MARC DUNAND

Curriculum Vitae, June 2025

CREATIVE TECHNOLOGY

COMPUTER SCIENCE

NEW MEDIA DESIGN

Contact Information

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Online Presence

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Portfolio: marcdunand.com/portfolio

GitHub: github.com/MarcDunand

LinkedIn: linkedin.com/in/marc-dunand-cmu

Arts Instagram: instagram.com/marccdunand

Biography

Marc Dunand is a creative technologist, computer scientist, and new media artist designing novel relationships between emergent phenomena, technology, and humanity. His work combines technical rigor, artistic aesthetic, and creative spark to produce objects and experiences that bring together the great strengths of each.

With research in fields from computational biology to video and media design, installation experience for corporate clients and for personal art pieces, and education in Computer Science, Art, and Design, Dunand is before all else interdisciplinary. His ability to not only rapidly expand to new fields of study but to then integrate these with existing knowledge produces his unique approach to inquiry and problem solving.

In his practice, Dunand focuses primarily upon interactive and generative work, with a particular focus on bringing computation into the physical world. He writes “I consider myself not the author of my works but rather their translator. By virtue of working with generative or interactive pieces, I take a pre-existing pattern, be it a mathematical function or a human-drawn scribble, and re-express the pattern in a beautiful and semantically meaningful manner”.

Education

Harvard University 2025-2027

Graduate School of Design

Master of Design Studies

Concentration in Mediums

Carnegie Mellon University 2021-2025

School of Computer Science

College of Fine Arts

Bachelor of Computer Science and Arts

University Honors

Employment

Creative Technology Intern May 2025 – August 2025

Deeplocal

Engineered installations at Deeplocal, a creative technology agency known for building innovative interactive experiences

Worked with creative agency on client projects from day one, including projects for LEGO, Pinterest, and Five Currents

Traveled to project sites for installation, oversight, and deinstallation, trusted as the only technical team-member on site

Skills: JavaScript, Node, Python, Computer Vision, Object Detection, Google Drive APIs, MAX (MSP), Q-SYS, Fabrication, Installation

Creative Software Researcher

May 2024 – May 2025

Department of Video and Media Design | School of Drama | Carnegie Mellon University

Worked with Professor Lawrence Shea to create an experimental motion capture lab space; integrated Vive, xSens, and CyanPuppets motion capture systems into the space

Developed workflows in Unity, NDI, ReadyPlayerMe, and MediaWiki, which integrate with the motion capture systems

Designed and choreographed real-time XR performances using motion capture, VR, and traditional performance technologies

Presented my work and findings at Meeting of the Minds 2025

Skills: Unity, C#, Mocap Systems, NDI Tools, Animation, Rigging, and Skinning, Oculus, Vive, 3D Rendering

Software Engineering Intern

February 2023 – September 2023

Soapboxx

Developed an extended backend for the Soapboxx website and integrated the backend with APIs for image databases, GPT3.5, and image GANs

Collaborated with Soapboxx and IB5K teams to design a frontend for my project and integrate the completed project into the site using React

Skills: React, Node.js, Python, JavaScript, HTML, LLMs, GANs, Prompt Engineering, Databases, API Integration

Philosophy Teaching Assistant

August 2023 – December 2023

Dangerous Ideas in Science and Society | Department of Philosophy | Carnegie Mellon University

Taught multiple classes every week on bleeding edge social, political, and metaphysical issues

Moderated small and large group discussions on issues including abortion, free will, assisted suicide, gun control, and religion; provided one-on-one help to students; worked with a group of 16 peers

Skills: Education and Lesson Planning, Public Speaking, Leadership, Communication, MindMup

Software Instructor — June 2022 – July 2022

iD Tech

Designed custom lesson plans and taught groups of ten students ages 13-17 Unity development from beginner to advanced levels

Ported finished projects to Oculus and integrated different VR control schemes, including keyboard, Oculus controllers, and motion, position, or tilt-based control

Skills: Unity, C#, Oculus VR and AR, Education, Leadership, Communication

Computational Biology Research Intern — March 2020 – August 2021

Amaral Lab | Northwestern University

Created a bespoke computational model of microbial assemblies in Python that accurately predicts the growth and collapse of microbial assemblies

Developed responsive graphical representations of model behavior to improve accessibility of data; presented project results

Skills: Python, Matplotlib, Data Analysis, Computational Biology, Systems Modeling

Selected Works

Full documentation available on my portfolio

Collaborative Drawing Machine — January 2024 – May 2025

Pen and paper drawings created through the collaboration of a participant and a pen plotter

Designed a custom contour parsing algorithm that guides a pen plotter to add algorithmically generated doodles like houses, trees, and lakes along lines

Wrote a camera to pen plotter image mapping system that accounts for camera-plotter relative angle and position, camera distortion, and lighting variation

