IBEHS 4QZ3 Modelling of Biological Systems – Assignment 4 2021

Individual assignment due Friday November 21st, 2021 11:59pm to the avenue dropbox.
Submit one PDF, with all code included in an appendix.

1. **(35 Marks)** The dataset **dataA4.mat** contains two 3-D matrices, each containing a single slice of brain functional imaging data (i.e. 2 dimensions are spatial and one temporal). Use al of the following methods to map out the functional areas in the brain
    a. Correlation analysis **(5)**
    b. Fourier analysis **(5)**
    c. PCA **(6)**
    d. Do methods **a, b**, and **c** give the same results? Why or why not? **(5)**
    e. Fractal dimension using RD **(4)**
    f. Fractal Dimension using PS **(4)**
    g. How do methods **e** and **f** compare to each other and compare to **a, b**, and **c**? Comment on why they are different/same? **(6)**

    For the Fourier and correlation analysis you need to know the person was activated in blocks of 30s OFF then 30s ON, done over 6 minutes with 180 temporal points in total (i.e. sampling was done at 0.5Hz, or an image was made every 2 seconds).