Major Changes:
There was a bug in the code.

What I have accomplished so far:
Originally, the Cartesian product of the tree and line graph didn’t work with the CRD algorithm. Over spring break, I thought of a potential fix. I haven’t thought about the effect on runtime but it should improve the CRD algorithm on the product of the tree and line graph.
However, right after spring break, Andy told me there was a bug in his code. So I don’t know if I should still implement my idea.

Meeting my Milestone
Here are the tasks that I set out to do:

• Experiment with some modifications in terms of momentum

I have an idea for a momentum based variation. It has to do with changing the capacities of the edges based on the neighbourhood of the vertex. Suppose we are on vertex $v$ and we’re trying to spread mass. If all or a lot of it’s neighbours have high mass, then we should decrease the outgoing capacity of that vertex. Specifically, suppose all but one neighbour, say $u$, has high mass then the capacity of the edge $(v, u)$ should be decreased. However, $(u, v)$ should not change. It may be wise to increase the capacity of edges when a lot of the neighbours are low weight, but I see problems with that idea. A lot of the finer details haven’t been figured out yet but I think it might not be a bad idea. The downside is that the graph must be directed then.
However, now since Andy discovered a bug in the code. I’m going to test bigger examples on the code and see how that goes. If CRD holds for the tree cross line counterexample, then perhaps my modification won’t be necessary/

Surprises:
None.

Revisions to Milestones For the next report, I would like to have the following accomplished

• Try bigger/different examples on CRD. Specifically, k-ary trees.

• Find out what to do for meeting of the minds.

Resources Needed
No changes.