

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
Courses	2 weekly
Project	4 weekly

Number of positions

Il n'est pas autorisé de se retirer de cette matière après le délai d'inscription.

Remark

Inscription faite par la section

Summary

The studio examines the effects of artificial intelligence on architecture and cities. Generative tools are approached as cultural and political instruments, shaping design through data grounded in territory, economy, identity, imagery, and ecology.

Content

The studio investigates how architecture can become a key element in the evolution of the sentient city: an urban environment where computational systems and generative AI are no longer accessed through discrete devices, but diffused across the urban fabric, embedded in intersections, facades, transit networks, and domestic spaces. Building on the Fall semester's investigations into generative design workflows, vibecoding, and LLM-assisted spatial modeling and conceptualization, students will explore how cities think and feel, and use this as a basis for developing context-specific, responsive spatial forms.

The cities studied in the first semester will serve as living laboratories, offering both real and speculative contexts in which to imagine new **Peripheral Typologies**. These will operate as nodes in a broader cognitive urban system. If the first studio focused on designing the "urban brain," this studio will address the organs, nervous systems, and distributed sensors that contribute to the city's underlying pulse, its patterns, rhythms, and emergent behaviors.

At the core of the studio lies a question: how can future architectures begin to sense and respond not only for human users, but with and through machines? Beginning with architectural elements, traditional components such as balconies, corridors, doors, pathways, ceilings, and patios, students will develop grounded, contextual interventions that allow intelligence to act publicly and legibly. They will consider questions such as: What are the aesthetics of data? How can cognition be spatialized? How might flows of sensing, computation, and action take on physical and cultural meaning in the city? What if a city begins to dream? What would those dreams be, and what roles would citizens play in them?

The goals of the studio are threefold: (1) to critically deploy LLMs and computational tools to design architectural elements and interventions that participate in emergent urban intelligence systems; (2) to develop new types of distributed civic, peripheral typologies that can react and respond within a sentient urban fabric; and (3) to articulate an architectural language for urban sentience, forms that embody the city's perceptual and cognitive capacities.

This intensive studio will make use of advanced digital tools. Experimental and remote LLMs and MCP agents for spatial modeling will be used in exploratory ways. A range of software, scripts, and plugins for mapping and open geodata analysis (including Rhino & Grasshopper, QGIS) will support successive phases of the design process.

No prior programming or software knowledge is required, but curiosity and strong motivation to learn are essential.

Keywords

- Architectural elements
- New Typologies
- Data-driven design
- Artificial intelligence
- Vibecoding
- Urban Design

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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 an AI-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 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 in groups.
- Some collective 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
Assistant.e.s	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 Doumptioti, 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

- https://www.instagram.com/mxd_epfl/
- <https://epfl-pavilions.ch/en/exhibitions/artificial-architecture>
- <https://www.epfl.ch/labs/lam/>
- <https://livingarchives.epfl.ch/projects/?type=Project&year=2021&year=2020&unit=LDM&sort=date>