Project II

I. Multivariate Gaussian distributions

- A. Simulation, estimation of the parameters (covariance matrix)
- B. Visualization of the results, e.g. 3D densities, 3D histograms
- C. Real-world data case study

II. Multivariate non-Gaussian stable distributions

- A. Simulation, estimation of the parameters (spectral measure)
- B. Visualization of the results, e.g. 3D densities, 3D histograms
- C. Real-world data case study

III. α-stable processes (in particular Gaussian)

- A. Lévy stable and fractional stable motions
- B. Ornstein Uhlenbeck processes
- C. Processes obtained by Lamperti transformation
- D. For all processes:
    1. Different simulation methods, checking the accuracy and speed
    2. Visualization of the results, e.g. trajectories, quantile lines, density evolution
    3. Estimation of the parameters, e.g. univariate, multivariate distributions, H parameter (we'll discuss the estimation of the self-similarity parameter next time; for an overview of the methods see, e.g. http://math.bu.edu/people/murad/pub/tails-posted.ps)