



Experimental Visualization Lab

Media Arts & Technology, University of California, Santa Barbara

lab 2611, Elings Hall

Vislab.mat.ucsb.edu

Applied Research & Projects in:

- Data Visualization
- AI & computational, algorithmic imaging studies
- Computational and Conceptual Photography
- Multi-robotic camera interaction systems
- Interactive Installations and data collection in public venues

MAT 200a Art & Technology

Tues-Thurs 1:00pm-2:50pm – Experimental Visualization Lab, 2611, Elings Hall

Overview of the digital media arts field with an emphasis on technological developments and their integration in art research and production. Students are introduced to contemporary and historical directions and methodologies through seminar lectures, research presentation, and a final project.

There are 3 required Media Arts & Technology courses:

MAT200a	Art & Technology
MAT200b	Media (Music) and Technology
MAT200c	Digital Media Technology and Engineering

MAT 200a Art & Technology

Course Links & CourseWork

Course Syllabus:

<https://www.mat.ucsb.edu/~g.legrady/academic/courses/25f200a/25f200a.html>

Student Forum where your projects will be uploaded:

<https://w2.mat.ucsb.edu/forum/viewforum.php?f=94>

Course Work & Completion:

- Attendance and participation in class meetings, field trips, lectures, etc.
- Posting of response to weekly presentations
- Final Project Document

Course Components & Goals

An overview of how **computation & technology** intersect with **artistic experimentation**

- The course addresses "**art**" as an **experimental research platform** rather than a space for self-expression
- Introduce **projects** that exemplify **creative approaches** with computing technologies and scientific topics and methodologies
- Give a **historical context** for the discipline of **digital media arts** so that your projects can be situated in relation to other existing works – similar to **citations** in the Engineering / Science disciplines
- Inform the **evaluation** processes by which Art & Technology works are rated
- Introduce the contexts such as **conferences, publications, festivals** and other venues where to present the work you are and will produce

Course Bias

Computation as a Medium for Exploration

- Technology as a **collaborator** (computer code as an authoring process)
- Arrive at **aesthetic results** that could not have been realized without computation
- Analyse the **impact of technology** on culture, society, nature (beliefs and values)
- Results may possibly **contribute** to engineering / scientific research

Art & Technology Topics Covered in the Course

Some directions for interfacing computation and aesthetic production:

- Early Examples from the 1970s
- The Digital Image
- Time, Space, Interactivity, Narrative
- Data, Information Arts, Information Theory
- Mathematical Modeling, Machine Vision
- Systems Art, Generative Art, Algorithmic Art
- Bio Art, Biometrics, Bio Data
- Emergence, Self-Organization
- Augmented Reality, Virtual Reality | Methodology Guidelines
- Digital Object | Digital Fabrication
- Robotics | Automation
- Artificial Neural Networks | CNN | Style Transfer
- Machine Learning / Artificial Intelligence

What is Creative Research & Explorations: A Philosophical Approach

A space for questioning, reimagining, and reconfiguring technology's role in culture:

- Using the technology in an unexpected way to arrive at a new perspective
- Reflect on the medium: “How does this technology create meaning”
- How does technology influence how we understand the world in a different way?
- Critical Play: Using games, not for entertainment but for questioning norms
- Deliberately misuse or “break” a tool to expose new possibilities
- Expose bias or social consequences
- Embrace errors, noise, glitches as an aesthetic approach
- Borrow freely across disciplines without the need to prove validity, for instance bio and tech
- Speculative Futures: Design a work that imagines an alternative reality or society

Philosopher Emmanuel Kant's “Play of the Imagination”:

- Creating a work that does not have a practical function but invites exploration
- Imagination is allowed to **“play freely” with understanding**: Imagination suggests forms, patterns, and meanings
- “Purposiveness without purpose”: To experience form and meaning but not tied to utility or function

