

Temporal Vectorization

This lesson explains temporal vectorization with an interesting case study called "Mandelbrot set".

We'll cover the following



- Problem Description

Temporal vectorization is where elements share the same computation but necessitate a different number of iterations.

Problem Description

The Mandelbrot set is the set of complex numbers c for which the function $f_c(z) = z^2 + c$ does not diverge when iterated from $z = 0$, i.e., for which the sequence $f_c(0), f_c(f_c(0))$, etc., remains bounded in an absolute value. It is very easy to compute, but it can take a very long time because you need to ensure a given number does not diverge. This is generally done by iterating the computation up to a maximum number of iterations, after which, if the number is still within some bounds, it is considered non-divergent.

Of course, the more iterations you do, the more precision you get.



Romanesco broccoli, showing self-similar form approximating a natural fractal. Image by Jon Sullivan, 2004.

In the next lesson, we'll try to solve this case study using the Python approach.