

# Class 18

October 20, 2022

## Linear Model

$$y = w_0 + \sum_{i=1}^d w_i x_i = w^T x + w_0$$

### One neuron

- $z = w^T x$
- $y = f(z)$

$f$  is a step function and is mostly non-linear.

### Matrix representation (for MLP)

$$X \xrightarrow{W} W^T X \longrightarrow Z \xrightarrow{f(Z)} Y$$

### Multi-class classification

Multiple outputs in the output layer. Class 1 will have 1 (for class1 output) and 0 for the other class outputs.