

Lecture 18, 16 October 2025

Madhavan Mukund

<https://www.cmi.ac.in/~madhavan>

Programming and Data Structures with Python

Libraries

Not "core" Python

import math

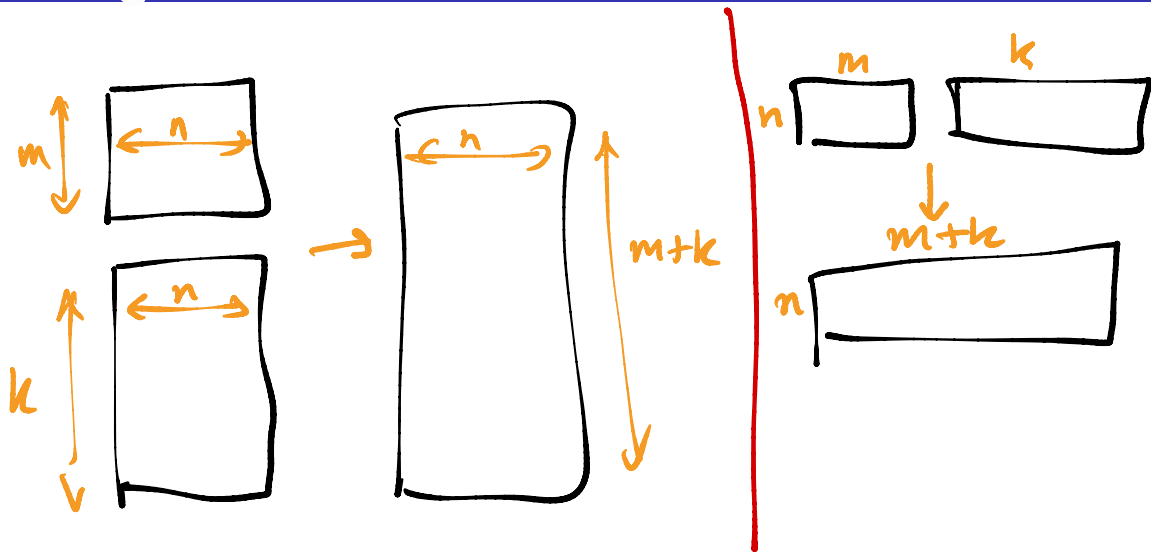
Specialized libraries

mumpy

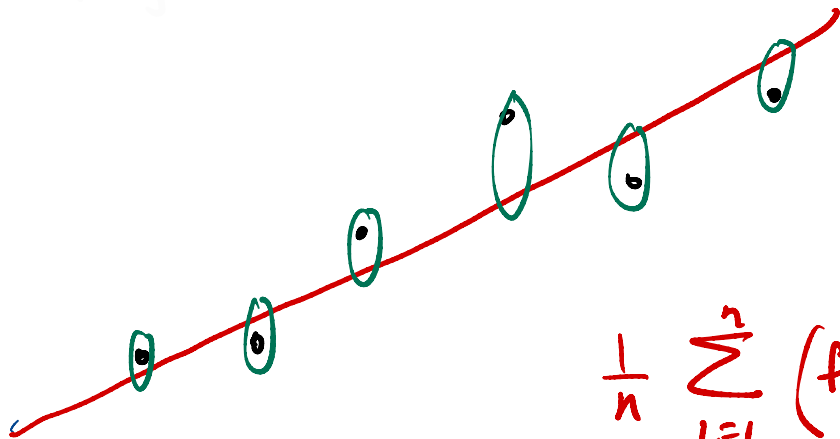
NumPy

- direct treatment
of matrices

Stacking matrices



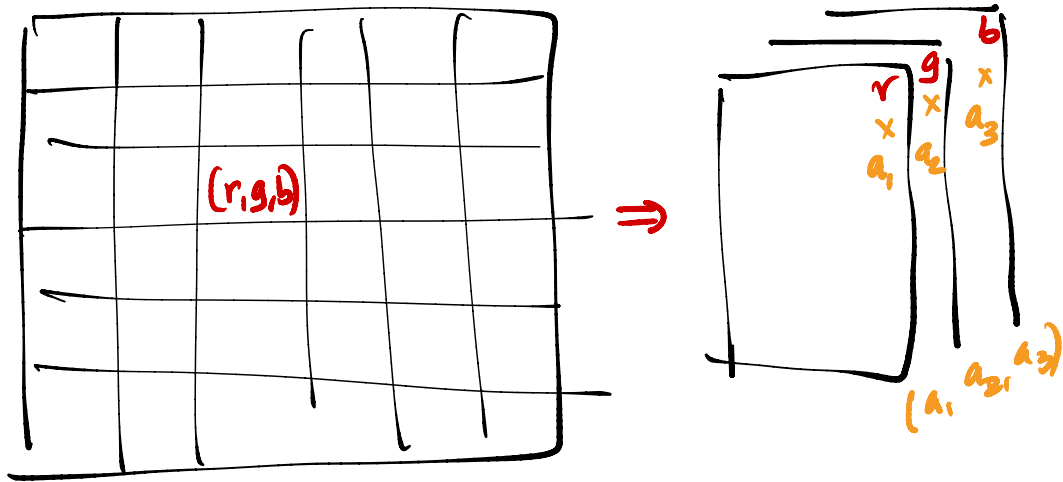
Line fitting



Mean Square
Error

$$\frac{1}{n} \sum_{i=1}^n (f(x_i) - y_i)^2$$

Images



$$(x, y, (r, g, b)) \times (a_1, a_2, a_3)$$

$$(x, y, (a_1 r, a_2 g, a_3 b))$$

Find nearest point

