EPFL

AR-302(k)

Studio BA6 (Huang)

Huang Jeffrey

Cursus	Sem.	Type
Architecture	BA6	Obl.
HES - AR	E	Obl.
Mob. AR	E	Opt.

Language of teaching	English
Credits	12
Withdrawal	Unauthorized
Session	Summer
Semester	Spring
Exam	During the semester
Workload	360h
Weeks	14
Hours	**6 weekly**
Lecture	2 weekly
Project	4 weekly
Number of positions	

Remark

Inscription faite par la section

Summary

The studio examines the effects of artificial intelligence on architecture and cities. We explore data-driven design processes by the use of algorithmic and parametric tools that take into consideration geographical, economical, personal, image, political, ecological parameters.

Content

The advent of new digital technologies has had a twofold impact on architectural thinking and urban design, transforming, on one hand, the processes for form generation and design production through algorithmic and parametric technologies, and, on the other hand, enabling an escape from the static fate of the built environment by facilitating dynamic interaction between inhabitants and their surrounding. Our interest in the orientation "Form + Data" is to explore meaningful form generating processes by the use of data-driven design, algorithmic and parametric tools. While developing a base of digital evidence specific to each site, each studio will explore novel means of deploying this data to support design and generate form.
The intellectual aim of the studio is to question the extent by which the data-scape can support architects to generate urban and architectural form. Our interest is directed at the decoding and recoding of two distinct domains of knowledge: exteriority which represents a many-layered geographic condition and anteriority which represents the embedded knowledge of local architectural typologies and systems. While the exteriority of geographic data is crucial to our research, we place a primary emphasis on the generative potential of typology- what we have called "growth typologies". Decoding anterior form and then recoding and deploying it across new territories allows us to challenge the role of architecture in urban developments of increased scale and complexity.

Keywords

- Architectural form
- Data-driven design
- Artificial intelligence
- Urban design

Learning Outcomes

By the end of the course, the student must be able to:

- Critique a specific project brief and a specific context and respond with a meaningful data-driven design concept.
- Translate a data-driven design concept into meaningful architectural and/or urban propositions at appropriate scales and levels of granularity.
- Produce coherent architectural representations and models at sufficient levels of detail.
- Formulate Formulate the morphogenetic narrative and create convincing arguments for the design propositions.
- Develop convincing final diagrams, drawings, renderings, simulations, physical and digital models.

Transversal skills

- Collect data.
- Design and present a poster.
- Make an oral presentation.
- Demonstrate the capacity for critical thinking
- Demonstrate a capacity for creativity.

Teaching methods

- Presentations
- Mapping exercises
- Hands-on design activities
- Design reviews
- Group projects.

Expected student activities

- Architectural projects will be developed individually (or exceptionally in groups of 2).
- Some group work may occur in the analysis stages.

Assessment methods

Grading will be based upon the quality of the projects in the preliminary stages, intermediary reviews, and in the final review. Projects will be assessed based on:
(1) their conceptual strength and innovation,
(2) the coherence and resolution of their architectural translation,
(3) their representative clarity and expressive power, and
(4) the persuasiveness of their communication, both orally, and through the physical and digital artifacts.

Supervision

Office hours	Yes
Assistants	Yes

Resources

Bibliography

On GANs, NLP and Architecture: Combining Human and Machine Intelligences for the Generation and Evaluation of Meaningful Designs, J Huang, M Johanes, F Kim, C Doumpioti, and C Holz. In Technology, Architecture + Design 5 (2): 207-24, 2021

Growth Typologies, Localities and Defamiliarisation: Experiments with Artificial Urbanism in Sichuan, Guangzhou and Beijing, J Huang. In: Archit. Design, 85: 70-75, 2015

Ressources en bibliothèque

- On GANs, NLP and Architecture
- Growth Typologies, Localities and Defamiliarisation

Websites

- http://ldm.epfl.ch