

Small UAV in training geospatial skills

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Newly established in 2016 WG V/7: Innovative Technologies in Training Civil Engineers and Architects is working on ISPRS funded project to design computer and UAV aided teaching and learning module exploring geospatial application scenarios of decision support in verification of the state and “health” of various civil infrastructure objects such as buildings, bridges, road/railroad pavements and others.

Specifically, our project comprises: a) practical experience in SUAS imagery acquisition at in-room and outside environments; b) review and comparative analysis of the classical photogrammetry and computer vision based methods of the UAS data processing; c) commercial and open-source software review. Educational outcomes of the proposed project encompass: 1) understanding of small UAV flight planning and limitations of the SUAS platforms and sensors; 2) knowledge of contemporary issues in sensor modeling and calibration deploying classical photogrammetric methods versus computer vision; 3) understanding of technological steps for 3D modeling and geospatial analytics of commercial-of-the-shelf and open-source software packages; 4) hands-on expertise of SUAS data acquisition and processing; 5) understanding of legal regulations of SUAS deployment in airspace of the different countries; 6) profound understanding of SUAS sensors platforms and methods matching to accuracy and procedural needs of the civil engineering application scenarios. SUAS-CAS can be accommodated by undergraduate, graduate and continuous education programs. SUAS-CAS implementation encompasses: 1) identification and acquisition of the in-room and outside SUAV platforms; 2) analytical review of the commercial-of-the-shelf and open-source software systems suitable for the SUAS data processing; 3) preparation of lectures and recording then in multimedia formats; 4) work on quizzes and SUAS-CAS final test. Concentration on low cost SUAS platforms and open-source software systems makes SUAS-CAS to be a viable candidate for the deployment by educators and engineers of developing countries at the different parts of the world. Initial development of SUAS-CAS elements and experimentation with SUAV was performed by Authors in Belorussian National Technical University.