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sDNA: 3D pedestrian network mapping & accessibility and flow analyses

Relevance & Novelty

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ABSTRACT

sDNA (Spatial Design Network Analysis) is world leading 3D spatial network analysis software (Cooper & Chiaradia, 2020; Zhang & Chiaradia, 2021), compatible with both GIS (ArcGIS/QGIS) and CAD (Autocad & Rhino) and using industry standard network representation. sDNA can be used to analyze complex 3D built environment morphology (volumetric urban design) encoded through linear spatial generalization of road/path center line in order to compute metrics for each link in 2D and/or 3D. sDNA 3D can deploy different metrics such as topological, angular, Euclidean and custom metrics to compute centrality measures such as 'closeness' and 'betweenness', with user defined radius. sDNA is innovative in not only working in full 3D, but also in its capacity to deploy a hybrid 'Angular-Euclidean' metric which discriminate better change in 3D configuration and give stable results.

This workshop is for researchers, students, practitioner who are investigating complex built environment using 3D pedestrian networks. The workshop will provide a quick introduction of spatial representation approaches: Axial, segment, and road/path center line maps, as well as from 2D/2.5D reduced spatial model to full 3D spatial model to reflect what happens in design process. In addition to learning about how to analyze accessibility and flow potential in 3D environments, the course also highlights the use of configurational indicators. The case Study is Hong Kong, a complex integrated volumetric multilevel TOD environment.

KEYWORDS

Spatial Design Network Analysis, 3D built environments, pedestrian networks