



Modeling the Appearance and Behavior of Urban Spaces

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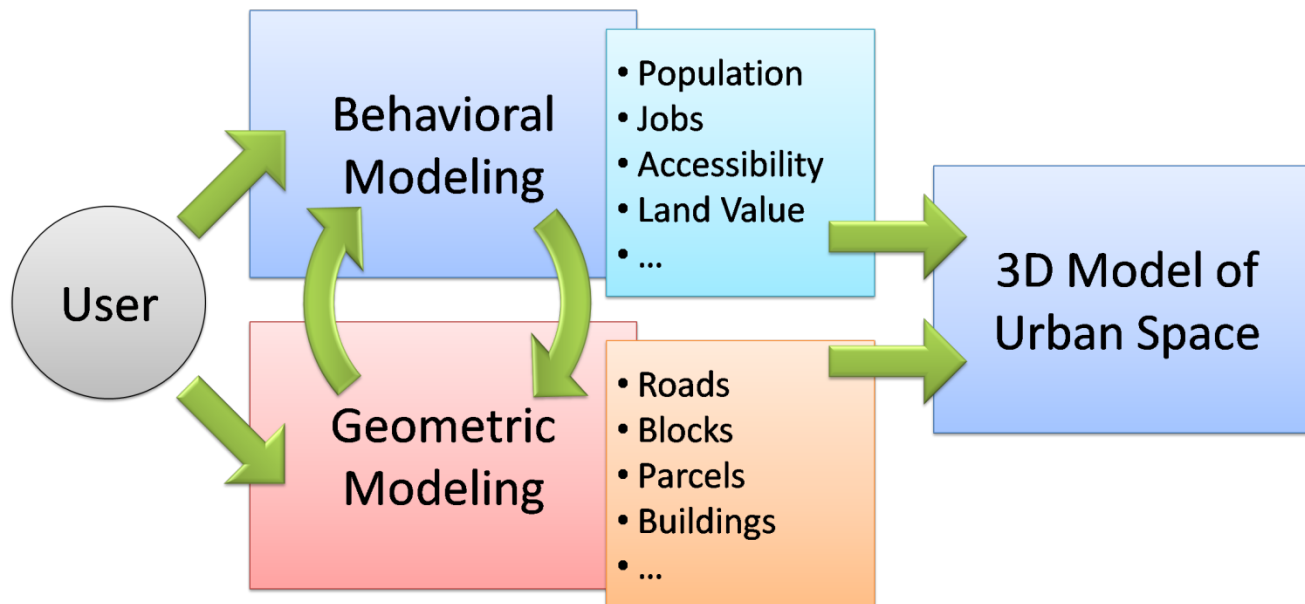
<http://www.cs.purdue.edu/cgvlab>

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New Urban Modeling Pipeline



- Synthesis using geometrical & behavioral modeling
 - [Vanegas et al. 2009, IEEE TVCG; work-in-submission]



Visualization of Simulated Urban Spaces



- Infer an urban layout
 - Images (aerial view) + Structure (streets, parcels)
- from the values of a set of simulation variables at any given time step (from UrbanSim)



Designing Urban Spaces

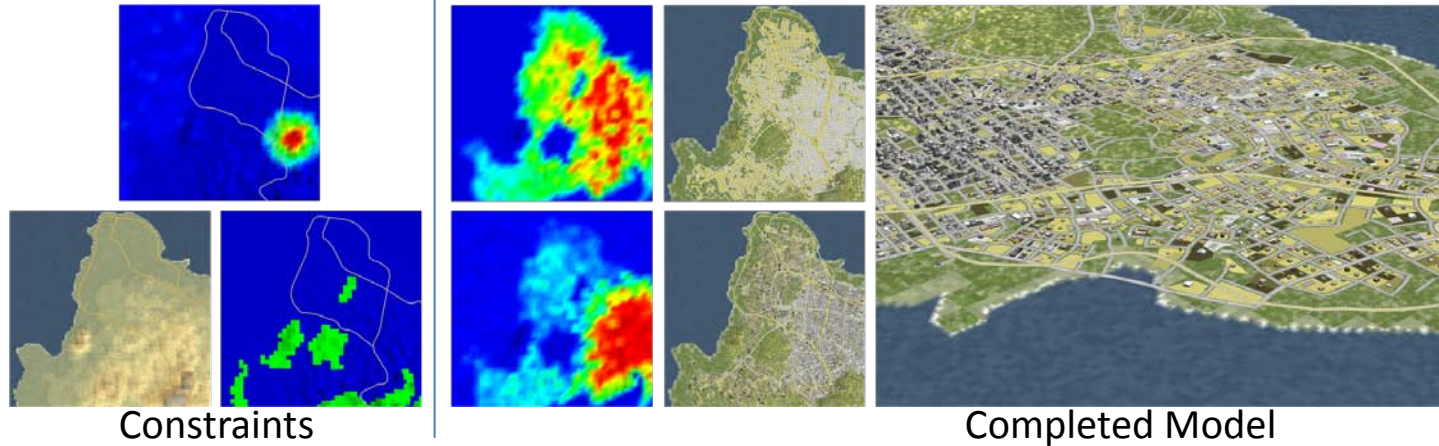


- Motivation:
 - Geometrical modeling deals with creating 3D models but not modeling behavior
 - Behavioral modeling deals with creating simulations but not modeling geometry
 - So we “**close the loop**” (1) to reduce modeling time and (2) to create plausible urban models

Designing Urban Spaces: Example Results



- Auto completion



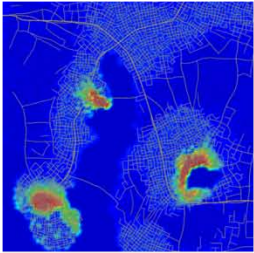
- Validation



Designing Urban Spaces: Example Results



- Large multi-city model
 - 200 km²; 50000 buildings; 3000 km of roads



Current and Future Work



- Incorporate additional non-geometric data
 - How does drought/water affect urban growth?
 - Can cities/states be designed to be more tolerant to drought?
 - How do we incorporate other climate-related factors?