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Integrating UAV Flight outputs in Esri's CityEngine for semi-urban areas

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One of the most pervasive technologies of recent years, which has crossed over into consumer products due to its lowering prince, is the UAV, commonly known as drones. Besides its ever-more accessible prices and growing functionality, what is truly impressive is the drastic reduction in processing time, from days to ours: from the initial flight preparation to the final output.
This paper presents such a workflow and goes further by integrating the outputs into another growing technology: 3D. The software used for this purpose is Esri's CityEngine, which was developed for modeling 3D urban environments using existing 2D GIS data and computer generated architecture (CGA) rules, instead of modeling each feature individually.
A semi-urban areas was selected for this study and captured using the E-Bee from Parrot. The output point cloud elevation from the E-Bee flight was transformed into a raster in order to be used as an elevation surface in CityEngine, and the mosaic raster dataset was draped over this surface. In order to model the buildings in this area CGA rules were written using the building footprints, as inputs, in the form of Feature Classes. The extrusion heights for the buildings were also extracted from the point cloud, and realistic textures were draped over the 3D building models. Finally the scene was shared as a 3D web-scene which can be accessed by anyone through a link, without any software besides an internet browser. This can serve as input for Smart City development through further analysis for urban ecology
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