Task 1 *(10 Points)*

In this exercise you should make some practical experience in using an IMU. The sensor is the VN100, produced by Vectornav (`https://www.vectornav.com/products/vn-100`), which was also the one you already saw data in Assignment 05 Exercise 01 (sensor01).

Goal:

Acquisition and visualization of a MEMS IMU data set. Calculation of a navigation solution.

Course of action:

1. Form groups of two to three persons.
2. Choose a timeslot from the table next to my office (room 3/89) and write the names of all team members in your slot. Contact me if there are timing problems.
3. At the assigned date, come to my office. You will get the VN100 and a raspberry pi for data acquisition.
   Together we start the program to read out the sensor data and you make a short walk for gathering some data. The final point should coincidence with the start point (*Why?*).
4. We copy the data onto one of your USB-Sticks.
5. Calculate the navigation solution by two times integration of the sensor data from the accelerometer (data in NED-System; data rate is 100 Hz) relative to your start position. Plot the results, discuss them, summarize them in a short protocol.

   Possible points for discussion:

   - Is the sensor quality sufficient for navigation over a longer time span?
   - How does the sensor calculate the acceleration in NED-system? How trivial is this?
   - ...
6. Upload your group results on ILIAS until 09. February 2020.
7. We will communicate the acquired points and comments using ILIAS.

For interested students:

Try to calculate the navigation solution using the accelerometer and gyroscope raw data and formulas from the lecture.
Compare the solution to the one above. Are there differences? Where may they come from?