**Report of Lab 1. Steering of Robot-Tachymeter**

Name: Nian LIU Matriculation Number: 3294622

1. **Main task**

Establish the communication between the worker’s PC and the tachymeter, in order to finish kinematic measurements by robot tachymeters.

1. **Description**

This part we describe the performed steps. In this lab we have three parts of task:

1. **Initializing**

To establish the connection between PC and the tachymeter, we need to initialize.

First, we need to build a new VI, and in the block diagram we create a Flat Sequence Structure and a VISA Configure Serial Port VI. Then for each part the leftside “VISA resource name”, “baud rate”, “data bits” and “parity” we create a response control.

1. **Steering of tachymeter**

In this part we need to finish these operation:

* Compensator on/off
* Change face
* New measurement
* Readout of Hz-, V-angle and slope distance

First, we open the file “write\_and\_wait\_for\_Ackvi.vi”, and connect it to a close control.

Then in the front Panel we create a string control and a string indicator, rename them into “request” and “answer”. Same in the block diagram we create a Concatenate Strings Function and connect it to the “request” string, also an “End of Line Constant”.

Afterwards we build a connection between the ACK and strings we just created. Now we need a control part l to control the delayed time.

Now we need to create a while loop in the block diagram, and shift the right block shift register into tunnels. At the same time, we need a second while loop to control the request part.

In the front panel we create an “OK” button and a “stop” button, put them into the smaller loop. The “stop” one we connect it to the outer loop’s loop condition.

In the inner loop we add a Boolean “or” and connect two buttons to it, then lead it to the inner loop’s condition. Here with one of the conditions can stop the final program.

The related command listed as the lab sheet’s attachment *Commands(GeoCom).*

Now we finish this part.

1. **Storage into file**

To storage the result, we need to create a “Write text to file” in the outer loop, and create a control of file (use dialog). Then drag the “Write text to file” outside but keep the connection between two parts.

Then, connect the “text input” of the control with ACK’s “answer output”, run the whole VI file, we finally finish the task.

In the task we will see Hz-, V-angle and slope distance, but in the same line and separate each other with a comma.

1. **Flow chart diagram**

