

AR-402(k)

**Théorie et critique du projet MA2 (Huang)**

Huang Jeffrey

Cursus	Sem.	Type
Architecture	MA2, MA4	Obl.
Mob. AR	E	Opt.

Langue d'enseignement	français / anglais
Crédits	12
Retrait	Non autorisé
Session	Eté
Semestre	Printemps
Examen	Pendant le semestre
Charge	360h
Semaines	14
<b>Heures</b>	<b>6 hebdo</b>
Cours	2 hebdo
Projet	4 hebdo

**Nombre de places**

**It is not allowed to withdraw from this subject after the registration deadline.**

**Remarque**

Inscription faite par la section

**Résumé**

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.

**Contenu**

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.

**Mots-clés**

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

### Acquis de formation

A la fin de ce cours l'étudiant.e doit être capable de:

### Compétences transversales

- Réaliser et présenter un poster.
- Recueillir des données.
- Faire une présentation orale.
- Faire preuve d'esprit critique
- Faire preuve d'inventivité

### Méthode d'évaluation

Projects will be reviewed and 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.

### Encadrement

Office hours	Oui
Assistant.e.s	Oui
Forum électronique	Non

### Ressources

#### Bibliographie

1. Huang, Jeffrey, Mikhael Johanes, Frederick Chando Kim, Christina Doumpiotti, and Georg-Christoph Holz. On GANs, NLP and Architecture: Combining Human and Machine Intelligences for the Generation and Evaluation of Meaningful Designs. *Technology | Architecture + Design* 5, no. 2 (2021): 207-224. <https://doi.org/10.1080/24751448.2021.1967060>.
2. Huang, Jeffrey, Dieter Dietz, Laura Trazic, and Korinna Zinovia Weber, eds. *Transcalar Prospects in Climate Crisis: Architectural Research in re/Action*. Zurich: Lars Müller Publishers, 2024.
3. Bender, Emily M., Timnit Gebru, Angelina McMillan-Major, and Margaret Mitchell. On the Dangers of Stochastic Parrots: Can Language Models Be Too Big? In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency (FAccT '21)*, 610-623. New York: ACM, 2021. <https://doi.org/10.1145/3442188.3445922>.
4. Carpo, Mario. *Beyond Digital: Design and Automation at the End of Modernity*. Cambridge, MA: MIT Press, 2023.
5. Crawford, Kate. *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. New Haven: Yale University Press, 2021.
6. Del Campo, Matias, Stefan Manninger, and Andre Carlson. Architectural Hallucinations: Diffusion Models and New Aesthetics. *International Journal of Architectural Computing* 20, no. 4 (2022): 493-509. <https://doi.org/10.1177/14780771221135036>.
7. Goodfellow, Ian, Jean Pouget-Abadie, Mehdi Mirza, et al. Generative Adversarial Nets. In *Advances in*

*Neural Information Processing Systems 27* (NeurIPS 2014).

<https://papers.nips.cc/paper/2014/hash/5ca3e9b122f61f8f06494c97b1afccf3-Abstract.html>.

8. Mattern, Shannon. *A City Is Not a Computer: Other Urban Intelligences*. Princeton, NJ: Princeton University Press, 2021.

9. Zuboff, Shoshana. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. New York: PublicAffairs, 2019.

### Ressources en bibliothèque

- [Find recommended book at the Library](#)
- [On GANs, NLP and Architecture](#)
- [Growth typologies, localities and defamiliarisation / Huang](#)

### Sites web

- [https://www.instagram.com/mxd\\_epfl/](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>