Urban Lenses: Unveiling the Unseen through Data-Driven Urban Exploration

Abstract

This introductory-level class navigates through the intricate fabric of urban environments with a data-driven design approach. With an emphasis on both conspicuous and subtle facets of city systems, a host of urban analysis tools are deployed to ensure a comprehensive understanding, catering to those at the start of their urban design exploration.

The class delves into the distinct urban landscape of Seattle, utilizing a variety of tools like Google Maps API, QGIS, Rhino, and Grasshopper to uncover and examine city dynamics. The insights obtained serve to inform future design decisions, aiding in achieving a seamless integration with the existing urban environment.

Central to this class is our unique approach to urban design. We demonstrate how data visualization and the translation of urban data into design can reveal the dynamic narratives embedded in a city. This immersive, hands-on exploration of urban systems aims to inspire thoughtful, data-informed contributions to the urban landscape.

Objectives

1. **Integrating Approach and Practice**: This class aims to communicate our unique approach to urban design practice. By integrating the process and tools within the design context, we aspire to evolve these tools in response to the specific questions and problems that emerge in our design work. This reflects our belief that our tools and methods should be adaptable, growing and evolving along with our understanding of urban systems.
2. **Technical Skill Development**: Participants will gain hands-on experience with key tools used in urban analysis, including Python scripting, QGIS, and Rhino/Grasshopper. We also introduce the fundamentals of using APIs to collect data for urban analysis, laying a strong foundation for participants to continue learning and experimenting after the class.
3. **Promoting Knowledge Sharing**: We strongly believe in the power of community and open-source learning. By openly sharing our experimental tools and techniques, we aim to foster an environment of active discussion around technical topics. This stimulates critical questioning of current practice, encouraging innovative thought and potential improvements to the way we approach urban design.

Workshop Structure

Part Zero. Introduction (5-10 min)

Part One: "Understanding Urban Complexity" (1h30min)

- *1.a Context: "Decoding Urban Systems" (45min)*
    - A presentation exploring our philosophy and approach towards understanding urban systems and data.
- *1.b Showcase: "Uncovering the City" (45min)*
    - *1.b.1 Workflow and Tools*: Introduction to the workflow, tools and libraries used in our urban analysis.
    - *1.b.2 Leveraging APIs*: A showcase on using Google Maps API to extract information about urban settings.

Part Two: "Visualizing Urban Narratives" (1h)

- *2.a Context: "Data Visualization and Urban Intervention" (30min)*
    - A discussion on the role of data visualization as a form of urban intervention.

(Break 10-15min)

- *2.b Showcase: Visualizing Data with QGIS (30 min)*
    - *2.b.1 Activity Point Analysis*: Learning to analyze points of activity throughout the city.
    - *2.b.2 Route Analysis*: Hands-on exercise on route analysis using QGIS.

Part Three: "Translating Urban Data into Design" (45min)

- *3.b Showcase: Visualization and Interaction with Rhino and Grasshopper*
    - *3.b.1 Activity Evolution*: Demonstrating how to visualize urban activity evolution over time.
    - *3.b.2 Custom Shortest Path Analysis*: Teaching the application of Dijkstra's algorithm for identifying ADA-friendly routes.

Part Four: Future Directions and Open Discussion (30min)

- *4.a Next Steps*
    - A conversation about potential technical improvements, creating more interactive tools, and undertaking complex analyses.
- *4.b Open Discussion*
    - An open forum to discuss the influence of this type of work on design and the technical deployment of these tools.

Details & Resources

- All files and resources will be shared via the LMNts Github dedicated repository: https://github.com/lmnts/urbanlenses
- The workshop duration time is expected to be between 3h30m and 4h.
- An email with links and resources related to the python libraries and grasshopper components will be shared prior the workshop.