

Instructions: In these assignments the goal will be to compare the from scratch processes we looked at in class, to the functionality of built-in functions that perform similar tasks. You should compare the functionality of our custom-built examples and the ability to further customize them, to the functionality of package functions. Describe any limitations of the from-scratch versions and the built-in functions. Run an example dataset through both and compare the results.

Submission: Create a Word document that discusses the comparison. Include graphs and explanations here, which package functions you are comparing, etc. With your submission, include your R code file.

Tasks:

1. Compare our custom implementation of a feedforward network to built-in packages such as neuralnet. Run them on the same dataset and compare results. Do built-in packages allow you to implement more than one kind of neural network or are packages limited to a single type? Explore other packages that implement neural networks (ideally, ones that do not require Python such as keras and torch do).
2. The decompose() function for time series can fail when there is no seasonality, such as when applied to the Nile dataset. Are there options to work around this in the decompose() function (check the documentation), or do you need to analyze this dataset by hand?