**Automated Building Footprint and Vegetation Extraction**

**Using Lidar and Hyperspectral Imagery**

Dr. Enrico C. Paringit1, Engr. Ma. Rosario Concepcion O. Ang2, Engr. John Louie D. Fabila3,

Marie Joyce F. Ilagan4, Engr. Charmaine A. Cruz5

*1National Engineering Center, University of the Philippines,*

*Diliman, Quezon City, Philippines,* [*paringit@gmail.com*](mailto:paringit@gmail.com)

*2National Engineering Center, University of the Philippines,*

*Diliman, Quezon City, Philippines,* [*concon.ang@gmail.com*](mailto:concon.ang@gmail.com)

*3National Engineering Center, University of the Philippines,*

*Diliman, Quezon City, Philippines,* [*johnlouie.fabila@gmail.com*](mailto:johnlouie.fabila@gmail.com)

*4National Engineering Center, University of the Philippines,*

*Diliman, Quezon City, Philippines,* [*mj12ilagan@gmail.com*](mailto:mj12ilagan@gmail.com)

*5National Engineering Center, University of the Philippines,*

*Diliman, Quezon City, Philippines,* [*charmaineasiscruz@gmail.com*](mailto:charmaineasiscruz@gmail.com)

**Abstract:** Light Detection and Ranging (LiDAR) remote sensing technology has been extensively used in producing detailed topographic data, which was used to produce high resolution flood hazard maps for the critical river systems in the Philippines. The next crucial phase is to determine the impact of flooding to livelihood, properties and critical infrastructure, by producing an exposure dataset for the identified areas. Extracting building footprints and vegetation is a critical starting point for such a dataset. This dataset, coupled with the flood hazard map, will serve as baseline data for the risk assessment initiatives of concerned agencies. This paper will examine the potential for automated extraction and identification of these features using the combination of LiDAR-derived digital elevation models (DEM) and hyperspectral imagery. In addition, the height above ground will also be extracted and automatically put in as an attribute to the features. Several segmentation algorithms will be employed, and the resulting features will be geometrically evaluated against manually delineated features.

**Keywords:** Flood modelling, LiDAR, Hyperspectral imagery, Feature extraction

**Suggested Topic:** Automated Feature Extraction

**Proposed presenter(s):** Engr. John Louie Fabila

**Mailing Address:** [*johnlouie.fabila@gmail.com*](mailto:johnlouie.fabila@gmail.com)

**Preference between oral and poster presentation:** Oral