AMS514 Fall 2025 First Project

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The first project is to assess the paper of Gustaffson, "Evaluating the Longstaff-Schwarz method for pricing of American options". A version can be found here: (https://uu.diva-portal.org/smash/get/diva2:818128/FULLTEXT01.pdf).

Your assessment should cover:

1. That you have understood Gustaffson's analysis of the problem and choice of algorithms. Make any appropriate comments if you agree or disagree.

2. Independently implement your own code, and compare the results of your code with Gustaffson's. Your own code might result from different choices or the same, but you need to test your code in a meaningful way. Hint: it is sometimes easier to gain confidence in the results of code if you have two or more different implementations.

3. Gustaffson's figure 2.1, which appears purely qualitative, motivates his implementation details well. And he does test the error and compute confidence levels for his algorithm. But he does not compute a version of figure 2.1 as a result of his code. You should provide a graph of the exercise boundary of the American put as computed by your code as well as valuations and any other information needed to assess the credibility of your estimate.

4. You should be able to price the American call option and compute the exercise boundary. This is not because anyone is curious about what that exercise boundary is, it is because you want to see how your code performs in computing exercise boundaries. Provide a graph shows the exercise boundary of the American call. If your code uses an iteration, you should show a graph that illustrates the convergence of your algorithm.

The due date is October 17, 2025.