RWTH Aachen University
Institute for Data Science in
Mechanical Engineering

Bonus Point Assignment I

This document provides all necessary information concerning the first bonus point assignment. As this is an assignment for bonus points, some questions may extend beyond the scope of the lecture. The first bonus point assignment consists of three tasks. You can find all the task descriptions in the according notebooks. Please follow the guidelines below while solving the tasks:

Formalia With this voluntary assignment, you can earn up to 5 bonus points for the final exam. The bonus points will only be applied when passing the exam. A failing grade cannot be improved with bonus points. This assignment starts on 10$^{\text{th}}$ of May 2024, and you can submit your solution until 7$^{\text{th}}$ of June 2024 at 11:59 pm. The assignment has to be handed in by groups of 3 to 4 students. All group members have to register until 5$^{\text{th}}$ of June 2024 at 11:59 pm in the same group via *Groups Assignment 1* on Moodle.

Installation Solving the tasks takes place in JupyterLab. We use the same Jupyter kernel as for the RLLBC Algorithm Library. We refer to our GitHub page for instructions on installing and launching JupyterLab on your computer. Once you downloaded and installed the library successfully, you can add the folder including the tasks and start working on them. The files will be made available to you on Moodle and must be uploaded after solving them. Please keep the directory tree of the assignment as it is and make sure that changes are saved regularly. Furthermore, make sure that group members always have the latest version available. Editing using collaboration tools such as "Google Colab" is possible in principle, but using them can lead to complications during grading. The same holds for using any IDE like Visual Studio Code. We therefore only offer support for the use of JupyterLab.

Handling the Notebooks Your solutions will be checked automatically via unit tests. To make sure that grading works correctly, here are some essential guidelines:

- Please hand in your solution as a single zip file and stick to the directory tree in which the files were provided.
- Do not rename any of the files for the submission.

- Do not delete or add any cells in the notebooks.
- Stick to the class and function definitions given in the task description.
- Only place your answer in the highlighted cells. Each task includes a task description as well as the blocks "student answer", and "checkpoints". "Student answer" is for placing your answer, "checkpoint" helps you to debug.
- A "checkpoint" only provides information on whether the code runs without errors. However, errors cannot be ruled out this way. We therefore recommend that students carefully debug their code before submitting their work. It often helps to output values via `print()`.

Tasks Each notebook represents a task. The tasks can be solved completely in the notebook. Below, we provide an overview of the tasks and the points that can be achieved.

Task	Title	Max points
01	Basketball Environment	10
02	Double-Q Learning	5
03	Off-Policy MC with Weighted Importance Sampling	5

The notebooks contain the entire task description and no additional software needs to be installed. All required libraries are imported at the beginning of the task. If the use of a specific library is required, this will be mentioned in the task description. The scripts also make use of helper functions that are provided with the task. If you have questions about the tasks, please ask them in the bonus point assignments forum.

Grading The table below shows how points are distributed.

Points (BPA)	Bonus points (exam)
2	0.5
4	1.0
6	1.5
8	2.0
10	2.5
12	3.0
14	3.5
16	4.0
18	4.5
20	5.0