Internet Art II

MAAD 23632

Instructor:	Nick Briz (nbriz@uchicago.edu) Office Hours by appointment only
AI-TA:	netnet
When:	Tue : 11:00 AM - 01:50 PM
Where:	JCL 134

Course Description

Though the web was originally conceived as an online space for sharing hyperlinked documents, the modern Web browser has evolved into a creative coding playground capable of producing all manner of networked art and algorithmic compositions. In this course we'll learn JavaScript, the Web's defacto programming language. Throughout the quarter we'll experiment with various different Web APIs for creating generative and interactive Internet art including HTML5 video, Canvas (2D/3D animations) and Web Audio. We'll learn how to produce work that responds to various input sources (trackpad/mouse, touchscreen, keyboard, cameras, microphones) and how to fetch and incorporate data from external APIs elsewhere on the Internet. This course counts towards the Media Practice and Design requirement for the MAAD program.

Learning Goals

- Foundational understanding of web programming concepts, tools and working knowledge of the JavaScript programming language.

- General understanding of the web's creative potential, by learning how to produce interactive and generative compositions using the browsers native APIs (which may include the DOM, Canvas, WebGL, WebXR, WebAudio among others) as well as through creative libraries (which may include p5.js, three.js, tone.js, aframe among others)

Class Materials

In order to participate in this course you will need to have a decent computer (desktop or laptop with 8-16GB of ram or more) and a modern Web browser like Firefox, Brave, Chrome or others (**do not use** Internet Explorer or Safari, those are subpar browsers). Personally, I will be demoing things in class using Firefox.

You will also need to create a free GitHub account, this is where you'll be uploading your projects (the actual code) before submitting them on Canvas. (*if you are new to GitHub, consider signing up for the GitHub Student Developer Pack*)

You will also need a code editor. In class I will be demoing concepts and creating examples/sketches using netnet.studio. If you're a beginner to code, i recommend using netnet.studio (which I designed specifically for beginner creative web coders), otherwise you're free to use your preferred modern code editor like Pulsar, Sublime, or VSCode (so long as you know how to get your work published on GitHub using those editors)

Class Discussions

So much of what we're going to cover in class, both in terms of the theory and practice, can be gleaned through your own online research. The most valuable aspect of learning this material in the classroom, rather than on your own, is the chance for real-time interactivity with your professor and peers. I can not stress enough how important it is to take advantage of class discussions. These can be technical discussions (about how the Internet and the Web work, about coding tricks and techniques, and/or any other topic relating to the technology and craft we'll be covering), theoretical discussions (about any of the concepts and ideas introduced in assigned readings and/or addressed by any of the Internet art referenced throughout this course) and/or historical discussions (about any of the various histories we'll be covering this quarter).

If you need to miss class for a legitimate reason (medical or family emergency, professional opportunity, etc), send me an email ahead of time so that I can mark it as an excused absence. Attendance and participation in class is 25% of your final grade.

Assignments + Evaluations

Each student will be expected to complete and submit 3 net art pieces on the dates specified below. These assignments are creative coding experiments/projects uploaded to your GitHub account, each as it's own repository (repo). These should be published using GitHub pages the URL for which should be submitted to the class canvas. NOTE: if a sketch requires alternative hosting options you are welcome to host your project elsewhere (so long as it has a publicly accessible URL), in these instances you should submit both the public URL as well as the URL to your GitHub repo (so I can review the code).

These pieces will be based on the demos conducted in class. Each week I will be introducing new techniques and concepts, often building on the previous weeks, and creating sketches together with the class. A net art piece can be a variation of something I demonstrated in class, a continuation of a previously submitted project or an entirely new one so long as it engages with the techniques and ideas discussed in class.

In my evaluations I will be reviewing both craft (how you've written your code) and concept (the idea behind the sketch), I will either mark the assignment as "complete" or "incomplete" on canvas, if/when I mark an assignment as "incomplete" I will leave feedback with clear request for changes you will need to make. Once you've made those changes (and updated the code on your GitHub) do not re-submit the assignment, instead leave a canvas comment in your submission letting me know I should re-review the work. I'll then either mark the assignment as "complete" or leave more feedback.

