

## Vertical Urban Design Guideline and Its Application to Measure Human Cognition and Emotions

**Authors :** Hee Sun (Sunny) Choi, Gerhard Bruyns, Wang Zhang, Sky Cheng, Saijal Sharma

**Abstract :** This research addresses the need for a comprehensive framework that can guide the design and assessment of multi-level public spaces and public realms and their impact on the built environment. The study aims to understand and measure the neural mechanisms involved in this process. By doing so, it can lay the foundation for vertical and volumetric urbanism and ensure consistency and excellence in the field while also supporting scientific research methods for urban design with cognitive neuroscientists. To investigate these aspects, the paper focuses on the neighborhood scale in Hong Kong, specifically examining multi-level public spaces and quasi-public spaces within both commercial and residential complexes. The researchers use predictive Artificial Intelligence (AI) as a methodology to assess and comprehend the applicability of the urban design framework for vertical and volumetric urbanism. The findings aim to identify the factors that contribute to successful public spaces within a vertical living environment, thus introducing a new typology of public spaces.

**Keywords :** vertical urbanism, scientific research methods, spatial cognition, urban design guideline

**Conference Title :** ICVUIL 2024 : International Conference on Vertical Urbanism and Innovative Landscape Designing

**Conference Location :** New York, United States

**Conference Dates :** December 09-10, 2024