

Robotics Practicals: Haptic Interfaces

Report Format – Spring 2024

A suggested structure for the report is provided below, it is strongly recommended to follow this structure. Otherwise, make sure to cover the required content according to this structure. The more important parts that would strongly determine the grade are marked in **bold**.

- 1) Introduction
 - a) Give some brief background information
 - b) State the purpose of the practical session and scope of the report (what the report will cover)
- 2) Method
 - a) Explain your approach for exercises 1 and 2 in detail**
 - b) Summarize what you did during the practical part of the lab
- 3) Results
 - a) Describe what you observed and discovered
 - b) **Answer the assignment questions in the lab worksheet** (written in **bold blue text**)
 - c) Answer the additional questions below**
- 4) Discussion
 - a) Discuss and summarize the most important points you learned**

Finally, note that all of the theoretical and discussion questions are from the material provided in the worksheet, so please read it carefully before answering the questions!

Please also include your group number in the cover page of the report.

Additional Questions

- 1) What are the unique properties of haptic interfaces that differ from conventional robotic devices?
- 2) What are the major constraints and requirements affecting the mechanical design of a haptic device?
- 3) What is impedance control? Why is it useful for haptic devices?
- 4) Why should the control loop frequency be high?
- 5) Why do we have to initialize the Pantograph device angles after each resetting?
- 6) Why didn't we need to use force/torque sensors to do closed-loop force control in this pantograph device?