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The four Ws'

Please make a new document for each topic, so it will be easy to edit if there is a mistake.

- Who are you addressing:

  scientists who are specialists in your field of research, a wider group of scientists, fellow students, or public audiences?
- Why is your message important?

  Why are your communicating it? Presumably you are not doing it just for credits, but to add to the pool of knowledge
- What are your main findings or "take-home" messages? '

  What are you going to present - new research results or a review of a topic? What prior knowledge, expectations and questions might your audience have? What technical language do they understand?
- How can you best deliver your message and satisfy the audience's need?

  How will the audience use its new knowledge?

Test template

Use this template when you need to make a test of somthing

Purpose:

Test equipment:

Procedure:

Measuring data:

Results:

Uncertainties of measurement:

Conclusion:

Contents

System overview 1

In this chapter an description of the system is made. This is made for the reader to get a better understanding of the setup which where available on Aalborg university. This description includes the following points and will be described in the same order

- The Gemagic touch
- The computer
- The test setup
- The Da vinci robot

1.1 Geomagic touch

The geomagic touch is a haptic feedback device, which has the ability to manipulates its joint in such a way that the user feels resistance when moving the pin in a certain direction or way. The geomagic touch described in this section is the model Phantom omni and can be seen on *Figure 1.1*.
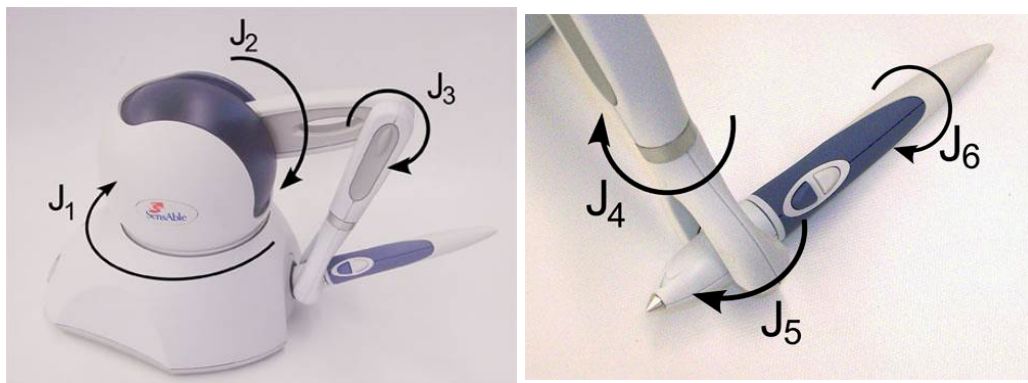
(a) Overview of the Phantom omni's first three joints.

(b) Overview of the Phantom omni's last three joint

Figure 1.1: Overview of all the Phantom omni's joints[1]

As mentioned the Phantom omni has the ability to generate resistance for the user. In other words, when moved in a specific direction it can create a counter force in respect to a certain position. On *Figure 1.1*, it can be seen that the omni has six degrees of freedom, where the first three has actuators. This means that the device only has the ability to generate force feedback with three degrees of freedom, in this case roll, pitch and yaw.

The connection to the omni can either be made directly through a ethernet cabel or through ethernet cabel to a usb converter into a computer. For programming the omni an API is included, which enables the connection to the omni. The programming of the omni happens through the languages C++ include other languages

1.2 Communication computer

1.3 Test setup

1.4 Da vinci robot

Kinematic for the Geomagic touch

bla bla bla

Table 2.1: Pleas give me some kind of information!

Bibliography

[1] Sigverse, "Using phantom omni haptik device," 2014. Downloadet: 21-10-2016.