Each of these assignments are worth 25% of your final grade and must be "complete" in order to receive full credit.

due dates

- sketch #1: Friday, Jan 26th
- sketch #2: Friday, Feb 9th
- sketch #3: Friday, Mar 8th

Plagiarism

Plagiarism of concepts, code, compositions, samples and/or other elements is strongly encouraged, so long as you leave clear attribution within your code via comments. Ensure that anything you copy is in some way transformed, either by creating a variation on the copied elements or combining those elements with other copied elements. NOTE: transformation/combination (however subtle) is not a substitute for attribution, but rather a requirement for all copied elements.

AI Policy

We're entering a new era of "Machine Learning" or AI. These algorithms are having (and will continue to have) drastic effects on every aspect of our society (including art). Today, artificial neural networks trained on troves of data (which are not always ethically sourced) can make "predictions" and create "hallucinations" that would have seemed like impossible sorcery just a few short years ago. In certain high stakes applications this can save lives, but it can also destroy them. In other contexts this biased hallucinatory predictive sorcery can be quite exciting, as is the case with media art. This technology, like many others that came before it (smart phones, the Internet, the computer) will most certainly change everything in our field, exactly how and to what extent is still anyone's guess. In the interest of collectively learning how to leverage its promises and minimize its perils, I encourage anyone interested to experiment with AI (beyond the tools covered in class) so long as you are transparent about what/when/how you use it and are willing to share your process/perspective on it in class.

In this class one likely use of AI will be code generation/evaluation using LLM (large language models), again you are encouraged to use these in ways the supplement your learning, rather than impede it. To ensure that is the case I ask that:

- When asking an LLM for help with your code make sure to practice the terminology we've learned in class, use it as an opportunity to practice articulating your creative goals just like you would to another person. Consider starting with something similar to this prompt.
- If an LLM generates any code (even a single line) that you do not understand, ask it to explain it to you before you copy it into your own sketch.
- Consider sharing your code with an LLM and asking it for feedback, be specific about what you want feedback on (coding style, clarity, efficiency, creativity)
- **Any conversations related to a sketch should be submitted alongside the assignment on canvas**, this can be done by either generating a shar link on ChatGPT or using https://aiarchives.org (which works with other AI models beyond ChatGPT).

Course Outline

Part 1: Text

In the first section of the course we delve into the realm of text-based algorithmic compositions. As we explore the foundational concepts of JavaScript, such as variables, functions, loops, and conditional statements, students will gain a solid understanding of core programming principles. We'll also cover essential aspects of the JavaScript standard library, focusing on Date and Math objects. A key element of our journey will be experimenting with randomness and (possibly also) learning to harness the power of REST APIs to fetch data from around the Internet. This section is designed to build a strong base in creating dynamic, text-based algorithmic art.

week 1: 01.09 - **What is Text?**
week 2: 01.16 - **10 PRINT CHR$(205.5+RND(1)); : GOTO 10**
week 3: 01.23 - **::after onKawara**

- *sketch #1 due: Friday, Jan 26th*

Part 2: Image

In the second part of our course, we venture into algorithmic image-based compositions. This section emphasizes learning interactive and generative animation loops using requestAnimationFrame, as well as mastering interactive window events and DOM manipulation. To provide a fundamental understanding of how images are constructed from data, we will introduce basic pixel manipulation techniques. Students will also learn to dynamically create images using the canvas element. This section builds on the core concepts to craft visually compelling generative and interactive digital artworks.

week 4: 01.30 - **A Tribute to Heather**
week 6: 02.13 - **What is an Image?**
week 5: 02.06 - **Instruction Sets**

- *sketch #2 due: Friday, Feb 9th*

Part 3: Sound

The final part of our course is dedicated to the creation of algorithmic music compositions. Students will be introduced to the WebAudio API and the tone.js library, enabling them to craft generative auditory experiences. Basic music theory will also be covered, including scales, keys, chords, arpeggios, and time signatures. This section offers a unique opportunity to blend the technical aspects of web programming with the creative and expressive world of music, leading to the creation of innovative and interactive sound art.

week 7: 02.20 - **What is Sound?**
week 8: 02:27 - **Algorithmic Music**
week 9: 03:05 - ***finals week (class pending)***

- *sketch #3 due: Friday, Mar 8th*