Automatic pattern recognition and data integration model for UAV imagery
MSc Thesis
EURAC

Are you interested in the use and application of new technologies based on Unmanned Aerial Vehicles (UAV/drones)? Do you possess strong programming skills such as writing of algorithms? Do you want to develop feature recognition software finding out patterns in hundreds of images in order to create spatial maps in high-resolution? The Institute of Applied Remote Sensing at -EURAC research - is looking for a student who wants to write his/her master thesis in the field of software computer vision and pattern recognition.

The Master Thesis will be linked to a scientific research project concerning environmental monitoring which uses and explores UAV technologies in order to infer biophysical parameters based on optical instrumentation (such as standard consumer RGB, modified Infrared, hyperspectral and thermal cameras). One of the main challenges when applying photogrammetry techniques for mapping and location based issues, is the automation, identification and recognition of patterns in the obtained imagery. This is crucial for data management as some of these patterns are used as spatial reference coordinate point. Only with this spatial information, the photogrammetry-software is able to derive high-resolution models for digital elevation, geomapping and 3D cloud points.

We are looking for an enthusiastic student with background in computing sciences or software engineering, with experience in programming with R and/or Matlab, C/C++, or some other scripting scientific oriented language software. Your main task covers the development, testing, and implementation of the so called "pattern recognition tool". The development process may also include your participation in UAV field campaigns at a suitable test site in South Tyrol in order to refine the requirements for the development of the tool. Good knowledge of English language is an asset, as you will be based within an active group of international researchers. Basic knowledge in geo-sciences and photography is a plus.

EURAC can offer working in an international environment of young and engaged researches and developers. You will work with the group of Technologies for Environmental Monitoring, within the Institute of Applied Remote Sensing, whose main objective is to support researches with the necessary technological environment for data processing, management and visualization.

If you are interested and/or have further questions, please contact:

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