

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

Photo by Weihao Qiu

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.

MAT APPROACH: Experimentation and exploration integrating the two fields to result in research, projects, publications, to lead to new products, disciplines, ways of thinking, etc.

ART ←-----**HYBRID INTERSECTIONS**-----→ **TECHNOLOGY**

ANALYTICAL: To go beyond **use** and **production** to also **reveal** and **question** how a system works

MAT 200a Art & Technology

Course Links & CourseWork

Course Syllabus:

<https://www.mat.ucsb.edu/~g.legrady/academic/courses/26f200a/26f200a.html>

Student Forum where your projects will be uploaded:

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

Course Grading, Work & Completion:

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

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

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)
- Introduce aesthetics as both a **process**, and / or **end goal**
- 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

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*

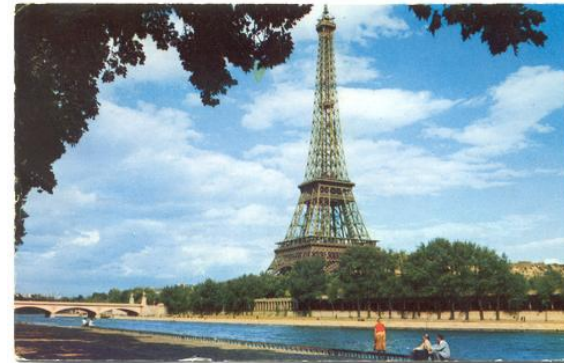
1910s



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 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

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.

