



MIT 4.562/4.502 Architecture in Motion Graphics Fall 2024

Instructor: Takehiko Nagakura (takehiko@mit.edu)

TA: Xiaoyun Zhang (xiaoyunz@mit.edu)

All information available at: <http://cat2.mit.edu/4.562/>

First Class meeting: Monday, September 09, 12:30, Room 1-150

The main idea behind this course is to exploit the sense of phenomena and movement in architectural space by means of computer graphics animation, interactive contents, and video production media. The class suggests use of film theories as referential background and create a narrative through architectural motion graphics.

We will take an experimental approach, in which both students and instructors attempt to understand how to visually synthesize different architectural ideas in photo-realistic motion graphics format. With the help of cinematographic film-making methods as well as cutting-edge digital imaging technology, student projects aim to construct a sense of place and represents its spatial ideas in motion. The advanced but relatively inexpensive hardware/software configuration available today provides architects with timely opportunity for new explorations and expressions.

The class addresses the issues of film/interactive form as well as architectural event, materiality and light. It is not only about what you place in the viewing frame, but also how it is represented to the audience as a controlled experience in time. Students become

at the same time stage designers (who design spatial forms as the main star in their films) and film/game directors (who design and choreograph the movie/experience sequence). Selected classic films and literatures are reviewed to study and analyze professional film language such as editing styles, camera movement, lighting and mise en scene.

Technical topics include radiosity rendering (3DS Max Advanced Lighting), global illumination (V-Ray), texture mapping, texture baking (Substance 3D Painter), montage (Premiere), sound effect, key framing, photogrammetric modeling (Remake/Metashape), and interactive game engine (Unity3D). Additional exploration includes panoramic video, chroma keying and virtual set, motion tracking, motion dynamics, inverse kinematics, crowd simulation/character animation (Character Studio/Populate), stereo graphics, network model visualization (NeRF and Gaussian Splatting), and Virtual/Augmented Reality (VR/AR) application to limited scopes.

Course Work: Students may work in teams and each achieves a project to design a short digital content (film or interactive) about architectural space and events in it.

Image sequence #1 by Henry Chang and Zach Kramer (MArch): The imaginary space is their vision of the Library of Babel, an infinite library which Jorge Luis Borges described in his book.

Sequence #2 from "Space by motion" by Connie Osborne (MArch): She uses the moving camera to explain architectural concepts in plans of MINKA, a traditional village house in Japan.

Sequence #3 from "Nightmare" by Paul Schlapobersky (SMArchS): He depicts an indiscernible space, full of dark allegories, where the sense of orientation is permanently questioned.

