**Project Outline**

I want to simulate something to do with **energy** – perhaps modelling batteries? Since the complexity of batteries would be more appropriate as a developed end product, I will first explore random processes, and then move onto the diffusion equation.

Some ideas to begin with, involving simple random problems:

* Generate pseudo-random numbers
* Test characteristics of pseudo-random numbers
* Simulate radioactive decay by random sampling
* Explain the basic Monte Carlo method
* Simulate random walks in 1D and 2D
* Explain the power scaling of travel distance
* Describe the forces acting at small and large time scales in Brownian motion
* Model the stochastic components in Brownian motion simulations
* Identify different power laws for travel distance in the limiting cases of small and large times