Development of python-based mapping software for real-time plotting of positioning and sensor data values from a UAV survey (DTU Space)

Type of project: B.Sc project, M.Sc project or Special Course project (Depends on qualifications of student – programming experience etc.).

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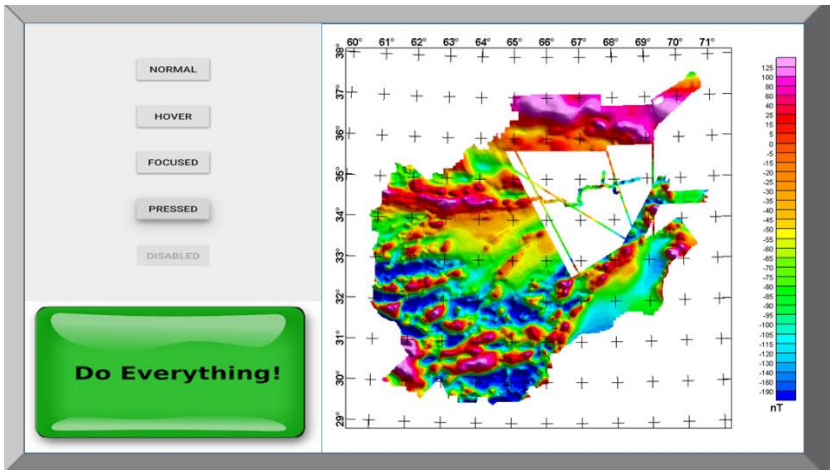
When performing drone-based aeromagnetic surveys, it is important to have real-time information about the condition of the sensors and the data being collected. Knowing that the sensors are performing correctly is of critical importance for efficient surveying and successful test campaigns. It is the scope of this project to develop a python based software that executes Real-time magnetic processing and plotting routines. The system will run on a tablet or laptop, and will receive position, current time, and magnetic field information via radio-link every 0.5s (approximately). The constructed routines should be able to process each new packet of data and update the simplified plot concurrently with the data reception.



Requirements:

- Undergraduate engineering mathematics (e.g. DTU Course 01005 - Advanced Engineering Mathematics 1)
- Undergraduate statistics (e.g. DTU Course 02402 - Introduction to Statistics)

- Classical Mechanics (e.g. DTU Course 10033 - Mechanics and Physical Modelling, or DTU Course 10018/10020/10022/10024 Physics 1)
- Undergraduate programming (e.g. DTU Course 02633 - Introduction to programming and data processing, with python)
- Basic understanding of computer systems (e.g. Checksum calculations, bit parity, serial communication) is also beneficial, but not a requirement to start the project (as it can be obtained quickly, during the project).
- Note that the use of python is a strict requirement for the project - students solely familiar with e.g. MATLAB can also attempt the project, but will most likely need to put in additional effort