CURRICULUM: Creative Coding & Live Coding

Workshop Format: 7 days, 3 hours daily (9:00 AM – 12:00 PM Beijing time)
Level: Beginner to Intermediate
Target Audience: Students interested in generative art, audio/visual performance, and creative programming

Taught by: Char Stiles @charstiles ch4@mit.edu

Day 1: Foundations of Creative Coding

- Introduction to creative coding concepts and applications
- Overview of creative coding environments (Processing, p5.js, WebGL)
- Basic programming concepts: variables, loops, and functions
- First sketches: drawing shapes, colors, and basic animation
- *Hands—on*: Set up our GitHub repo and go over how to submit assignments!
- Assignment: take an existing sketch from p5.js resources and modify it somehow

Day 2: Sketching with Code

- Working with randomness and noise
- Creating patterns and textures algorithmically
- Introduction to coordinate systems and transformations
- Color theory in code
- *Assignment*: Build a generative art piece using what we learned in class

Day 3: Animation & Interactivity

- Time—based animation techniques
- User interaction (mouse, keyboard input)
- Easing functions and smooth motion
- Creating responsive visual systems
- *Assignment*: Build a real—time clock with code

Day 4: Introduction to Shaders

- Basics of setting up shader environment
- Introduction to shader workflow
- Basic syntax and real—time modification
- Building a performance
- *Assignment*: live coding performance sketches

Day 5: Audio—Visual Synthesis

- Connecting sound and visuals
- Basic audio synthesis concepts
- Audio—reactive visuals
- Synchronization techniques
- *Assignment*: Create original music with strudel

Day 6: Final Project Prep

- Workshop our final project, which is integrating some technique we learned today into a past project or to extend a homework into a larger project.
- Assignment: Final Project!

Day 7: Final Projects & Showcase

- Student presentations
- Feedback and discussion
- Next steps: resources, communities, and practice strategies
- Q&A and wrap—up

Required Materials:

- Computer with internet connection
- Web browser (Chrome/Firefox recommended)
- Headphones

Software (all free/open—source):

- p5.js (web—based, no installation)
- WebGL
- Strudel

Learning Outcomes:

- Understand fundamental creative coding concepts
- Create generative visual artworks
- Perform basic live coding sets
- Connect audio and visual elements in real—time
- Develop personal creative coding practice