

Jeffrey Ventrella

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ventrella.com



Massachusetts Institute of Technology (The Media Lab)	MS	Media Arts and Sciences	1994
Syracuse University	MFA	Computer Graphics/Video	1987
Virginia Commonwealth University	BFA	Art Education/Art History	1984

University of Maryland Institute for Bioscience College Park, Maryland
Developer/designer (Contract) 7/20 – current

Developing high-end virtual reality applications for molecular modeling and cryo-electron microscopy; continuing development of front-end and data viz for nmrPipe/nmrDraw, in collaboration with Dr. Frank Delaglio; prominent software app for spectral analysis of nuclear magnetic resonance data

EyeBrain Media Petaluma, CA
Owner/Developer/Designer 1/20 – current

Several ongoing projects including successful innovative generative NFT collaborations with Canton Becker, Math visualizations with Michael Dunworth, and new initial involvement in decentralized web

CSforAll New York, NY **Developer/designer (Contract)** 4/19 – 9/19

Developed prototype and core functionality for an interactive crowd-sourced timeline of the history of computer science education. Developed JSON interface and data representation using web technologies

EndlessOS Hack, San Francisco, CA **Digital Toymaker (Contract)** 8/18 – 12/18

Designed and implemented the first game for the Hack product

MeshOS, Sausalito, CA **Designer/Engineer (Contract)** 3/18 – 6/18

Consulted on design and interaction for the MeshOS system

Leap Motion, San Francisco, CA 4/17 – 12/17

Designer/Engineer (Contract)

Worked with engineers to implement my original Clusters algorithm in VR

MeshOS, Sausalito, CA **Designer/Engineer (Contract)** 2/17 – 8/17

Consulted on design and interaction for the MeshOS system

Wiggle Planet, LLC, Petaluma, CA 10/12 – 1/18

Founder

Developed kid-friendly mobile apps featuring self-animated characters and artificial life with geo-located augmented reality

Virtuocity VR, Inc. London, UK 8/16 – 12/16
Developer/Designer (Contract)
R&D in a virtual reality application using the Samsung GearVR and Unity

Pillantas, Inc. San Francisco, CA 6/16 – 8/16
Developer (Contract)
R&D using the Microsoft HoloLens; developed prototypes in Unity/Windows 10 for a highly-innovative augmented reality interface

Binary Simplex Washington, DC 1/15 – 12/15
Developer (Contract)
Implementing cross-platform (iOS and Windows) rendering tools for patented optimized 3D mesh generation based on DICOM files.

For Goodnes Sake San Francisco, CA 10/14 – 1/15
Designer/Developer (Contract)
Design and implementation of javascript-based simulation components for female-oriented sexuality education app

High Fidelity San Francisco, CA 4/13 – 8/13
Developer (Contract)
Helped build-out core avatar systems, user interactions, particle systems, camera behaviors, and other virtual world features

Visual Music Systems, Boston, MA 6/11 – 9/12
Principle Developer
Developed high-performance, realtime computer animation for a performative artform incorporating immersive displays and gestural input. Particle systems, 3D math/physics, and parameter-based control

The Internet Archive San Francisco, CA 10/10 – 11/10
Designer/Engineer (Contract)
Worked closely with internet visionary **Ted Nelson** on implementation of ZigZag for the **Open Library**. Project management, JavaScript/HTML5/CSS development

Emota.net Menlo Park, CA 7/09 – 9/10
Designer/Engineer (Contract)
NSF-funded start-up. Consulted on design; development: interactions and interfaces for social connectedness. Developed JavaScript code for web and iPad

School of Interactive Arts and Technology, SFU, Vancouver, BC 9/09 – 8/10
Research Scholar: nonverbal communication in virtual worlds.
Taught Advanced Game Design class to 4th-year students.
Wrote the book: *Virtual Body Language*: www.virtualbodylanguage.com

The Internet Archive San Francisco, CA 3/08 – 7/09
Developer/Designer: built home page for **NASAIMages.org**; designed and implemented the 'create account' page and other pages. Helped design the Open Library Book reader using JavaScript/CSS.