Technologies are not NEUTRAL: They Impose Meaning Onto Content

Research Approach: The study of *how image-generating technologies (camera, computer imaging systems, software) inadvertently redefine the data they process, and how this affects the content and meaning of the images, objects, and time-based media that these image-generating machines produce*

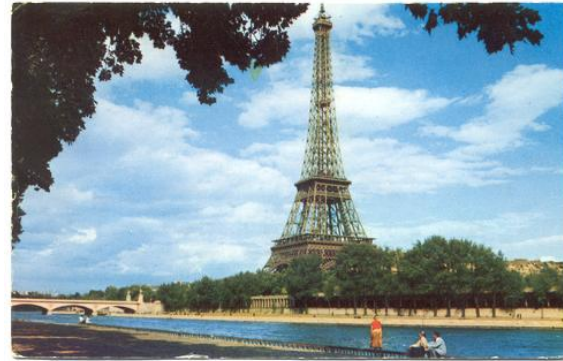
1910s



1940s



1960s



1990s



Images communicate 1) a **subject matter** 2) **stylistic representation** 3) **Culture & time-specific technology** 4) an **aura** (authenticity, authority) 5) Ideological values: Images convey **social values**: Romance, tourism, iconicity (i.e., must-see global destination), idealizes certain spaces over others.

What are Topics **NOT** Covered in the Course

The focus of the course is on the **artistic** history and production with computer technology.

These are topics outside of the contexts of this course:

- Commercial and industrial applications (unless repurposed within an artistic context)
- Scientific and engineering applications (unless applied within an artistic context)
- Entertainment industry (commercial video games, animations, etc.) unless they are presented within an art context
- Populist events / places like “[Burning Man](#)”, Las Vegas “[The Sphere](#)”, etc.

Who is Taking the class (Who are we?)

MAT students come from diverse cultures, media specific training, and disciplines

- Engineering / Science / Technicians
- Audio specialists: Some are technologists, instrument builders, composers, performers
- Digital media art, art, design, architecture, cinema / film studies
- Other disciplines: Social Science, Math, etc.
- Diverse cultural backgrounds means different training, different understanding of expectations

Different Expertise:

Some are strong in computation, engineering problem-solving

Some are strong in conceptual, and/or aesthetic approaches

Some are strong in innovation & speculative exploration

Taking classes together to learn from each other's **expertise** and **perspectives**

- Share skills and methodologies
- Share cultural perspectives
- Learn thru collaboration to arrive at hybrid results

