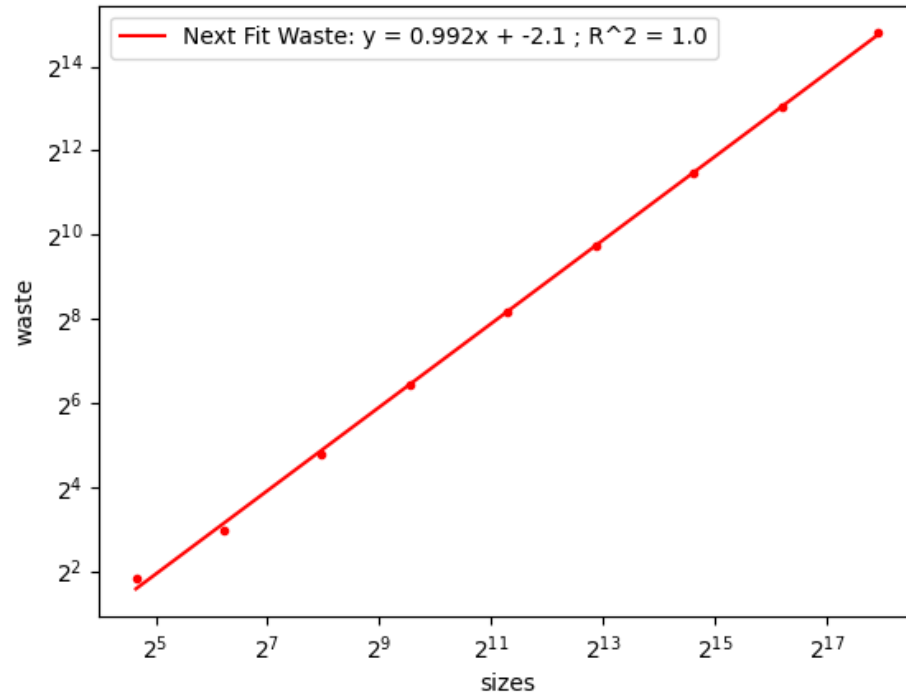


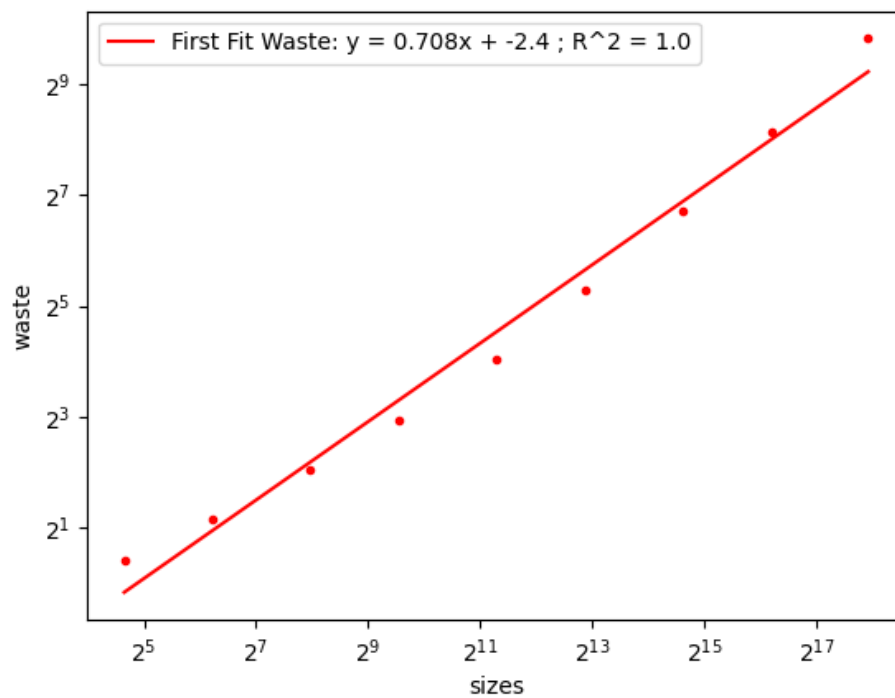
Bin Packing Algorithms

Andy Tran

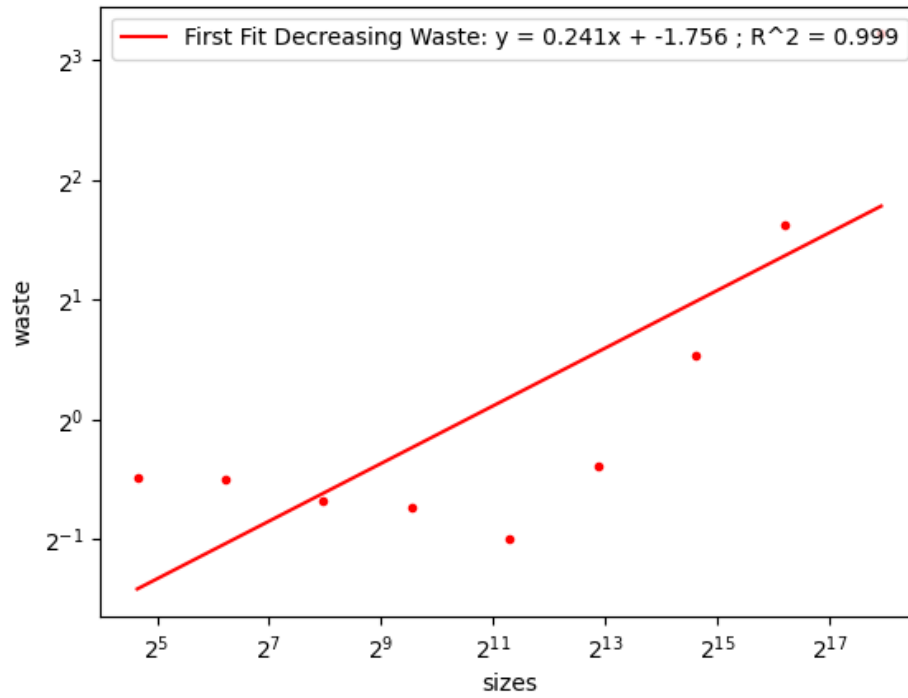
Next Fit



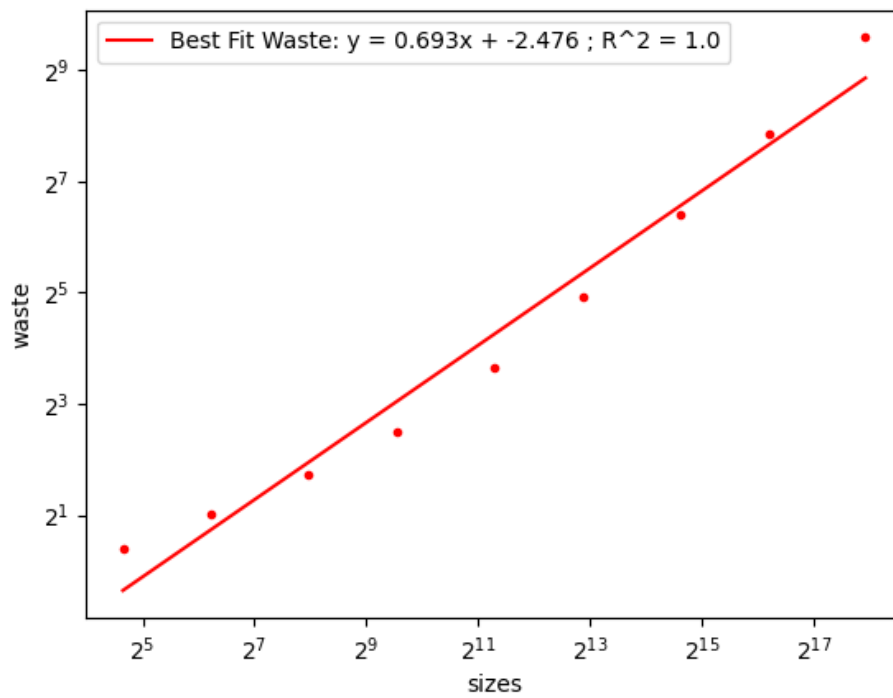
First Fit



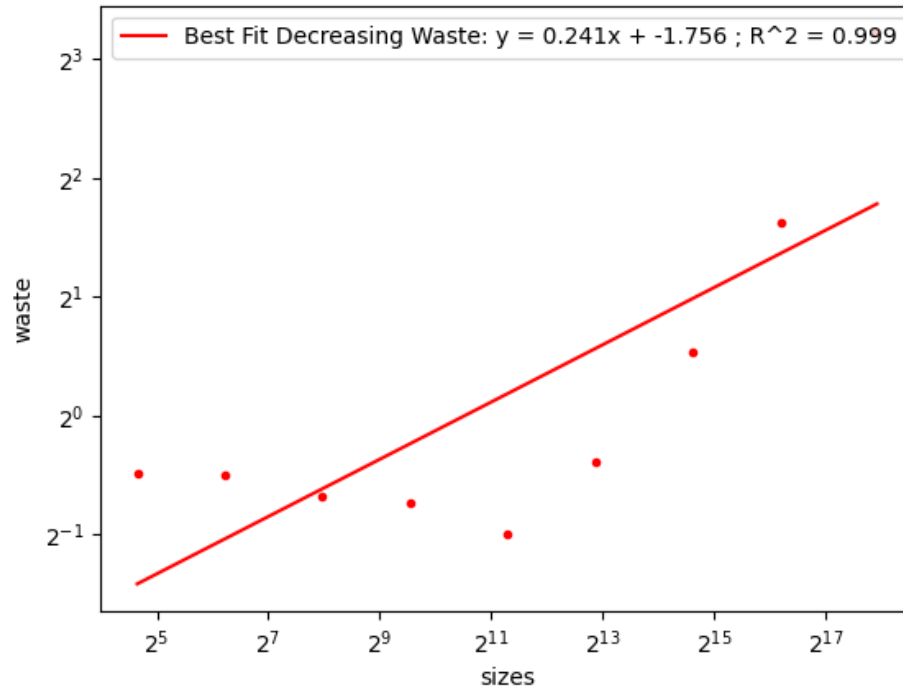
First Fit Decreasing



Best Fit



Best Fit Decreasing



Best Algorithm

The algorithm I believe that produces the least amount of waste is the Best Fit Decreasing bin packing algorithm. After plotting the sizes and waste, First Fit Decreasing and Best Fit Decreasing were the two that stood out the most because there was no line that truly was “best fit”. Also the waste was significantly less. Next Fit was overall the worst because of its $O(n^2)$ time complexity. Then came First Fit and Best Fit with Zip-Zip trees which had an $O(n \log n)$ time complexity. Then I believe First Fit Decreasing and Best Fit Decreasing has optimization by the items ordering makes it much easier and faster to bin pack. But I think Best Fit Decreasing is the best of all because it has the optimization of item ordering. But also Best Fit overall packs better than First Fit because the way it stores items is much more beneficial on space then time.