

4.550/4.570, MIT Architecture Spring 2024

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

Instructors: Takehiko Nagakura, Daniel Tsai and Guests

TA: Chili Cheng

Last update: 2024.04.20 (Subject to changes)

Weekly Schedule

Week 01	Mon, Feb. 05 + Tue, Feb. 06	Introduction Using image data: Scraping SNS, online crowd-sourcing Mechanical Turk, LAMP pipeline Ex0 out: Q/A (Student selection) Guest: Rohit Sanatani Ex1 out: Learning through image data – image segmentation
Week 02	Mon, Feb. 12 + Tue, Feb. 13	Measuring human response to spatial designs Physiological sensor (EEG/SGR), eye-tracking Ex1 in: Review and discussion Instructor: Han Tu Ex2 out: VR and physiological measurement – Affective Computing
Week 03	Mon, Feb. 19 + Tue, Feb. 20	Presidents Day Holiday (All Monday classes shift to Tuesday) Representations and UI, data collection from visualization device Instructor: TN and Han Tu Ex3 (part of Ex2): [in-class exercise] Photogrammetric modeling and AR
Week 04	Mon, Feb. 26 + Tue, Feb. 27	Using videos: motion tracking/segmentation, panoramic projection Ethnography of heritage places, pedestrian simulation Ex2 in: Review and discussion Guest: Chili Cheng Ex4 out: Analysis from video recordings – gesture recognition
Week 05	Mon, Mar. 04 + Tue, Mar. 05	Finding patterns through Machine Learning Spatial layout, sketches, photos Ex4 in: Review and discussion Guest: Xiaoyun Zhang Ex5 out: Finding and generating patterns by machine learning
Week 06	Mon, Mar. 11 + Tue, Mar. 12	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. 18 + Tue, Mar. 19	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

Week 08 Mar. 25 – Mar. 29 MIT Spring Break

Week 09	Mon, Apr. 01 + Tue, Apr. 02	Presentation: Final project proposal + initial progress Workshop/desk critique
Week 10	Mon, Apr. 08 + Tue, Apr. 09	Human-subject study in cognitive psychology, COUHES, gamification Guest talk: Daniel Tsai on Analysis of Palladio's Four Books using NLP Workshop/desk critique
Week 11	Mon, Apr. 15 + Tue, Apr. 16	<i>Patriots Day Holiday</i> No class
Week 12	Mon, Apr. 22 + Tue, Apr. 23	Interim review: Final project Guest talk: Nikolaus Vlavianos on Analysis of Spiritual Space (HMD and GSR) Workshop/desk critique
Week 13	Mon, Apr. 29 + Tue, Apr. 30	(Data-driven) AI tools for design generation Guest talk: Rohit Sanatani on Analysis of Urban Data Matrix by Deploying Analogy Workshop/desk critique
Week 14	Mon, May 06 + Tue, May 07	Cultural heritage practice for preservation and online/museum exhibition Guest talk: Woongki Sung on Generation of Architectural Site Plan through Bayesian Network Workshop/desk critique
Week 15	Mon, May 13 Tue, May 14	Final presentation Reserved for backup (<i>MIT Last day of class</i>)
	<i>May 17-22</i>	<i>MIT Final Exam period</i>
	<i>May 30-31</i>	<i>MIT Commencement</i>