Exhibition, Conferences, Publication Venues for Digital Media Arts

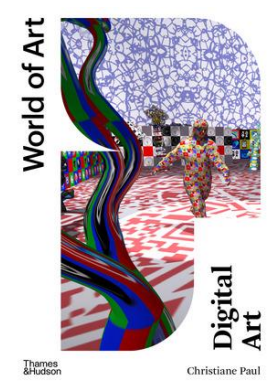
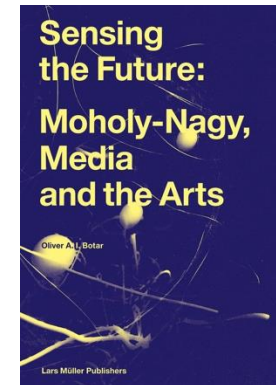
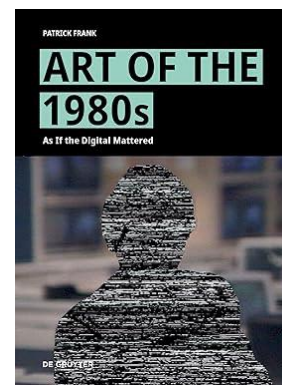
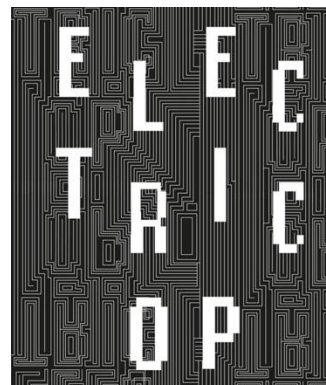
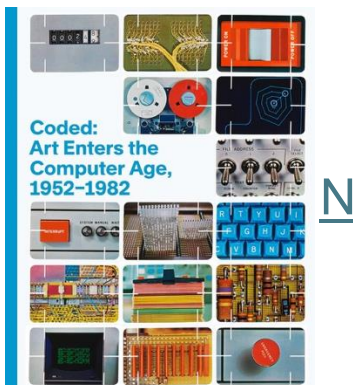
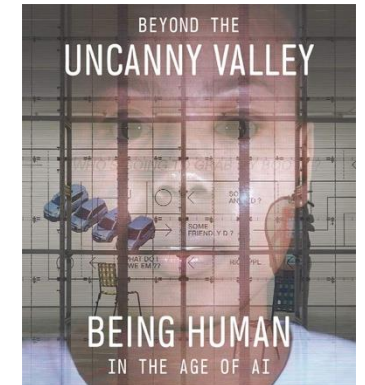
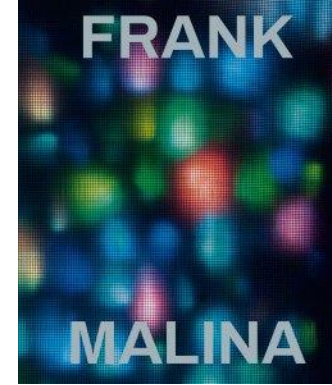
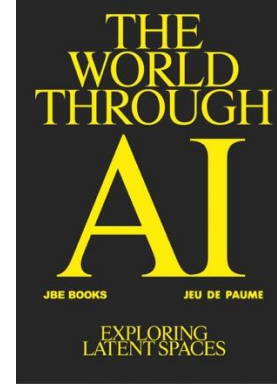
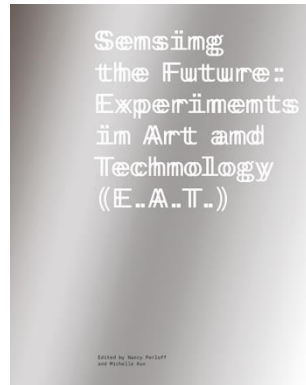
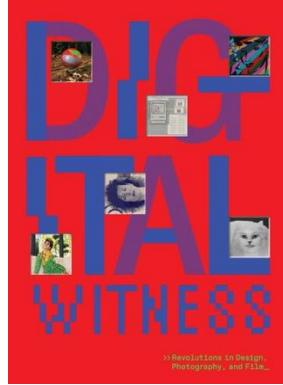
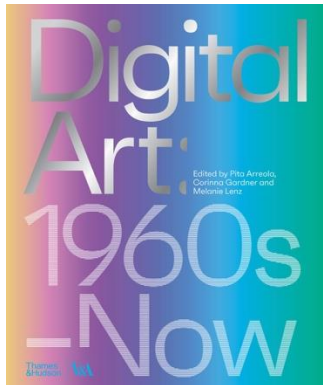
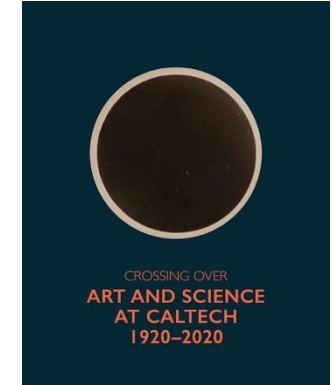
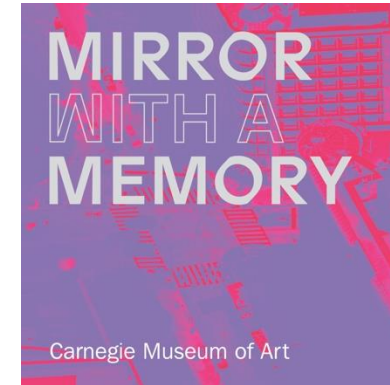
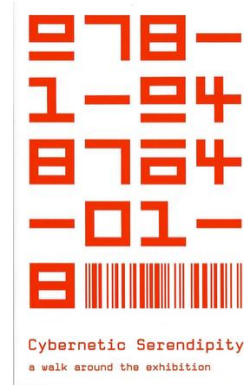
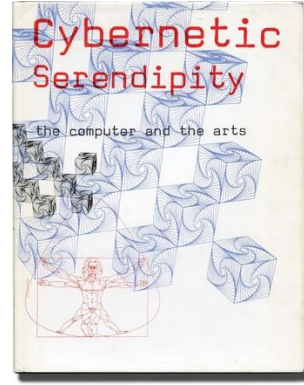
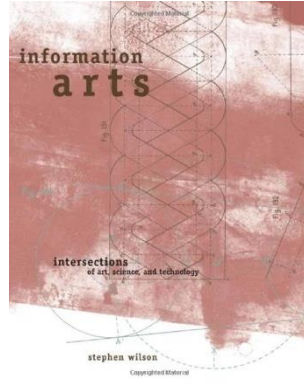
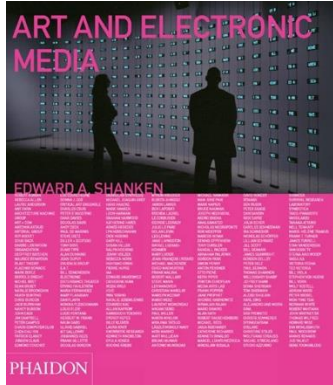
Some Conference, Exhibition, Festival Venues

