of locality in row-major order of c code. As a result, the team was able to achieve a speedup factor of approximately 2.6-2.8.