Statistical Machine Learning – Homework

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Sheet 3

Each (sub)task in this homework is worth 1 point. For example, you can get up to 5 points in Task 3.1. The points you achieve in this homework will count towards the exam bonus points.

In this exercise, all tasks are provided in jupyter notebooks. You can either host the jupyter notebooks on your own pc or you can work on them in a google colab. If you decide to work with colab, make sure to copy the provided notebooks before editing. Otherwise, your changes won't be saved!

To submit the homework, print the jupyter notebook as a pdf and concatenate all pdfs in the provided latex template at the end of the file with

```
\includepdf[pages=-]{task_submission/<your-colab.pdf>}
```

Then submit your homework as a single pdf. Find all the tasks at

Regression

- https://colab.research.google.com/drive/1ArDZN8IwCycHBqeLb2f WKjVQibBePaZk?usp=sharing or
- as a jupyter notebook *linear_regression.ipynb*

Gaussian Processes

- https://colab.research.google.com/drive/1nUkGI9co8pY3BgISzbxWNuJkGdNBzDVa?usp=sharing or
- in the attached jupyter notebook *gp_with_numpy.ipynb*

Expectation Maximization

- https://colab.research.google.com/drive/1T0wyDvAR8XySHRh336k8QmZnxpEXWi2i?usp=sharing or
- in the attached jupyter notebook *em_image_segmentation.ipynb*

Linear Dimensionality Reduction

- https://colab.research.google.com/drive/1ELCa-dag1SJbpHTLW2zezmLdUvzHlxe-?usp=sharing or
- in the attached jupyter notebook *pca.ipynb*