

## Assignment 1

### Explore the random walk model of decision-making

In Lectures 2 and 3 we discussed the random walk model of two-choice decision-making. We discussed some of its properties and assumptions. We also learnt that it's not a very good model of human decisions since it predicts equal response times for both options, which is rarely true. Nevertheless, it is a very good starting point to get started with and is the subject of your first problem set.

**Problem 1:** Using the provided code (`random_walk_model.m`), run simulations of 20 trials for zero drift, positive drift and negative drift. Plot the evidence trajectories of each and write your observations.

**Problem 2:** What are the ways you can introduce bias into the model so that the agent tends to favor one decision over the other regardless of the evidence? Implement it and plot a case with bias but zero drift.

**Problem 3:** How would you increase the noisiness of the evidence in the code?

**Problem 4:** Currently, the evidence is randomly sampled from a uniform distribution. How would you change the code to get the evidence sampled from a normal distribution?

**Problem 5:** Reproduce the RT histograms (latency distributions) from the Farrel & Lewandowsky (2010) paper (Figure 2) using fewer trials (1000 or 10000) by modifying the code provided and using the function histogram.