

4.550/4.570, MIT Architecture Spring 2025

Learning from Design Heritage: Research Incubation Workshop of Data-driven Methods

Instructors: Takehiko Nagakura, Daniel Tsai and Guests

TA: Xiaoyun Zhang

Last update: 2025.03.30 (Subject to changes)

Weekly Schedule

Week 01	Mon, Feb. 03 + Tue, Feb. 04	Introduction Using image data: Scraping SNS, online crowd-sourcing Mechanical Turk, LAMP pipeline Ex0 out: Q/A (Student selection) Guest Instructor: Rohit Sanatani Ex1 out: Learning through image data – image segmentation
Week 02	Mon, Feb. 10 + Tue, Feb. 11	Measuring human response to spatial designs Physiological sensor (EEG/SGR), eye-tracking Ex1 in: Review and discussion Tutorial: TN and XZ Ex2 out: VR and physiological measurement – Affective Computing
Week 03	Mon, Feb. 17 + Tue, Feb. 18	Presidents Day Holiday (All Monday classes shift to Tuesday) Representations and UI, data collection from visualization device Tutorial: TN and XZ Ex3 (part of Ex2): [in-class exercise] Photogrammetric modeling and AR
Week 04	Mon, Feb. 24 + Tue, Feb. 25	Using videos: motion tracking/segmentation, panoramic projection Ethnography of heritage places, pedestrian simulation Ex2 in: Review and discussion Tutorial: XZ Ex4 out: Analysis from video recordings – gesture recognition
Week 05	Mon, Mar. 03 + Tue, Mar. 04	Finding patterns through Machine Learning Spatial layout, sketches, photos Ex4 in: Review and discussion Guest Instructor: XZ + Woongki Sung Ex5 out: Finding and generating patterns by machine learning
Week 06	Mon, Mar. 10 + Tue, Mar. 11	Examining literature on spatial designs Natural language processing, sentiment study of heritage places Ex5 in: Review and discussion Instructor: DT Ex6 out: Design Analysis through text
Week 07	Mon, Mar. 17 + Tue, Mar. 18	Ex6 in: Review and discussion Final project guideline (Title, idea, method, deliverable, resource) [in-class session] Brainstorming: Final project topic and method Workshop/ desk critique by sign-up

Week 08	Mar. 24 – Mar. 28	MIT Spring Break
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Week 09	Mon, Mar. 31 + Tue, Apr. 01	Presentation: Final project proposal + initial progress Tutorial: Training Image Segmentation (Yolo 11)
Week 10	Mon, Apr. 07 + Tue, Apr. 08	Human-subject study in cognitive psychology, COUHES, gamification Guest talks: Daniel Tsai + Xiaoyun Zhang on Analysis of Palladio's Four Books using NLP Tutorial: Customizing Multi-modal network (Yolo-world)
Week 11	Mon, Apr. 14 + Tue, Apr. 15	Interim review: Final project Workshop/ desk critique by sign-up
Week 11	Mon, Apr. 21 + Tue, Apr. 22	<i>Patriots Day Holiday</i> No class
Week 13	Mon, Apr. 28 + Tue, Apr. 29	(Data-driven) AI tools for design generation Guest talks: Rohit Sanatani + TBA (Taro/Nik/Tracy) on Analysis of Urban Data Matrix by Deploying Analogy Workshop/ desk critique by sign-up
Week 14	Mon, May 05 + Tue, May 06	Cultural heritage practice for preservation and online/museum exhibition Guest talks: TN + Woongki Sung on Generation of Architectural Site Plan through Bayesian Network Workshop/ desk critique by sign-up
Week 15	Mon, May 12 Tue, May 13	Final presentation Reserved for backup (<i>MIT Last day of class</i>)
	<i>May 16-21</i> <i>May 28-30</i>	<i>MIT Final Exam period</i> <i>MIT Commencement</i>