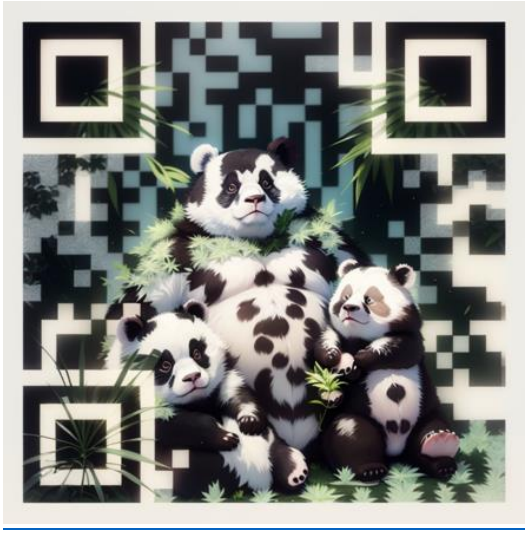
Code as Nature

Fall 2024
ATEK / IIMC – 446/646
W 2-3:50 pm
Unit: 3.0
Instructor: Dongpu Ling dling@calarts.edu



Studio
Year level: BFA-3, BFA-4, MA-1, MA-2, MFA-1, MFA-2, MFA-3, DMA
Open to institute

We will learn software by making concrete examples,
rather than by studying abstract principles.
Working in ways that are improvisational,
rather than planned.
And create things that are expressive.
This is a studio art course,
rather than a computer science class.

COURSE DESCRIPTION

Multi-digital software explorations, network communications, and immersive environments for interactive media.

Code as Nature is a studio workshop that introduces a variety of contemporary artworks, computational software, networking strategies, and artificial environments. Artists use algorithms and simulations to explore and invent new approaches in the fields of generativity, interactivity, transcoding and transmediality, connectivity, corporeality, and virtuality. The learning process is a study and critique between simulations and the natural world. In this course, participants will employ artificial intelligence (AI), machine deep learning, augmented reality (AR), virtual reality (VR), and extended reality (XR) technologies, using OpenAI, Unreal Engine, RunwayML, Google Colab, Teachable Machine, et al. to create artworks. According to Thomas Hauer's 2017 paper "technological determinism and new media", our regular use of technologies may influence the users and their surroundings, and the converse is also true. Artificial neural networks were invented, inspired by human cognition, and we can now observe machine intelligence and their vision through images, texts, sound, videos, 3D environments, and more.

LEARNING GOALS

Introduce the essential digital tools used in the Center for Integrated Media program and look into the future through the lens of the newest technologies. Think critically about the use of data, networking, simulation, and interactive media through the aesthetic possibilities inherent in media, culture, and society.

COURSE OUTCOMES

Through participation in this course and analysis of topics covered, students will be able to: identify the types of creative art-making methods, gain insights into the latest artworks and technologies in the art world, learn foundational concepts and functions of network communication, understand program workflows and capability, augment their own artistic practices with software introduced in class.

EQUIPMENT AND MATERIALS

Students will need to bring their own hard drive or large storage thumb drive to each class. You can also access the Mac Lab outside of class time during its open hours.

COURSE SCHEDULE (*Subject to change)

Week 01 (9/11/23): Welcome, introduction to course structure and schedule.
Software: RunwayML

Week 02 (9/18/23): Transcoding and transmediality- custom pixel, data self-portrait, synthetic instrument
Software: p5.js, Teachable Machine, ml5.js

Week 03 (9/25/23): Comparing different ML models.
Generativity – image generator, text generator, face generator
Software: OpenAI, Midjourney, Hugging Face

Week 04 (10/2/23): The history of AI - ALife
Generativity - stylization
Software: Google Colab

Week 05 (10/9/23): Continue the history of AI
Interactivity- drawing machine, conversation machine, virtual creature
Software: Unreal Engine

Week 06 (10/16/23): Corporeality and virtuality- virtual public sculpture, augmented projection
Software: Kiri Engine, Polycam, Rovo Scan

Week 07 (10/23/23): Continue corporeality and virtuality
Software: MetaHuman Creator

Week 08 (10/30/23): Final project idea presentation, continue corporeality and virtuality
Software: Mixamo, Deep Motion

Week 09 (11/6/23): Continue corporeality and virtuality
Software: Unreal Engine

Week 10 (11/13/23): Continue corporeality and virtuality
Software: Unreal Engine

Week 11 (11/20/23): Connectivity- collective memory, experimental chat, extrapolated body
Software: Unreal Engine

Week 12 (11/27/23): Individual meeting on final project

Week 13 (12/4/23): Final individual/group project presentation

ASSIGNMENT TYPES AND ASSESSMENT METHODS

Assignments include in-class demos, reading, screening, discussions, critiques, and individual or group projects.

GRADING POLICY

CalArts doesn't follow a conventional A-F scale. Instead, we use High Pass (HP), Passing with Excellence Pass (P), Passing with Quality Low Pass (LP), No Credit (NC). NC grades appear on external records for financial aid and institutional purposes. Please check the Registrar's Office for all deadlines to withdraw from the course without receiving a failing grade.

Attendance (40%)	Attendance will be taken in each class meeting
In-class Assignments (30%)	Complete and submit in-class assignments
Group/Individual Project (30%)	Presentation and detailed concept & research artifact including any diagrams

BIBLIOGRAPHY

Thomas Hauer, Technological Determinism and New Media, 2017
Nick Bostrom, Are You Living in a Computer Simulation? 2003
Nick Bostrom, Superintelligence, 2015
Arther I. Miller, The Artist in the Machine, 2019
Giuliano Pezzolo Giacaglia, Making Things Think, 2022
Arthur L. Samuel, Some Studies in Machine Learning Using the Game of Checkers,
Rodney A. Brooks, Elephants Don't Play Chess, 1990
Walter Benjamin, The Work of Art in the Age of Mechanical Reproduction, 1935
Jon Danielsson, Robert Macrae, and Andreas Uthemann, Artificial Intelligence and Systemic Risk, 2020
Golan Levin, and Tega Brain, Code as Creative Medium, 2021
Martine Rothblatt, Virtually Human, 2015
Ruha Benjamin, Race After Technology, 2019
Mike Featherstone, Couze Venn, Ryan Bishop, and John Phillips, Theory Culture & Society, 2006
Robert Pepperell, The Posthuman Condition Consciousness Beyond the Brain, 2003
Warren S. McCulloch and Walter Pitts, A Logical Calculus of the Ideas Immanent in Nervous Activity, 1990
Meghan O'Gieblyn, God Human Animal Machine, 2021
Sofia Crespo, (EN)TANGLING WITH ARTIFICIAL LIFE, 2021

Peter D. Turney, Evolution of Autopoiesis and Multicellularity in the Game of Life, 2021
Maki Sato, The Enactive and Interactive Dimensions of AI: Ingenuity and Imagination Through the Lens of Art and Music, 2022

LIFE

Grad school is a challenging time, and the world is a challenging place these days. We want you to flourish. Please take care of yourselves. There is a 24-hour crisis line for CalArts students 855-364-7981. There are many other resources dedicated to your well-being that can be found on campus and online. Reach out if you need help finding the resources you need.
https://calarts.edu/life-at-calarts/support-and-advocacy/care/where-to-go-for-help