

ART&ARCI00- I “Find By Image: Machine Learning For Artists”

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TA: Lee Tusman (ltusman@ucla.edu)

Tues and Thurs 2-4:50pm

Office Hours: Tues 12-1pm Room 4256

<http://classes.dma.ucla.edu/Spring17/ARTARCI00/>

Overview:

This studio-based course aims to introduce machine learning—a complex and quickly evolving field—to artists, designers and performers. The goal of this course will be to unpack and familiarize ourselves with available machine learning tools, which we will use to plan and produce works of art. In-class labs will open a preliminary investigation into the conceptual and technical underpinnings of key machine learning methods, exploring their application through hands-on demonstrations. Readings and discussions will attempt to connect the theory, practice, and poetics of machine learning, and to place our efforts into wider ethical, social, and art-historical contexts. In the process, we will expand on the general phenomena of learning, experience, and creativity as subject matters in themselves.

Students are encouraged to pursue a process that continues the development of their own specific artistic practice. However, this course places a strong emphasis on collaboration—because of the interdisciplinary focus of the course, and because realizing artistically viable projects with machine learning will require a bundle of specialized knowledges. Whatever our background, we are each in experimental territory!

Course Goals:

As a group, we will be conducting original research with the aim of uncovering artistic and poetic possibilities in the practice of applied machine learning. Each student will learn the concepts behind common machine learning techniques, and apply these ideas to artistic projects of their own design.

Expectations:

Students will be expected to collaborate - to share skills and resources; to document their work and make it available to a wider public; to properly credit and attribute components of collaborative work; to keep up with course readings, to come to class with questions prepared, and to take turns leading in-class analysis of the readings; to actively participate in group discussion and critique. The form and media of each studio project will be left open to each student - ideally we will explore a range of approaches.

Assignments:

White paper presentations - In-class discussions led by groups of three.

In most class meetings, we will take a deeper look at one technique or concept through the lens of a publication, scientific paper, proposal, or essay. A collection of these papers will be provided on the course website for groups to choose from in advance of their presentations.

Studio Project I - to be completed by each individual student and presented in a mode of the student's choosing for in-class critique.

Identify a way that you are already engaging with AI in everyday life. Develop and document a process of exposing (breaking? interrupting? re-directing?) the limits of this AI.

Studio Project II - to be completed by groups of three (graduate students can opt to work alone or as a pair instead)

This is the primary project that each student will complete over the course of the class. Each project should start with an essential question related to the poetics of machine learning, and progress towards becoming an artwork that makes use of machine learning techniques. This project will be presented three times, first as a proposal, second as a "proof of concept" experiment, and third in a presentation format. The design and final form of this project is completely up to the collaborative group, but should be a consideration from the proposal stage on. In-class critiques at each stage will help guide the group to refine their initial proposal and working process, and to make full use of available resources.

Additional Course Materials and Readings - TBD

Throughout the course we will be reading and discussing critical texts, poetry, and speculative fiction, as well as looking at artwork for contextual and comparative examples. All of these materials will be made available on the course website. Students will be expected to apply an understanding of these materials in project critiques.

A range of additional resources for learning more about machine learning - textbooks, online courses, tutorials etc. will also be made available via the course website, and we may make reference to them occasionally as needed.

Grading:

Grading will be determined as follows:

White paper presentations - (10%)
Studio project I - (20%)
Studio project II (proposal) - (15%)
Studio project II (proof of concept) - (15%)
Studio project II (final presentation) - (20%)
Participation - (20%)

Participation can be summarized as "contributions to discussions and critique, sharing skills and resources, evident role within collaborative efforts."

Studio projects will be evaluated through in-class critique, based on their artistic value, which we will describe as

I.) The extent to which the artwork addresses its presentation within the context of fine art: its relation to historical antecedents and future possibilities, its critical function, its virtue as an object.

- 2.) Legibility: how meaning is articulated, both in terms of how you as an artist speak about the work, and in terms of how the work itself speaks. This doesn't always have to be literal - Open-ended-ness, obscurity and ambiguity are qualities that can be legibly contained in an artwork.
- 3.) Commitment to work: as demonstrated by the amount of time and care put into making the work (specifically) and developing an individual artistic voice through practice (generally).
- 4.) Economy of means: how well does the work make use of its available resources (material, skill, time, attention, and so on).
- 5.) The experiment, the risk: what new possibilities have been opened? what is at stake?

Attendance:

If you are going to be late or miss a class, please email Lee or I before the start of class. Each absence or lateness (more than 15 minutes) without prior notice will drop your grade by a half-step (A to A-, for example).

Schedule (subject to modification):

Tues April 4

- Lecture / Discussion: Overview of AI in general, machine learning in specific
- Assignment: Questionnaire - A look at our resources (due before Thursday's class)
- Assignment: Find example of artwork that makes use of an emerging technology (due 4/6)
- Assignment: Studio Project I (due 4/11 or 4/13)

Thurs April 6

- Lecture / Discussion: Machine Learning in Art History - process / materials, pedagogy / practice
- Lab: Using and Sharing via GitHub; Overview of software tools to be used in class; Using the course website and online resources

Tues April 11

- Studio Project I - presentations / critiques
- Lab: Neural Network Zoo pt 1 - A comparative look at the variety of available nets

Thurs April 13

- Studio Project I - presentations / critiques
- Lab: Neural Network Zoo pt 2 - making "toy" networks

Tues April 18

- White Paper presentation - group 1
- Lab: Other Inputs and Outputs - connecting to creative coding platforms, sensors and hardware

Thurs April 20

- White Paper presentation - group 2
- Lab: Optimizing, Filtering, Encoding - abstracting for usefulness

Tues April 25

- White Paper presentation - group 3

Lab: Supervised and Unsupervised Networks

Thurs April 27

White Paper presentation - group 4

Lab: Convolutional Networks

Tues May 2

Studio Project II - preliminary presentations / critiques

Thurs May 4

Studio Project II - preliminary presentations /critiques

Tues May 9

White Paper presentation - group 5

Lab: Sequence Models - Considering time and other kinds of order

Thurs May 11

White Paper presentation - group 6

Lab: Generative Networks

Tues May 16

White Paper presentation - group 7

Studio Project II - proof of concept presentations

Lab: Deep Dream and Latent Space - peeking into hidden layers

Thurs May 18

White Paper presentation - group 8

Studio Project II - proof of concept presentations

Lab: Style Transfer - separating content from form

Tues May 23

Lab: Working With Datasets - critical and practical considerations

Thurs May 25

Lab: Scaling up - using deep neural networks on cloud computing platforms

Tues May 30

Lab: work on studio projects

Thurs June 1

Lab: work on studio projects

Tues June 6

Studio Project II - Final presentations / critiques

Thurs June 8

Studio Project II - Final presentations / critiques