- ACM SIGGRAPH: [Art Gallery](#)
- NEURIPS: [Creative AI Track](#)
- VIS IEEE: [Vis Arts Program](#) (VISAP)
- ACM Multimedia: [Art Program](#)
- ISEA: [ISEA2025, Seoul](#)
- Ars Electronica: [Exhibition](#)

Publication Venues

- Conference Proceedings
- [Leonardo](#), MIT Press

References (Library Resources)



Shaw Yiran Xiao – Teaching Assistant

MAT doctoral student: yiranxiao (at) mat.ucsb.edu

www.yiranxiao.com

Shaw Yiran Xiao is a multidisciplinary media artist and researcher based in Southern California, working at the intersection of art, technology, and human experience. Her research explores how digital systems shape human perception and society, with a focus on data visualization, generative art, and machine learning. Through her visualizations, Shaw reveals the hidden operations of technology, uncovering the aesthetic dimensions embedded within data and algorithms. Her work encourages critical reflection on how digital infrastructures influence autonomy, cultural values, and individual identity.

AI Usage Policy

Presentation of Research

George Legrady Area of Specialization

I am an interdisciplinary digital media artist, scholar, and researcher.

Like the other senior MAT faculty, I belong to the first generation of media artists to integrate computational processes since the mid-1980s for creating “[Born-Digital](#)” visualizations

Areas of specialization:

- Explore algorithmic processes for photographic imaging and data visualization
- Semantic categorization and self-organizing systems
- Interactive computational-based art installations, and
- Mixed-realities narrative development (augmented reality)
- The approach engages with the longstanding tradition of the cultural critique of photographic representation
- A key focus is the creative potential of such technologies for aesthetic coherence and expression

A Selection of Best Known Projects:

- “[Equivalents II](#)” (1992), a text-prompt to image software and installation
- “[Pockets Full of Memories](#)” (2001), data collection with artificial neural-network integration
- “[Making Visible the Invisible](#)” (2006), Long term data analysis, and visualization Seattle Public Library
- “[Kinetic Flow](#)” (2006), Permanent installation, Santa Monica / Vermont Metro Rail Subway Station, Los Angeles
- “[Swarm Vision](#)” (2015), multi-camera unsupervised robotic camera interaction

glegrady@ucsb.edu

vislab.mat.ucsb.edu

<https://www.mat.ucsb.edu/~g.legrady/academic/courses/25f200a/25f200a.html>