Christian Swinehart

CURRICULUM VITAE

SKILLS

LANGUAGES

Python, JavaScript, Rust, C, Bash, Make, Objective-C, Perl, C++, Java, Scheme

FRONT-END

React, jQuery, Lodash, Chroma, Handlebars, Less, Mapbox

SERVER-SIDE

Nginx, Caddy, Docker, Prisma, CouchDB, Postgres, Express, Tornado, GitHub Actions

APPLICATIONS

Illustrator, InDesign, Git, Excel, After Effects, Figma, Photoshop, Max/MSP

GRAPHICS ENVIRONMENTS

Canvas, SVG, Quartz, P5.js, D3, Three.js, Zdog, PlotDevice

DATA ANALYSIS

NumPy, Pandas, SQL, Seaborn, BeautifulSoup, MATLAB, *Numerical Recipes in C*

SEE ALSO

DESIGN PORTFOLIO

samizdat.co

CODE REPOSITORY

github.com/samizdatco

CONTACT

drafting@samizdat.co

EDUCATION

RHODE ISLAND SCHOOL OF DESIGN (2008)

M.F.A. | Graphic Design

Thesis work centered on information graphics, physicalized interfaces, and typography. Received the school's *Award of Excellence* in my final year and an intramural research grant to study Ramon y Cajal in 2006.

BRANDEIS UNIVERSITY (2005)

Ph.D. | Computational Neuroscience

Studied under Laurence F. Abbott with a *dissertation* on a biologically plausible mechanism for reinforcement learning in neural networks. Our research was *published* in the journals *Network, Neural Computation,* and *Neurocomputing,* and presented at the *Society for Neuroscience, Cosyne*, and *CNS* conferences.

DICKINSON COLLEGE (1998)

B.S. | Cognitive Science

Graduated with a self-developed major whose curriculum I designed by combining psychology, neurobiology, computer science, and philosophy coursework and an independent thesis project.

TEACHING

COLUMBIA UNIVERSITY (2022–)

Currently teaching *Introduction to Data Visualization* in the Computer Science department.

MARYLAND INSTITUTE COLLEGE OF ART (2021–)

Designed and taught electives on *Information Visualization*, *Front-end Development*, and *Creative Coding* in the Graphic Design department.

PRATT INSTITUTE (2019–)

Entering my fourth year of teaching *Data Integrity* as a senior elective to students in the Communications Design department.

PARSONS (2017–2020)

Taught for four years as part of the M.S. in Data Visualization program. I revamped the *Data Visualization & Information Aesthetics* course, supervised masters thesis projects in *Major Studio II*, and covered the nuts and bolts of data science in *Data Sructures*.

RHODE ISLAND SCHOOL OF DESIGN (2015–2017)

Created and taught an elective in the Graphic Design department called *Lies, Damned Lies, and Data Visualization* for three years and co-taught a semester of *Graduate Studio I*.

PROFESSIONAL EXPERIENCE

OFFICE OF UNSPECIFIED SERVICES (2010–)
Partner
Recent clients include Yale School of Management, System.com, Boxcar Press, The New York Times, Citibank, Ennead, Diller Scofidio + Renfro, Allied Works, and Mitch Epstein.

creative direction by <u>Lisa Strausfeld</u> in collaboration with lead designer <u>Hilla Katki</u>

BLOOMBERG VISUAL DATA (2011–2013)
Visualization Developer
Designed and developed interactive data visualization products covering politics, society, the environment, and the global economy.

also developed sites for Abbott Miller's team and consulted for Michael Bierut's.

PENTAGRAM (2007–2010)
Interaction Designer & Lead Developer
User experience and development on Lisa Strausfeld's National Design Award winning team. Clients included Gallup, Lincoln Center, OLPC, Litl, and the Museum of Arts and Design.

SELECTED CLIENT WORK

directed by former treasury secretary Timothy Geithner

NEW BAGEHOT PROJECT (2019–2020) ‹*yale.samizdat.co*›
Yale's Program on Financial Stability was created in the aftermath of 2008 and engages in research that leaves us better prepared to respond to (or ideally prevent) future economic meltdowns. This project aims to exhaustively catalog the history of financial crises and evaluate the effectiveness of the various attempts at ameliorating them.

published in the April 2018 issue of the journal <u>Computer</u>

LAWRENCE BERKELEY NATIONAL LABORATORY (2017)
Designed figures for an IEEE publication written by my longtime scientific collaborator, Dr. Kristofer Bouchard.

in conjunction with a rebranding project at Critical Mass

CITIBANK ACCOUNT DASHBOARD (2015)
Developed visualizations as part of a redesign of the account interface shown to checking and credit card customers on the web and mobile apps. <u>My diagrams</u> were used to show trends across transaction histories and helped monitor balances, expenses, and savings goals.

