

Tutorial 2: Introduction to Pytorch

Practical Deep Learning for Science
02 May, 2024

- *Nilotpal*

Last year,



“Will Smith eating spaghetti”

AI is cool!
Can't wait to see what it
can do in **20 years**

One
~~20~~ years later...



Air head
(Made with SORA)

<https://openai.com/index/sora-first-impressions>

- ❖ **AI growth has been quite steep in the recent years**

- Much steeper than “*exponential growth*”!

- ❖ **But, the building blocks are still kinda same**

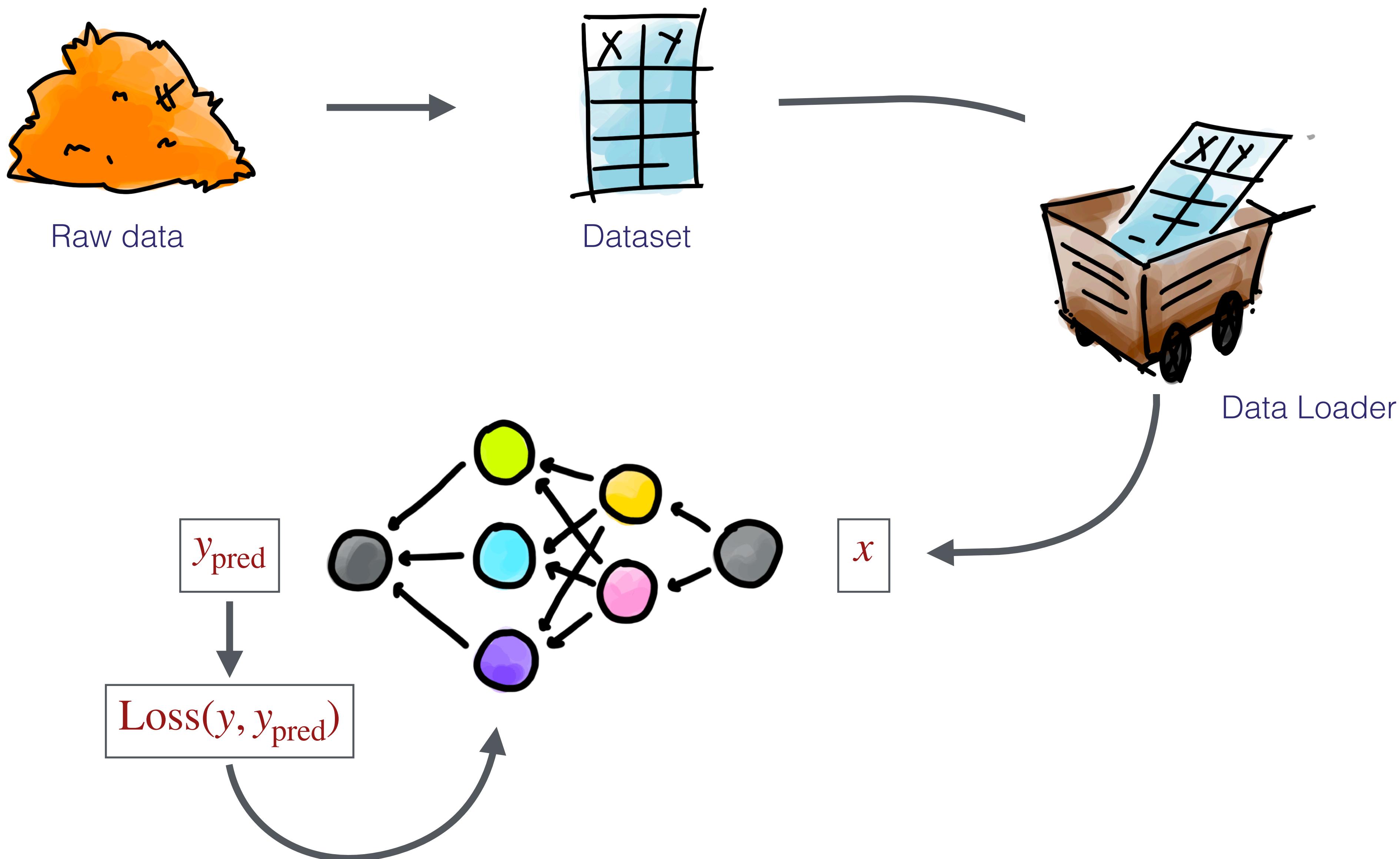
- Will learn a few in this course

- ❖ **And, core tools are also same**

- Mostly Tensorflow and Pytorch