Exhibition, Conferences, Publication Venues for Digital Media Arts

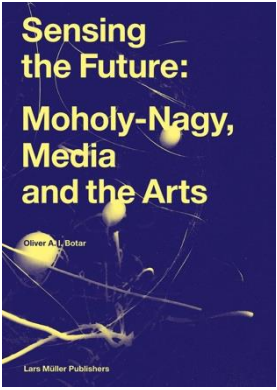
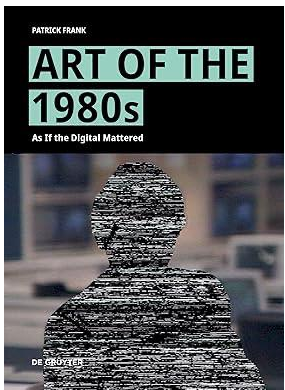
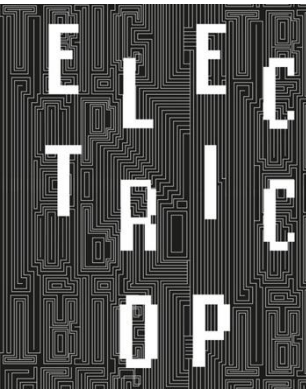
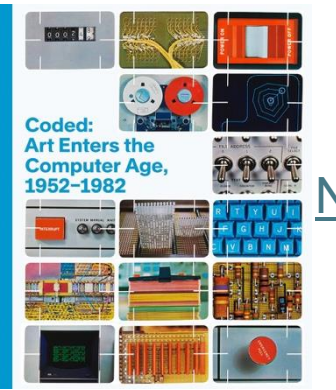
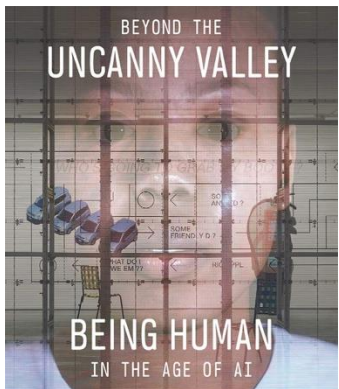
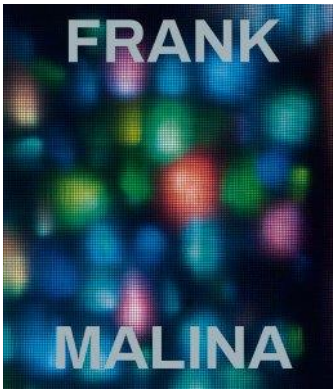
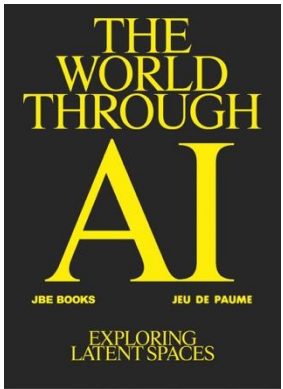
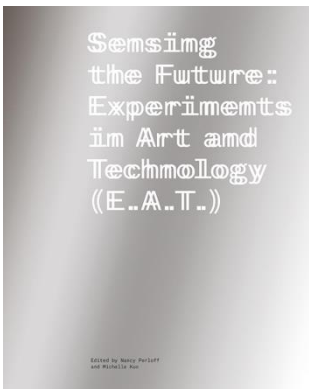
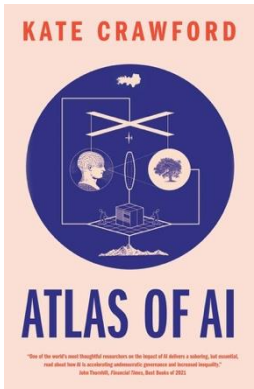
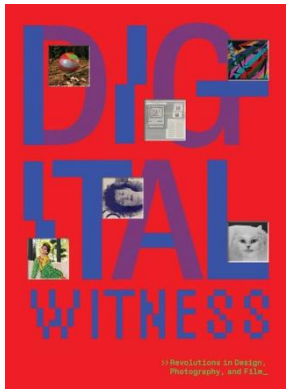
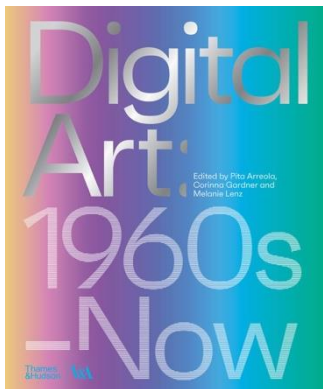
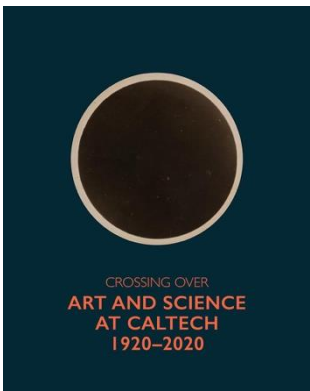
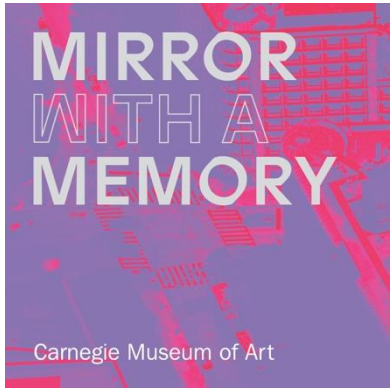
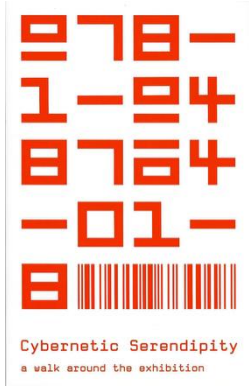
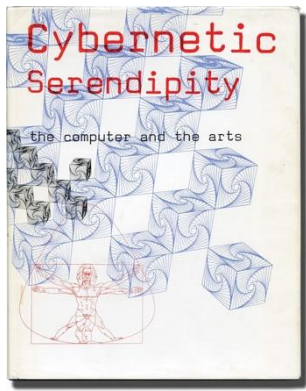
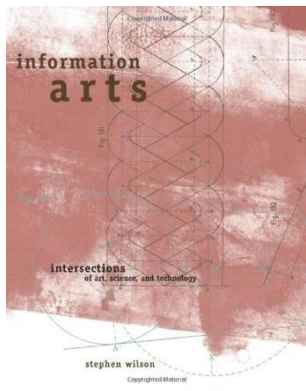
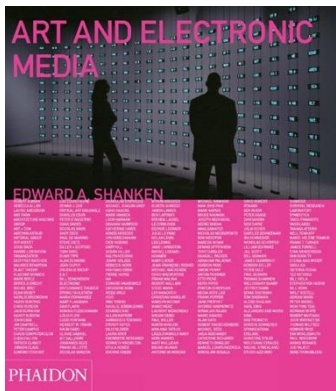
Some Conference, Exhibition, Festival Venues

- 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)



How to use AI

- We are using AI (Chatgpt, Claude, etc.)
- What intellectual and creative work have you (student) actually perform?

Acceptable:

- Asking questions to AI
- Testing code in AI
- Cleaning up language

NOT acceptable:

- Presenting AI work as your own (was the idea yours or AI?)
- Formatting documents by AI (you have to compile your own reports, papers, etc)

Approach:

- **Research reliability:** Were references, facts, quotations checked?
- Check for copyright violations
- Document in your work how AI was used for what purpose

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

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