Writeup for Networks Project 1 Final Stage

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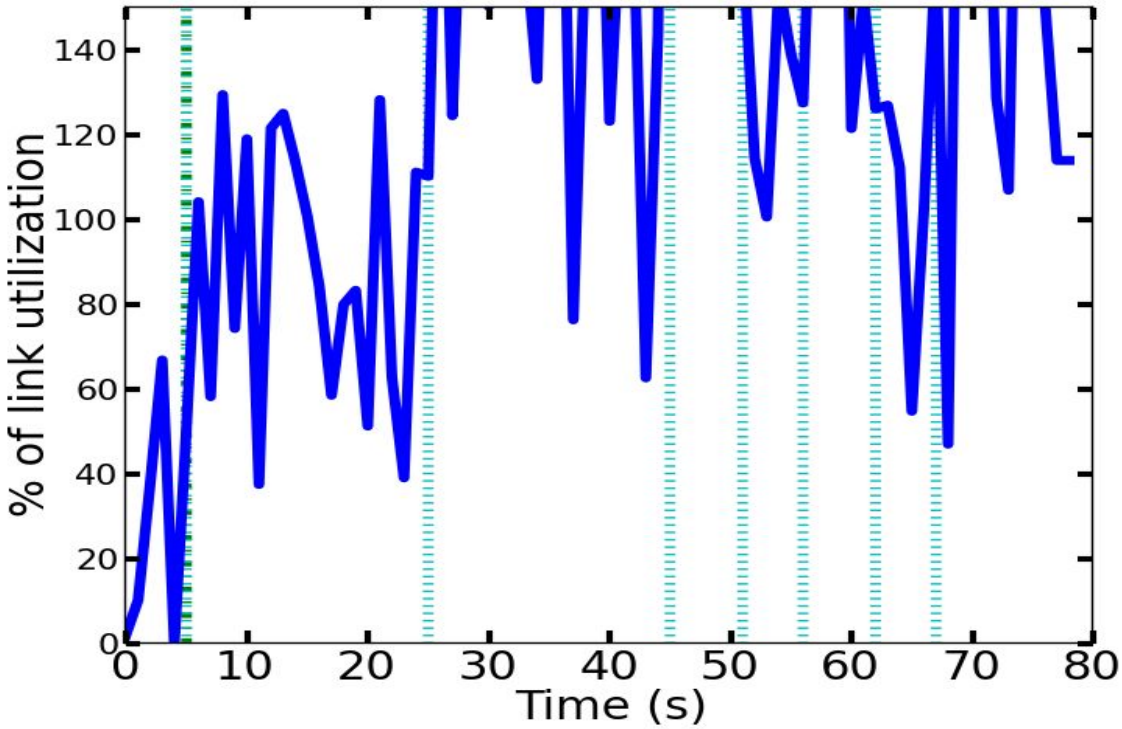
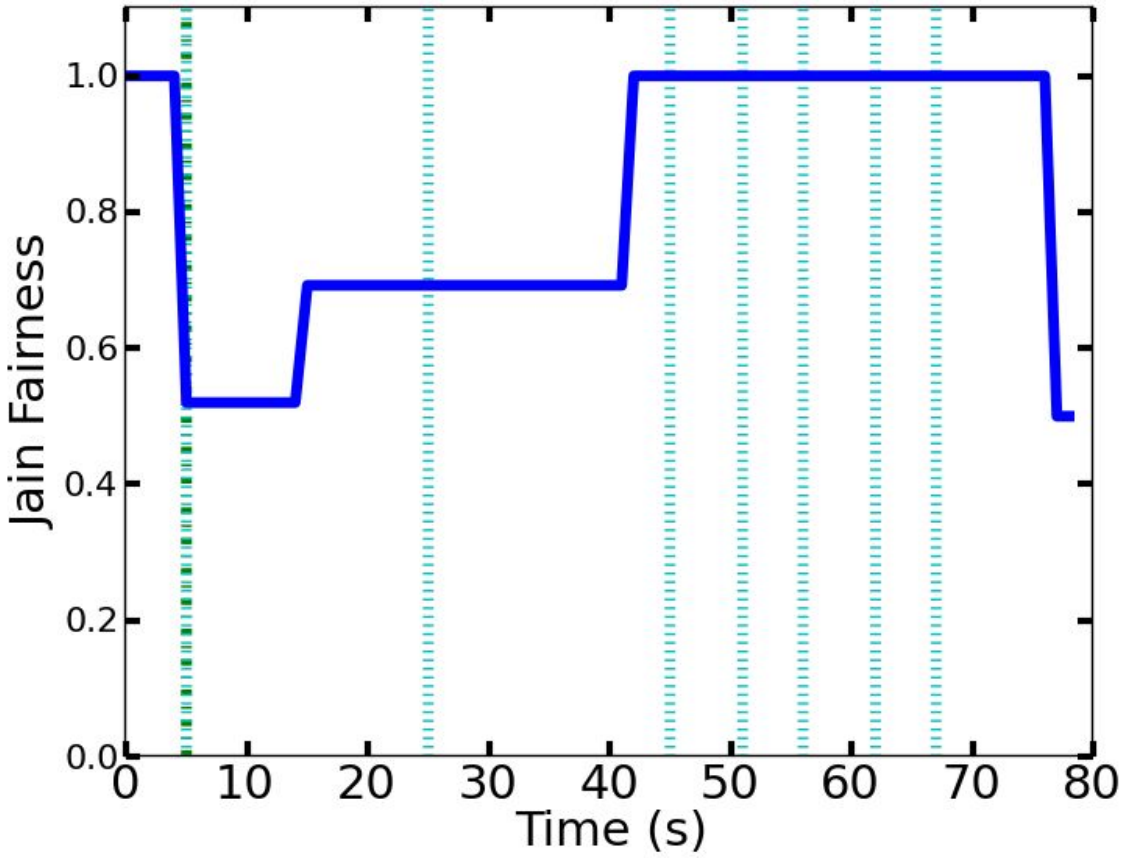
a = 0.1:

utilization:



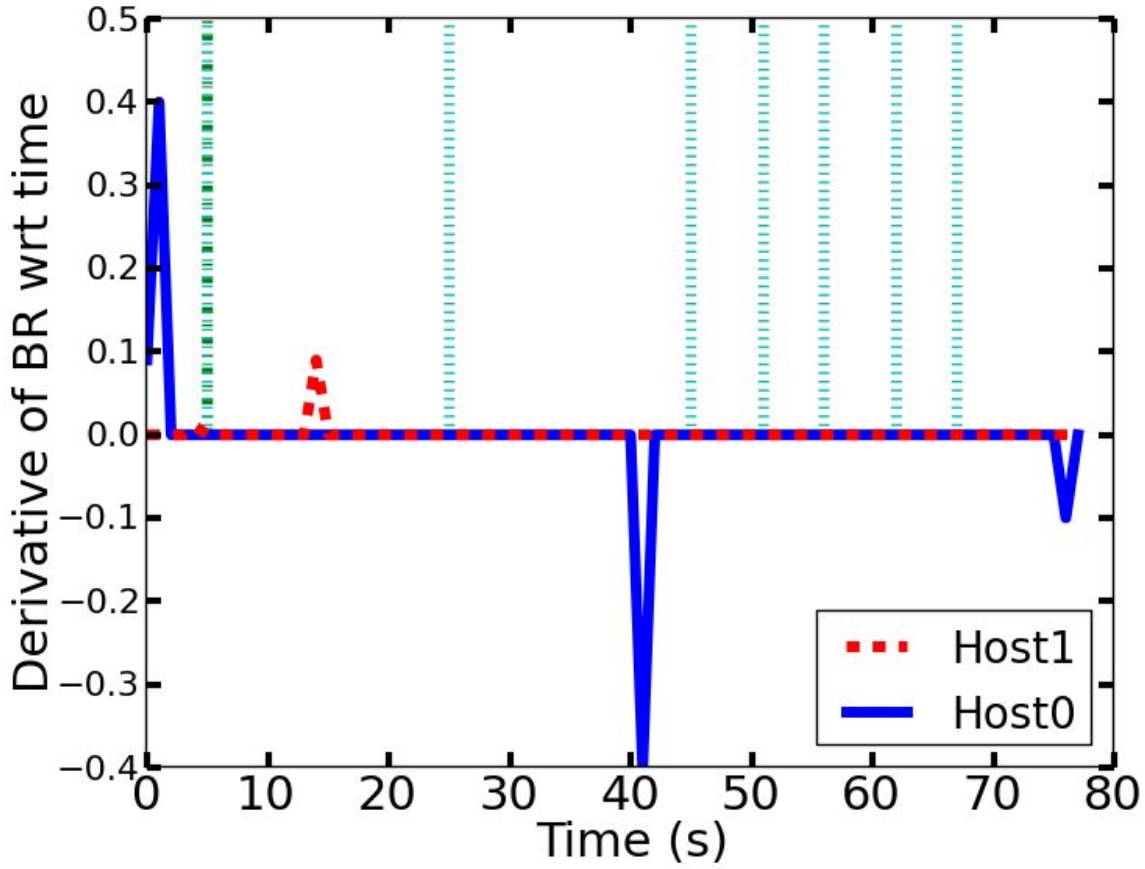
a = 0.1