 - We'll be using pytorch



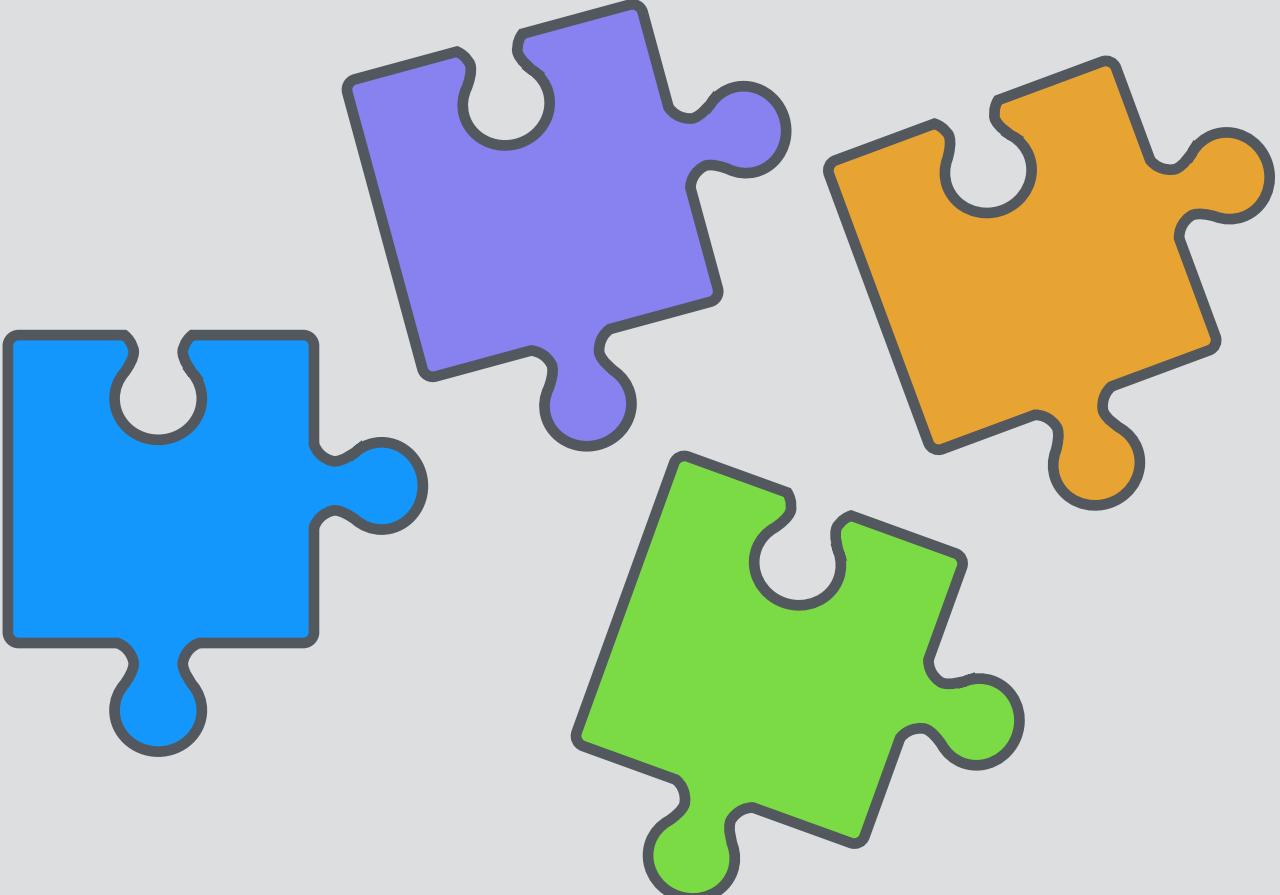
The PYTORCH pipeline



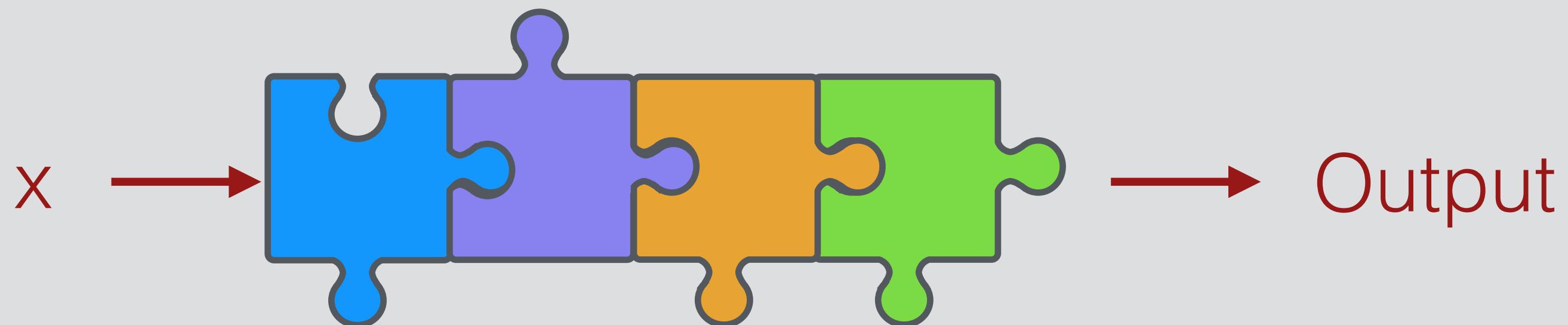
Creating the network with torch

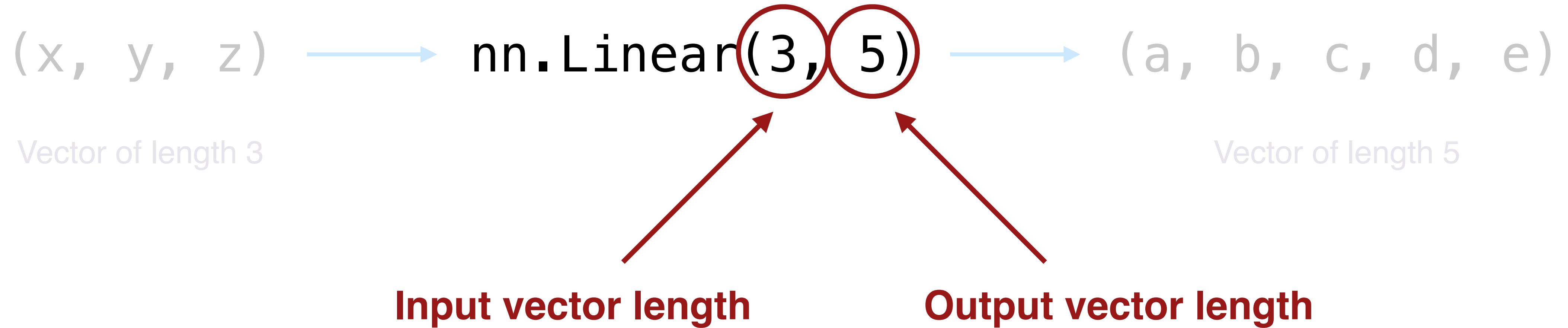
```
class MyNet(nn.Module):
```

```
    def __init__(self):
```



```
        def forward(self, x):
```





$$(x, y, z) \begin{matrix} 1 \times 3 \\ \times 3 \end{matrix} \begin{pmatrix} w_{11} & w_{12} & w_{13} & w_{14} & w_{15} \\ w_{21} & w_{22} & w_{23} & w_{24} & w_{25} \\ w_{31} & w_{32} & w_{33} & w_{34} & w_{35} \end{pmatrix}_{3 \times 5} + \begin{pmatrix} b_1 & b_2 & b_3 & b_4 & b_5 \end{pmatrix}_{1 \times 5} = \begin{pmatrix} a & b & c & d & e \end{pmatrix}_{1 \times 5}$$

- ◆ You are free to use whatever IDE/editor you want
 - We recommend VSCode



- ◆ We also recommend getting github-copilot
 - It's free for students



- ◆ We will need GPU access later
 - Google colab
 - Will discuss later



Before we wrap up,

Before we wrap up...

♦ Slack

- Your *primary* lifeguard
- https://join.slack.com/t/wis-ml-course-2024/shared_invite/zt-2hyndz2sm-xNJISa_T0t2HeXYdo4_ITA

♦ Final project

- Start (early) by creating a slack channel
- Keep it private (you don't wanna spam everyone)

♦ Feedback