

AI Configurators

3D Layout via Reinforcement Learning

Background and aim:

Spatial qualities heavily depend on the configuration of spaces. In this research project, we develop computational agents that configure the space within a voxelated envelope while ensuring spatial qualities such as daylight, accessibility to other spaces, etc., via Multi-Criteria Decision Analysis. Each computational agent utilizes Reinforcement Learning to understand the inter-relation of global spatial quality criteria with local spatial decisions.

Research question:

How to train an ensemble of artificial agents to make local spatial decisions to attain high global spatial qualities?

Design objective:

To design and implement a computational 3D layout methodology using DRL.

Methods:

- Deep Reinforcement Learning (DRL, Artificial Intelligence)
- Multi-Criteria Decision Analysis (MCDA)
- Topology Optimization
- Computer Programming (Python/C#)

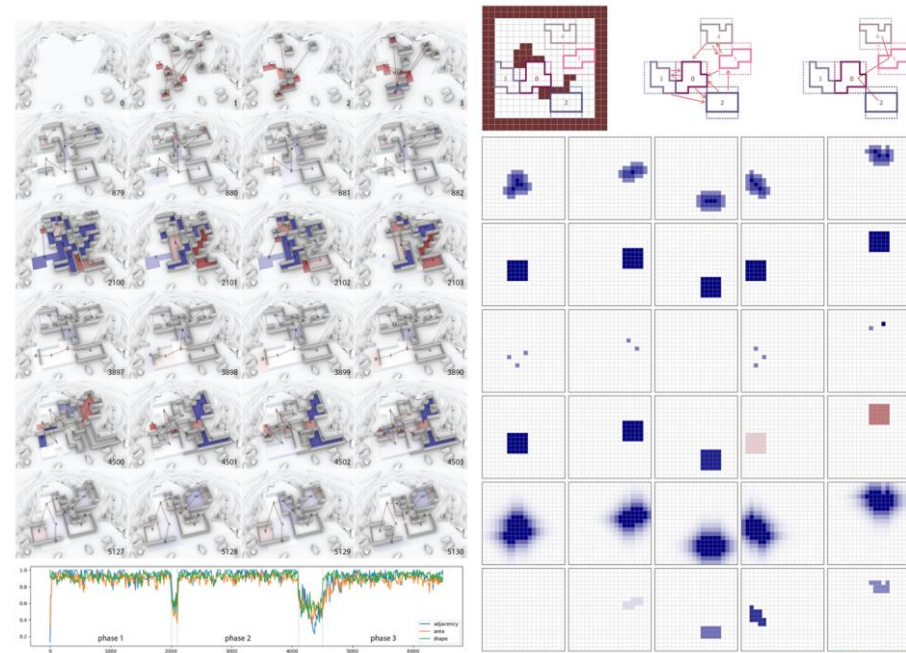


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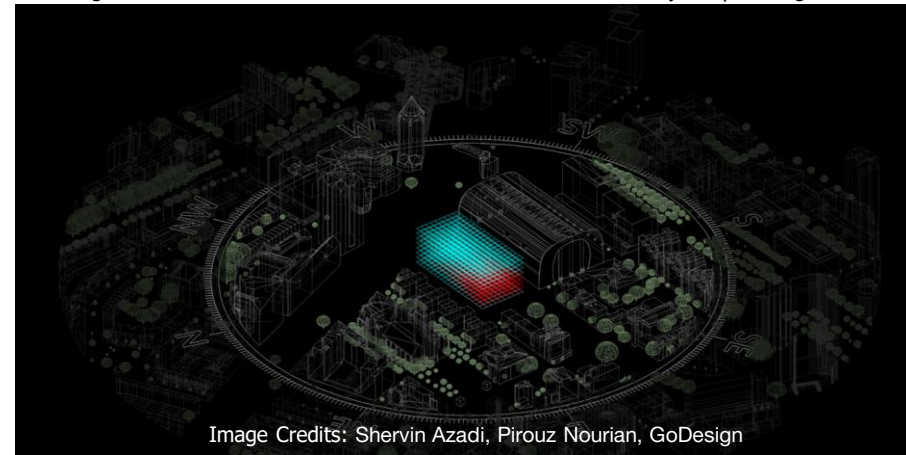


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Building Technology Graduation

Theme: Computational Design/Generative Design

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