Stochastic Control and Optimization Project 2

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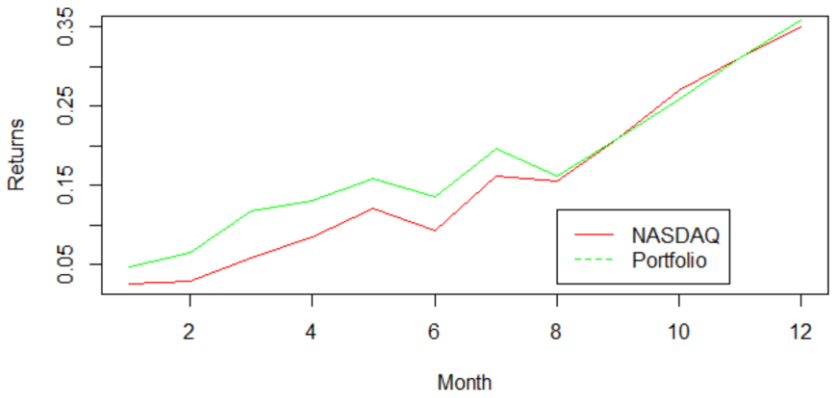
a) For Question 5, we used cosine similarity as the similarity measure.
Cosine similarity is a measure that makes sure that the similarity is not fully decided only by the subset of items the two vectors have in common. Correlation, however, uses a subset.
Also, cosine similarity is easily interpreted because it is bounded between zero and one. The more similar the indexes, the closer the cosine similarity is to zero. To improve interpretability and to experiment with different measures, we picked cosine similarity.
Unlike what we expected, we got good results when we used correlation. This suggests that considering only the most recent data is relatively better for portfolio optimization problem.

b) For Question 4, we get the following results. As we can see, for the first few months, our portfolio gives greater returns than NASDAQ and becomes comparable as time progresses.



For Question 5, after we used cosine similarity, we get the following results. As we can see, our portfolio performs worse than NASDAQ.