How will we do it?

A step-by-step guide to what we will be doing in this course and how we will do it.

The primary aim of this course is to open up the concepts behind neural networks to as many people as possible. This means that we will always start an idea somewhere really comfortable and familiar. We will then take small, easy steps, building up from that safe place to get to where we have just enough understanding to appreciate something really cool or exciting about the neural networks.

To keep things as accessible as possible, we will resist the temptation to discuss anything that is more than strictly required to make your own neural network. There will be interesting context and tangents that some learners will appreciate, and if this is you, you are encouraged to research them more widely. This course won't look at all the possible optimizations and refinements to neural networks. There are many, but they would be a distraction from the core purpose here - to introduce the essential ideas in as easy and uncluttered way as possible.

Course Outline

This course is intentionally split into three sections:

- **Part 1:** This part is about mathematical ideas at work inside simple neural networks. We will deliberately not introduce any computer programming to avoid being distracted from the core ideas.

- **Part 2:** This part is a gentle introduction Python to implement our own neural network. We will train it to recognize human handwritten numbers, and we will test its performance.

- **Part 3:** In the last part, we will go further than is necessary to understand simple neural networks, just to have some fun. We will try ideas to

further improve our neural network's performance, and we will also

have a look inside a trained network to see if we can understand what it
has learned, and how it decides on its answers.