fairness:



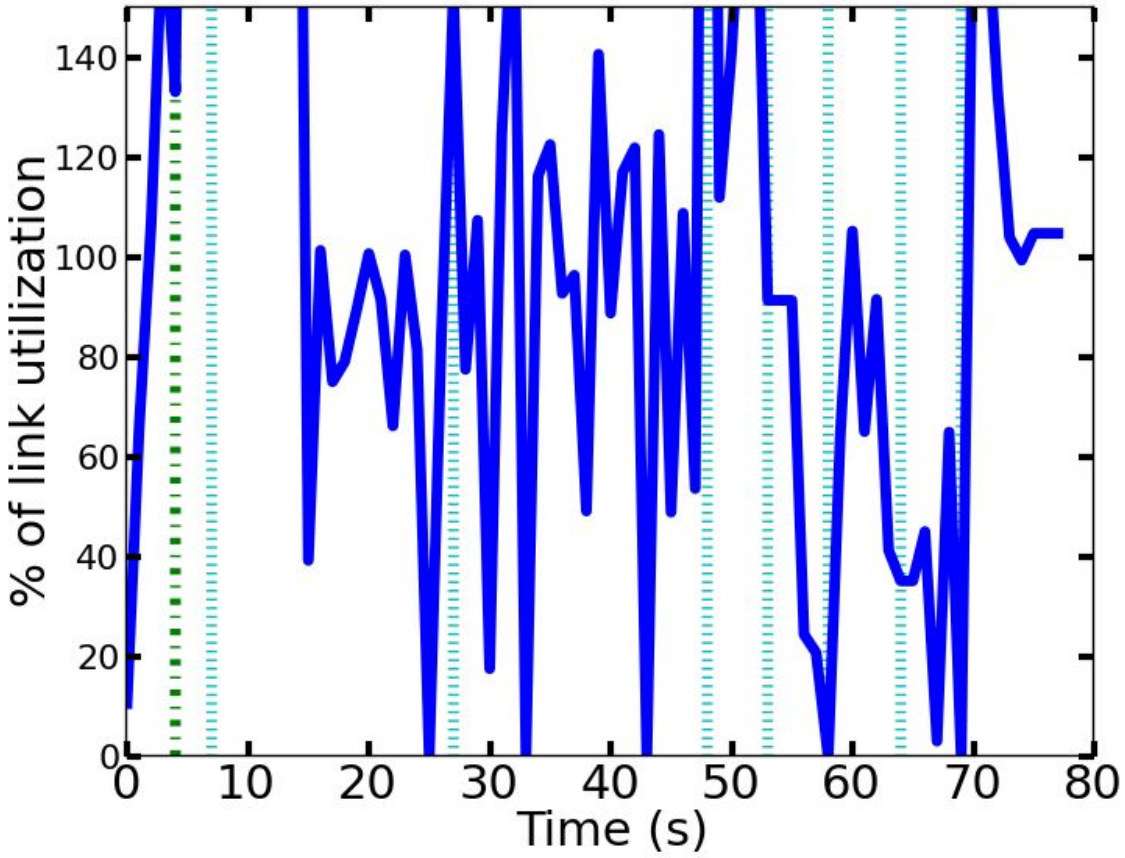
a = 0.1

smoothness:



