

Regression + Assignment 1

(Neural Networks Implementation and Application Tutorial)

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Overview

- Assignment 1
- Regression
- Assignment 2

Assignment 1

Organization

- Late submissions (>10 mins) will not be accepted unless previously agreed upon
 - Other questions?
 - How long did it take?
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- *Tutor cue*: go through the assignment
 - Questions?
 - Did it work?
 - Were you able to collaborate?

Regression

- What is the difference between classification and regression? 🤔
- What is regression in terms of functions? 🤔
 - ▶ Any function $f : F \rightarrow \mathbb{R}$ (from joint feature space to numbers)
- What is *linear* regression? 🤔
 - ▶ $\hat{y} = x^T \cdot \theta + C$ (parameters θ, C)

Which of the following are regression (and linear/polynomial) models? 🤔 1. 5

- 2 $4 \cdot x_1 + 5$
- 3 $4 \cdot x_1 + 3 \cdot x_2^2 + 5$
- 4 $4 \cdot x_1 + 3 \cdot x_1 \cdot x_2 + 5$
- 5 $4 \cdot x_1 + 3 \cdot \sin(x_2^2) + 5$
- 6 $\begin{cases} 4 \cdot x_1 + 5 & \text{if } x_2 \geq 10 \\ 3 \cdot x_1 + 4 & \text{if } x_2 < 10 \end{cases}$

Regression

Regression to Classification 🤔 🤔

Assume that we have a function that outputs a score for every class, e.g. *Predict sentiment into (positive, negative, neutral)*:

(15.0, -2.3, 4.1)

- How do we use this for classification?
 - ▶ Argmax
- Can we get a probability distribution?
 - ▶ Softmax: $\frac{\exp x_i}{\sum_k \exp x_k}$

Assignment 2

- Any questions?

Resources

TODO