Publicly installed *Collaborative Drawing Machine*, generating hundreds of collaborative works with hundreds of participants

Skills: Python, OpenCV, Inkscape, vSketch, Image Processing, Installation, Pen Plotter, Woodworking, Laser Cutting

Lightsail

September 2024 – November 2024

Laser galvanometer projecting on phosphorescent fabric and flowing in the wind

Designed and built an algorithmically controlled 20,000 points per second custom laser galvanometer from circuit components

Created installation where the laser galvanometer projects high-energy light onto phosphorescent fabric; the fabric is blown around by a fan, resulting in a glowing projection representative of the wind

Skills: TouchDesigner, Electrical Engineering, Laser Operation, Soft Sculpture, Installation

Scribbler

February 2024 – December 2024

Generative asemic (without meaning) script pen plotter mimicking the structure of handwriting

Researched the transcultural graphical elements and data encodings that emerge from written languages with independent linguistic roots

Created a generative asemic script which makes use of my findings to accurately mimic the structure of human writing

Interfaced generative script with custom pen plotter system to write asemic script in realistically imperfect human handwriting

Collaborated with educational content creator PurpleMind to produce a video that explores machine-generated asemic handwriting in the context of *Scribbler*

Skills: Semiotics, Python, Inkscape, Pen Plotter, Education, Video Editing

Mandelbrot-Julia 4D Fractal Visualization

February 2024 – December 2024

Live-calculated visualization of the four-dimensional Mandelbrot-Julia set fractal

Wrote an efficient CUDA algorithm to calculate the 4-dimensional Mandelbrot-Julia fractal and designed reparameterization of the 4-space set in two spatial, a temporal, and a color dimension

Built front end that allows translation, scaling and custom resolution in all four dimensions and rotation across all six orthogonal planes of 4-space

Wrote simple compiler which converts human-writable instructions into 4 dimensional transformations, rotations, and scalings, allowing scripted navigation of the fractal

Skills: CUDA, OpenCV, Python, Compilers, Tkinter, Algorithms, Color Theory, Frontend

Flock Finder October 2024 - November 2024

Live physical representation of the flight of birds

Downstreamed YOLOv8 object detection to efficiently detect birds in flight outside my window

Interfaced YOLO with pen plotter allowing the plotter to draw an abstracted bird at the corresponding location and scale of each bird YOLO detects

Skills: YOLOv8, Pen Plotters, Python, OpenCV, Image Processing

Exhibitions and Artist Talks

Video Artist Conclave
Tech25, Pittsburgh PA, May 2025 - *Lightsail*

REM (Rapid Eye Movement)
Tomayko Foundation, Pittsburgh PA, May 2025 – *Collaborative Drawing Machine*

Meeting of the Minds
CMU, Pittsburgh PA, April 2025 – Talk on *Collaborative Drawing Machine*

The Squeeze Art Exhibition
The Frame Gallery, Pittsburgh PA, April 2025 – *Scribbler*

Open Studios 3024
Carnegie Mellon University College of Fine Arts, Pittsburgh, PA, December 2024 - *Scribbler*

Live Visuals Meetup
Tech25, Pittsburgh PA, November 2024 – *Lightsail*

Tech25 SHOWCASE
Tech25, Pittsburgh PA, November 2024 – Talk on *Lightsail*

Art Publications

2025 Carnegie Mellon Senior Catalogue, May 2025 – *Collaborative Drawing Machine*

Lemon Publication, Issue #03: Junction, April 2025 – *Scribbler*

Honors and Awards

University Honors, Carnegie Mellon University, May 2025

Frank-Ratchye Further Fund for Innovative Artworks, Frank-Ratchye STUDIO for Creative Inquiry, September 2024

Dean's List, BXA Intercollege Program, Fall 2021, Fall 2023 – Spring 2025

Skills

Languages and Libraries

Python, Java, JavaScript, C#, C, Standard ML, x86 Machine Code, G-code, HTML, Google Drive APIs, Node.js, React.js, OpenCV, YOLO, CUDA, FFmpeg

Software

Autodesk Maya, Rhino, Unity, Processing, P5.js, vSketch, GitHub, MediaWiki, TouchDesigner, Inkscape, Adobe Suite, Video Editing Tools, MAX (MSP), NDI Tools, Q-SYS

Hardware

Pen Plotters, Laser Cutters, Laser Galvanometers, 3D Printing (Extrusion), Sensel (Haptics), Oculus and Vive VR, CyanPuppets and xSens Motion Tracking

Primary Creative Media

Light, Software, Circuitry, Wood, Metal, Glass, Soft Sculpture, Pen and Paper, Mechanical Plotters

Interpersonal

French (Fluent), Teaching, Public Speaking, Teamwork, Communication

References

Available upon request