Assignment 1

(Neural Networks Implementation and Application Tutorial)

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Overview

- Assignment 1
- Time effort
- Current assignment (Assignment 2)
- QA

Assignment Submission Deadline

Late submissions (>10mins) will not be accepted unless previously agreed upon!

- Mandatory groups of 2 (1 group of 3 as previously discussed)
- Usually 2-3 exercises per assignment + a possible bonus question
- Jupyter notebook templates
  - Assignment + solution in the same notebook
  - Can use Google Colab or local runtime
  - Write solutions in Python files and import them
  - Submitted notebook must only contain your analysis and outputs
- Only one submission per group
  - Submit through Teams

Organization

Questions?

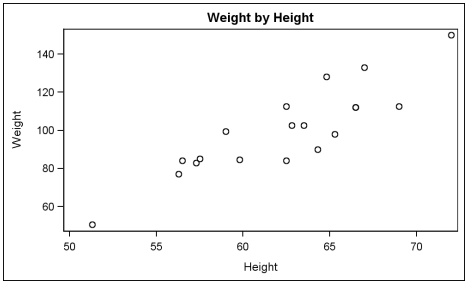
Assignment 1

- Questions?
- Did it work?
- How long did it take?

Feedback:

- Change TODO to Solution.
- Don't forget to write amount of work.
  - Useful for our estimates of difficulty.

PCA

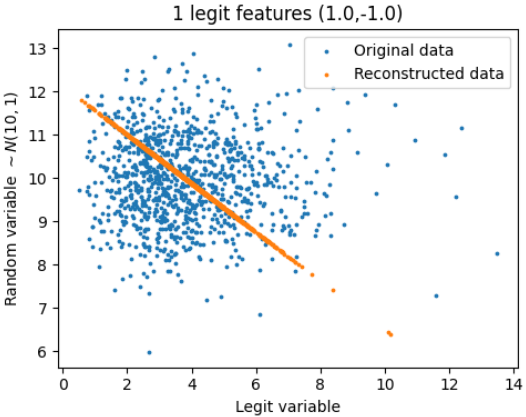


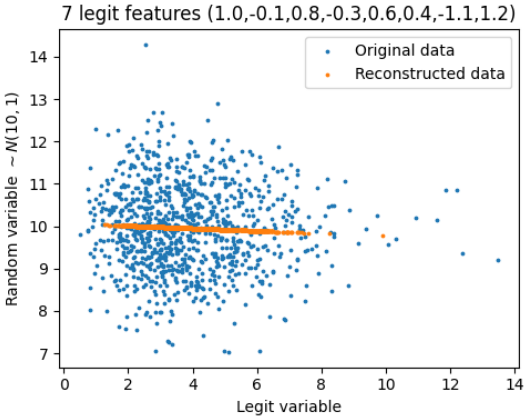
Questions 🧐

- What will be the first principal component?
- Does anyone know how PCA works?
- What does it mean that we take only k largest principal components?

PCA

- Is it safe to say that the first component will always contain the most important information? 🤔





Standardization

- Is not normalization! ($x' = \frac{x}{|x|}$)
- $X = \frac{X - \text{mean}(X)}{\text{std}(X)}$
- Compute either:
  - With Numpy: `X = (X-X.mean())/np.std(X)`
  - With Scikit: `StandardScaler().fit_transform(X)`
- Why do we need standardization for PCA? 🤔

Assignment 2

- Any questions?

Resources

1. Course Website: lsv.uni-saarland.de/neural-networks-implementation-and-application-winter-2021-2022-2
2. Piazza: https://piazza.com/class/kvc3vzhsvh55rt
3. Tutorial repository github.com/zouharvi/uds-nnia-tutorial
4. Lecture & tutorial teams channels