<p><u>Centre for Digital Media</u> Vancouver, BC Faculty: Developed curriculum and taught <u>Building Virtual Worlds</u>, advised students on industry-funded projects</p>	8/08 – 12/08
<p><u>Millions Of Us</u> Sausalito, CA Consultant: Developed avatar-customization tool, general consulting</p>	1/08 – 2/08
<p><u>SheZoom</u> New York, NY Animator: designed and implemented <u>Shemoticons</u> in Flash</p>	12/07 – 1/08
<p><u>Linden Lab (Second Life)</u> San Francisco, CA Senior Developer: Developed software and designs for Second Life, invented Flexi Prims, <u>FollowCam</u>, vehicle physics, camera behavior, <u>avatar customization</u>, and user interfaces</p>	1/05 – 11/07
<p><u>Adobe Systems</u> San Jose, CA Programmer: Worked with the <u>Acrobat 3D</u> team (originally Adobe Atmosphere), developed JavaScript for direct manipulation, modeling, and interactive behavior of 3D content</p>	2/04 – 7/05
<p><u>There, Inc</u> Menlo Park, CA Co-Founder and Principle Inventor of <u>There.com</u> Developed prototype with Will Harvey April 1997 to April 1998; co-founded company with Will on April 1998. Invention of technologies and designs for avatars, vehicle physics and navigation, camera behavior, sound design, animal behaviors, and real-time voice-activated speech animation. Principal author on first <u>patent</u> granted to the company.</p>	4/97 – 1/04
<p><u>Rocket Science Games, Inc.</u> San Francisco, CA Designer/Engineer: Designed and prototyped software games. Worked with author <u>Michael Crichton</u> on a game prototype. Designed <u>Darwin Pond</u></p>	7/95 – 4/97
<p><u>ABSOLUT Vodka</u> (via <u>TBWA/Chiat Day</u> NY, NY) Artist/Programmer: Developed code to generate stylized genetic algorithm-based variations of the <u>Absolut Vodka Bottle</u> using interactive evolution. Published online as promotion for the "Absolut Kelly" web site, Consulted with <u>Kevin Kelly</u> on the site</p>	2/96 – 5/96
<p><u>Protozoa</u> San Francisco, CA Software Engineer: Worked with <u>Brad deGraf</u>. Developed interactive tool to generate 3D tree models for a computer game.</p>	3/95 – 3/95
<p><u>Tufts University, Experimental College</u>, Medford, MA Instructor: Designed and taught course: "Populating Virtual Reality". (Artificial Life: cultural implications, technical aspects).</p>	1/95 – 3/95
<p><u>Papyrus Design Group</u>, Somerville, MA Designer: Developed script and consulted on animated characters for proposed CD-ROM-based interactive comedy game.</p>	12/94 – 3/95
<p><u>Do While</u> Studio, Boston, MA Artist: Developed interactive animations; worked with artist Jen Hall</p>	9/94 – 4/95

<p><u>Cinergi Productions</u> Lenox, MA Artist/Programmer: Feature Film Special Effects Animator, (Sylvester Stallone Film, Judge Dredd) Programmed custom animation effects on SGI IRIS; collaborated artists.</p>	7/94 – 8/94
<p><u>Visible Language Workshop, MIT Media Lab,</u> Cambridge, MA Research Assistant: multimedia interfaces, AI, information design, and animation.</p>	9/92 – 3/94
<p>University of California, San Diego, <u>Visual Arts Dept.</u> San Diego, CA Instructor: Worked under Harold Cohen, developed curricula and taught courses in Graphics Programming, 3D CAD, and C Language</p>	1/92 – 6/92
<p>Syracuse University Computer Graphics Specialist, Created Scientific Data Visualizations for supercomputer research. Taught workshops; Produced videotapes; Acquired video equipment, Attended Data Visualization Workshops at NCSA.</p>	7/87 – 12/91
<p><u>Syracuse University Department of Industrial Design,</u> Syracuse, NY September 1987 – December 1991 Instructor: Taught Computer Aided Design for Industrial Design; Used SDRC-IDEAS software running on a VAX mainframe. Developed curriculum and co-authored graphics library for programming</p>	9/87 – 12/91