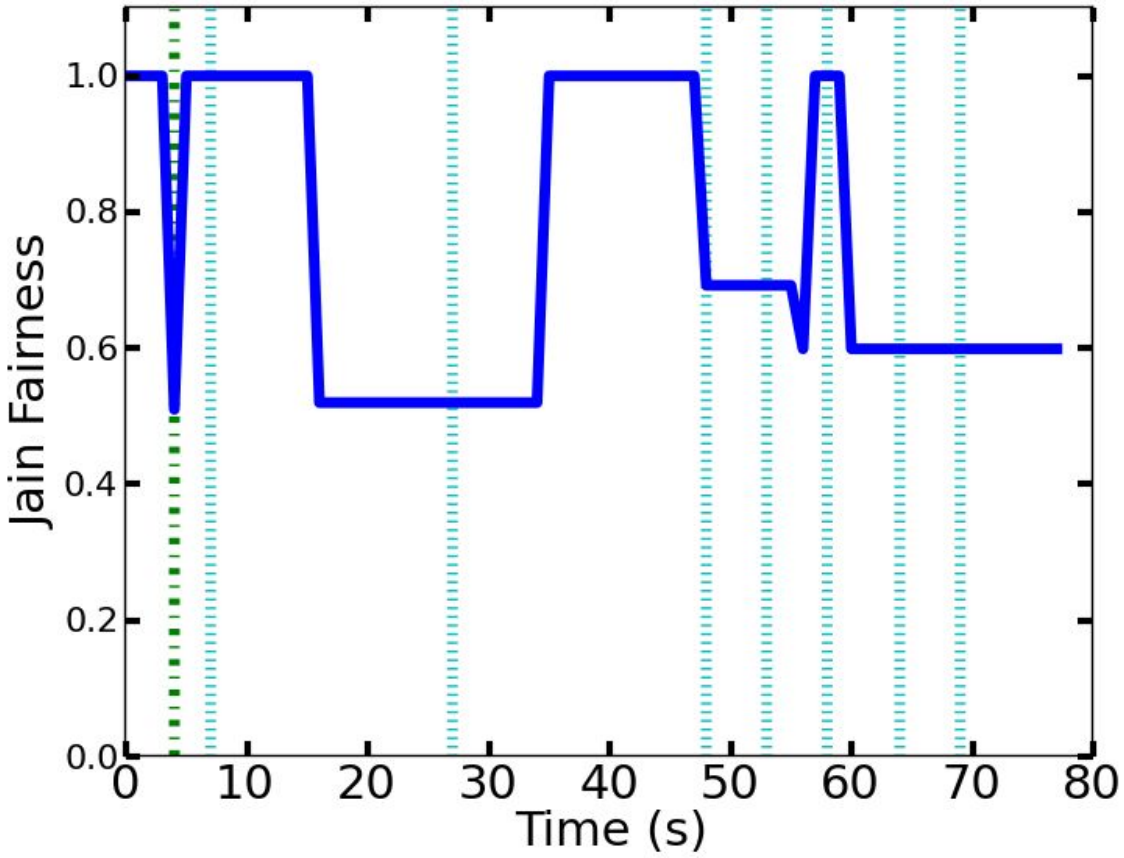
a = 0.5:

utilization:



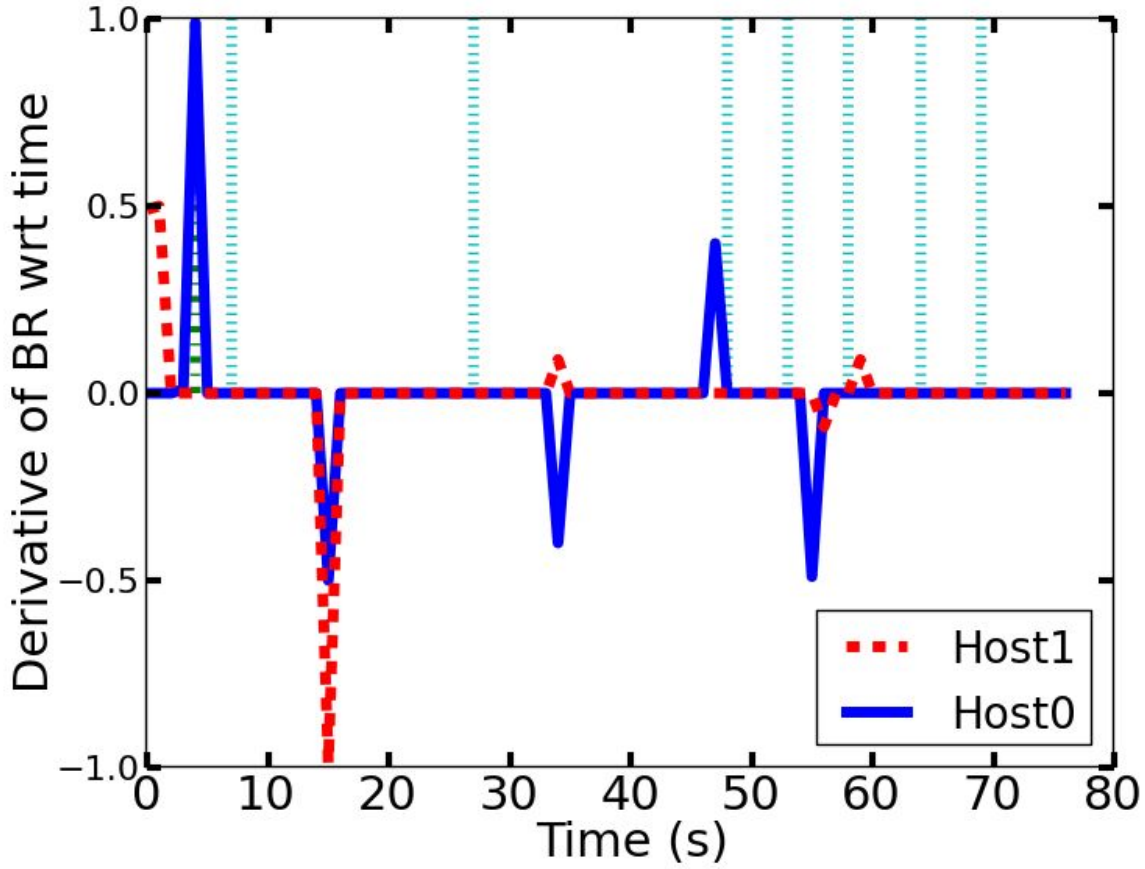
a = 0.5

fairness:



