

## Assignment 7: Multivariate Data - Parallel Coordinate Plot

(20 points)

Due: 17.06.2024 10AM



Figure 1: Parallel Coordinate Plot (PCP) of penguin dataset.

### Task 1: Theory

(10 points)

**Task 1a)** Solely looking at Figure 1, what can you say regarding

- Distinguishable **characteristics** between the 3 penguin **species** (*Adelie*, *Chinstrap*, *Gentoo*)?
- Differences between **male and female** penguins in terms of **body measurements**?
- Pairwise (positive or negative) **correlations of dimensions**?
- Outlier(s)** in the data?

**Task 1b)** Figure 1 shows both, numeric and categorical dimensions on the axes. Shortly explain possible **advantage(s)** and **disadvantage(s)** of including **categorical dimensions** as axes in the PCP.

**Task 1c)** Can you think of **interactive features** that could be added to the PCP in Figure 1 to further enhance data exploration? Which **questions of Task 1b** could **benefit** from these interactions and how?

### Task 2: Programming

(10 points)

Goal of this exercise is to implement a PCP with D3, where the user can **choose between displaying all dimensions or only numeric ones** as **axes** through **radio buttons** and adjust the **ordering of the axes (dimensions)** using a **dropdown** (see Figure 1). Attached to this exercise you will find a folder which contains an unfinished implementation of the PCP. Your task is to finish the implementation such that opening the *index.html* shows the plot as depicted in

Figure 1. To finish the implementation, follow the steps described as comments within the dedicated file. Each comment starting with *TASK* indicates a position you have to add code. Within the folder there are **4** files:

- **index.html**  
The main entry point of the visualization.
- **index.js**  
The main JavaScript entry point. All the coding tasks are in here.
- **index.css**  
Implements CSS rules for specific elements.
- **data.js**  
Initializes a variable called *data* and reflects the dataset we want to visualize.

**Submission: Zipped folder including all files of the programming exercise (index.html, index.js, index.css, data.js) and a PDF/text file with the answers to the theoretical questions.**

Please find yourself in Groups of **2 Students**. Only 1 member of the group must submit the exercise in ILIAS.