

P1:

As λ decreases, the percent k explained by the first eigenvalues increases due to the fact that more weight is given to more recent observations.

P2:

The Higham method takes up more time to run and provides more precision about the output compared to the near psd method. The conclusion is more significant as N increases.

The decision between whether to use the Higham method or the near psd is a tradeoff between time consumption and precision. When in a situation where an output is needed in a short time, the near psd method should be used and some precision may be sacrificed; when in a situation where no one is in a rush of getting the output, the Higham can be implemented. It also depends on how big N is, the larger the N gets, the longer it takes for Higham to run, and the larger the gap between the run-time of Higham and the near psd.

P3:

The EWMA_COR_PEARSON_STD and PEARSON_COR_EWMA_STD consumes more time, especially when the percentage k explained gets smaller. This is because more weight is put on more recent data.