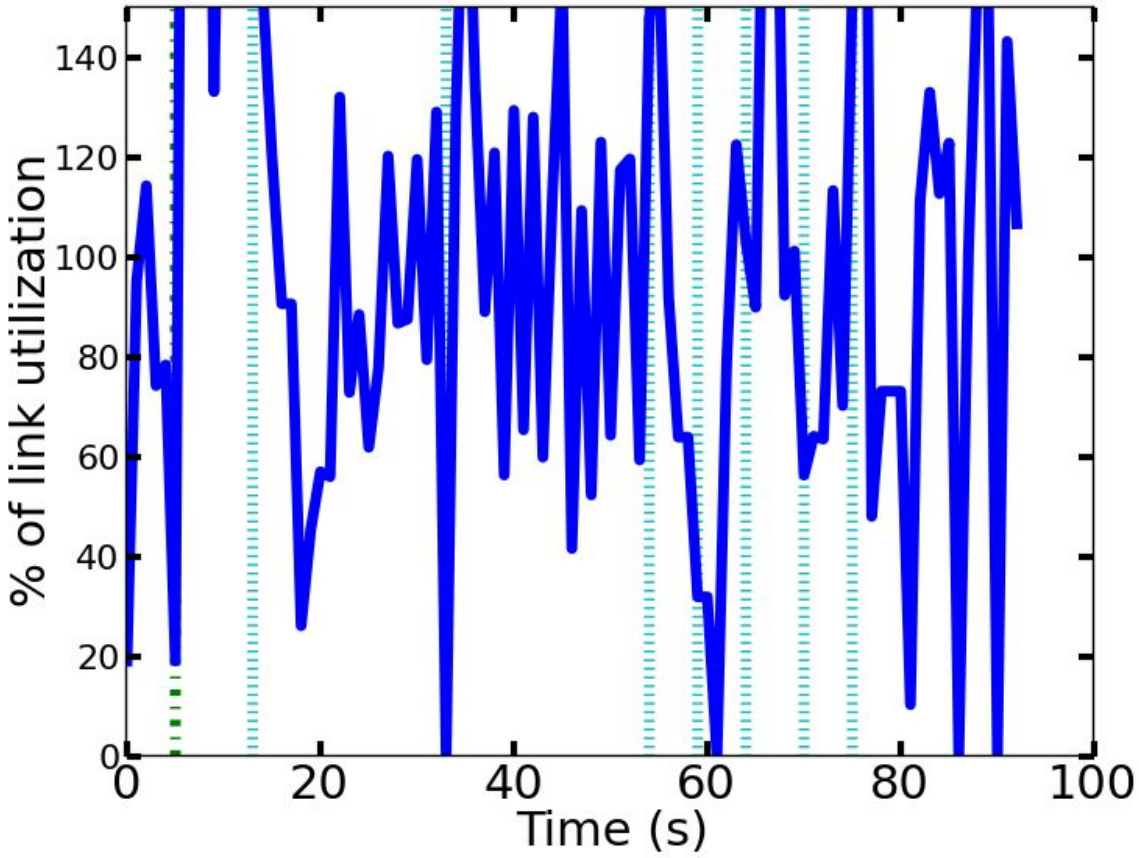
a = 0.5

smoothness:



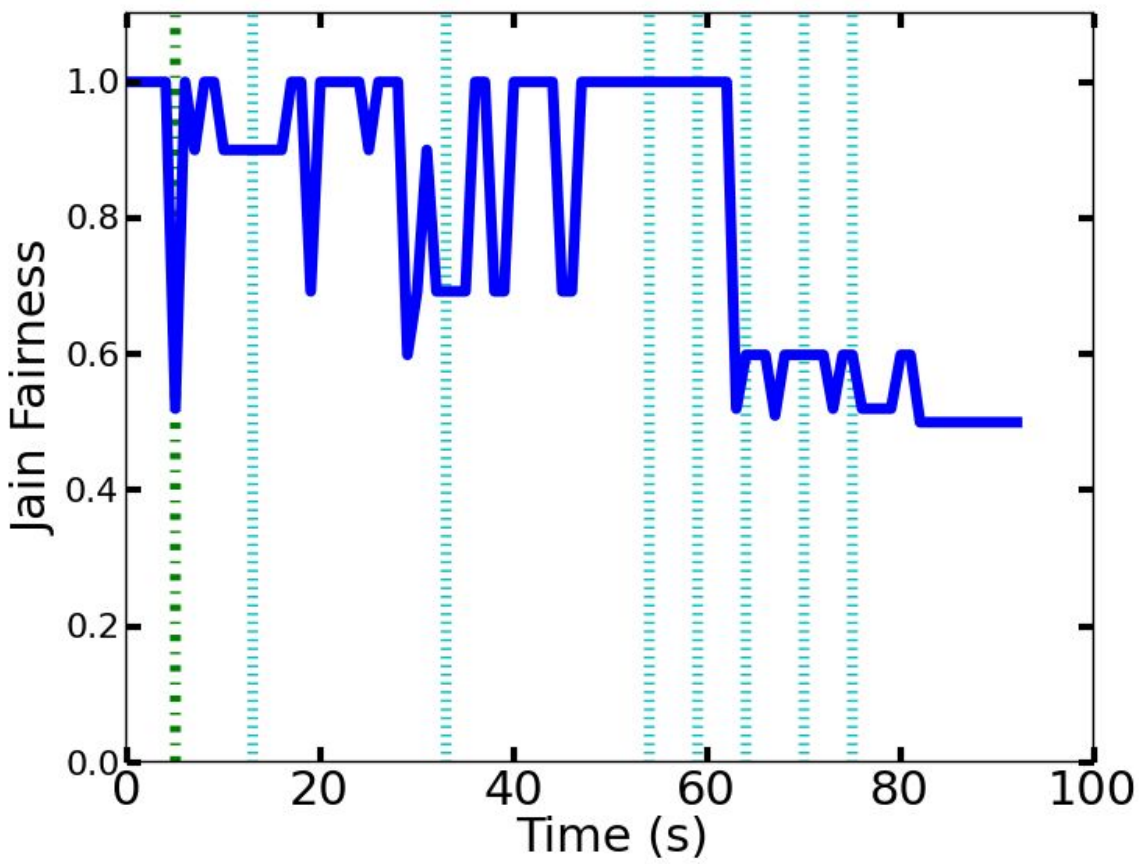
a = 0.9:

utilization:



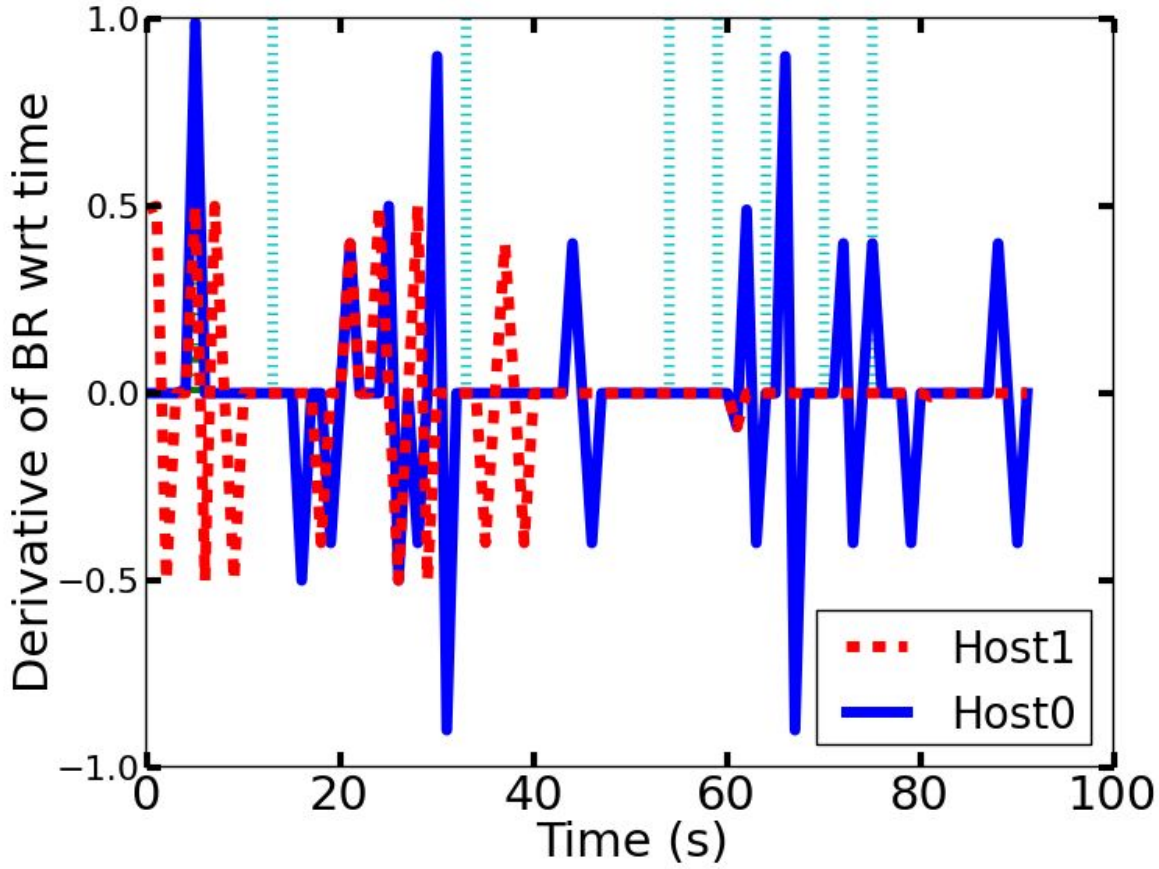
a = 0.9:

fairness:



a = 0.9

smoothness:



Observations:

For utilization, when alpha was 0.1, the utilization showed a steady increase as time went on, exceeding 100% around the 25 second mark. When alpha was 0.5, the link utilization shoots up in the beginning, then stays fairly balanced between 0 and 100. The 0.9 graph appears to fluctuate more rapidly than either of the other two alpha value graphs, indicating how increasing alpha affects reactivity and thus the throughput calculation and link utilization.

As alpha increased from 0.1 to 0.9, the behavior of the fairness curve went from constantly increasing/decreasing over longer stretches of time to making several quick fluctuations in a short span of time, since the newest throughput observation has more and more of an impact on the weighted average. The alpha = 0.1 graph goes from a fairness of 1 down to around 0.5, gradually coming back up to 1 again in linear stretches, while the 0.5 graph dips up and down between 1 and 0.5~0.6, and the 0.9 graph zigzags up and down quickly, eventually setting around 0.5~0.6

I noticed that as alpha increased in size, the variation in smoothness increased. For alpha = 0.1, smoothness stayed relatively constant, even during events, other than a single large dip for host 0, again most likely because the weighted average dampens the impact each new observed throughput has on the overall average. For alpha = 0.5, there were several smaller fluctuations, and for alpha = 0.9, the smoothness curve is all over the place, indicating a throughput estimate that is very reactive.