selected for <u>The Best American Infographics 2014</u> and won Grand Prize in the 2013 <u>Information is Beautiful Awards</u>

BLOOMBERG BILLIONAIRES INDEX (2014) ‹*bloom.samizdat.co*›
The Billionaires Index visualized the wealth of the world's 500 richest people—information previously only available through the Bloomberg Terminal. It was designed by the Visual Data team where I contributed the front-end development, interaction design, and data API.

winner at Type Directors Club 55 for Best Website and included in of Lisa Strausfeld's National Design Award

DILLER SCOFIDIO + RENFRO WEBSITE (2008)
An early instance of 3D interaction design on the web, this portfolio site presented the work of the artists and architects at this groundbreaking firm within a VR-like, spatially organized <u>environment</u>.

SELECTED OPEN SOURCE PROJECTS

SKIA CANVAS (2020) ‹*github.com/samizdatco/skia-canvas*›

high performance, high quality, cross-platform graphics using Google's Skia rendering library

A javascript library for Node.js that enables the creation of bitmap and vector files outside of the browser. It provides a drawing model identical to the HTML canvas element via an emulation I wrote in *Rust* for speed and memory-safety.

PLOT DEVICE (2014) ‹*plotdevice.io*›

used in all of my classes as a pedogogical tool and for production of print-focused visualizations

PlotDevice is a Macintosh application used for computational graphic design. It provides an interactive Python environment where you can create two-dimensional graphics and output them in a variety of vector, bitmap, and animation formats. It is meant both as a sketch environment for exploring generative design and as a general purpose graphics library for use in external Python programs.

ARBOR.JS (2011) ‹*arborjs.org*›

over 3,000 stars and forks on github

In a number of projects I've made use of force-directed layout routines for constructing network diagrams. Arbor is a javascript library that abstracts away the physics simulation and provides hooks for rendering the resulting graphs in the developer's choice of canvas, SVG, or HTML.

SELF-INITIATED DESIGN PROJECTS

ONE BOOK, MANY READINGS (2021, 2010) ‹*samizdat.co/cyoa/v2*›

featured in étapes magazine, Slate, Fast Company, Gizmodo, Brain Pickings, & Atlas Obscura

A visual analysis of the *Choose Your Own Adventure* books of my youth. The project examines the structure of choices in the books and how it changed over the course of the series. Animations allow you to see patterns among the many unique paths through each of the books.

INFINITE DIGEST (2021–) ‹*samizdat.co/projects/infnite-digest*›

in-progress sketches of the various plotlines and a 3D model of chronology vs page order

My current research uses visualization methods to make sense of chronological nonlinearities within literary narratives. The initial dataset is the text and structure of David Foster Wallace's novel *Infinite Jest*. Its length, enormous number of characters, and flashback-heavy plotting make it an ideal example of *fabula and sjužet* diverging.

BDBGS! (2010) ‹*samizdat.co/digital/bdbgs*›

reprinted in You are Here N.Y.C. (2016)

After scraping data from the Bedbug Registry and New York's 311 system, I created an interactive map to view incidents and animate the sequence over time. Clicking the play button begins the march from 2007's relatively quiet scene to the explosion of reports in 2010 & '11.

ECHOLALIA (2006) ‹*samizdat.co/digital/echolalia*›

bird syntax visualizations featured in Your Idea Starts Here (2016)

In collaboration with Michael Brainard's lab at U.C.S.F., I visualized statistical patterns in Zebra Finch vocalization data as a way to unravel the 'grammar' of birdsong and the neural circuitry underlying it.

PUBLICATIONS

PATTERN RECOGNITION (2008)
M.F.A. thesis | Rhode Island School of Design
advisor: Matthew Monk
program head: Bethany Johns

DIMENSIONAL REDUCTION FOR REWARD-BASED LEARNING (2006)
Network: Computation in Neural Systems 17(3): 235–252

RESPONSE MODULATION: A MECHANISM FOR THE GUIDANCE OF LEARNING (2005)
Ph. D. dissertation | Brandeis University
advisor: Laurence F. Abbott
program head: Eve Marder

designed & typeset using LaTeX

SUPERVISED LEARNING THROUGH NEURONAL RESPONSE MODULATION (2005)
Neural Computation 17: 609–631

CONTROL OF NETWORK ACTIVITY THROUGH NEURONAL RESPONSE MODULATION (2004)
Neurocomputing 58–60: 327–335

CONFERENCE PRESENTATIONS

SOCIETY FOR NEUROSCIENCE (2002–2004)
Orlando, New Orleans, & San Diego

COSYNE: COMPUTATIONAL AND SYSTEMS NEUROSCIENCE (2004)
Cold Spring Harbor Laboratory, Long Island

CNS: ANNUAL COMPUTATIONAL NEUROSCIENCES MEETING (2003)
Alicante, Spain