Travel: Melbourne, Mumbai, Seoul, Vienna, Paris, Kyoto, Banff, Barcelona, Florence, Bilbao, Vienna, London, Geneva, Dublin, Vancouver,

Technical Skills

Software Languages:	JavaScript, C++, C#, Java
Development Tools:	Qt, XCode, Unity, Visual Studio
Other:	Video production, augmented/virtual reality, Adobe, Gimp, procedural animation, web design, generative NFT's, audio design/processing, visual number theory, photography, music composition/improvisation, music theory, artificial life

Lectures/Presentations

<p>Mendocino Redwoods, California Presented "The Future of Decentralized Art and Music" at DWEB Camp</p>	8/22
<p>Linz, Austria Presented paper on fractal curve techniques at the Bridges Math/Art conference</p>	6/19
<p>Palo Alto, California Presented original research at Stanford University as part of the MediaX series https://mediax.stanford.edu/events/artificial-life-meets-augmented-reality</p>	4/17
<p>San Jose, California</p>	

Presented my work on AI-driven characters for augmented reality at the Narrative Summit Santa Barbara, California	11/16
Presented keynote at the Immersive Learning conference	6/16
Los Angeles, California Presented on a panel at Digital Hollywood	10/15
Barcelona, Spain Presented keynote presentation at VISIGRAPP conference	2/13
Pittsburgh, PA Presented Virtual Body Language at Carnegie-Mellon University's ETC	10/11
Vancouver, BC, Canada Gave keynote presentation at International Symposium on Computational Aesthetics in Graphics, Visualization, and Imaging : a SIGGRAPH co-located conference.	8/11
Menlo Park, California Gave a presentation at the Talks on Computing Systems series at Carnegie-Mellon University, Silicon Valley, NASA Ames Campus	5/11
Laval, France Gave the first keynote at the Laval Virtual conference	4/11
Los Angeles, California <i>Virtual Body Language</i> Presented avatar expression at an invitation-only workshop at ICT, USC	2/11
Banff, Alberta, Canada , <i>Self-Portraits in Mandelbrot Genetics</i> Smart Graphics . Presented mathematically-generated artworks	6/10
Toronto, Ontario, Canada , <i>The Gestural Turing Test</i> AAMAS Presented motion-capture experiment in nonverbal communication and believability (details available at http://gesturalturingtest.com/)	5/10
Melbourne, Australia , <i>Workshop Lecturer</i> ACAL - Presented ecological simulation using planetary toy physics, emphasizing Open, collaborative development	12/09
Palm Springs, California , <i>Keynote Speaker</i> . HPC Horizons . How genetics, physics, and communication can be represented for efficient traversal over the internet for virtual worlds. Other Keynote speakers were Craig Venter and Jaron Lanier.	3/08
Boston, Massachusetts <i>Prime Numbers are the Holes Behind Complex Composite Patterns</i> (The Divisor Plot) at the 7th International Conference on Complex Systems	10/07
Vancouver, BC, Canada <i>Online Body Language - Expressivity and Identity in Avatars and Autonomous Creatures</i> School of Interactive Art and Technology (SFU) Research Colloquium	9/07

Boston, Massachusetts <i>Physical Avatar</i> – a new technology for Second Life SIGGRAPH conference Tech Talk	8/06
Bloomington, Indiana <i>A Particle Swarm Selects for Evolution of Gliders in Non-uniform 2D Cellular Automata</i> - paper presented at Alife X conference	6/06
Pittsburg, Kansas presented overview of work at Pittsburg State University	4/05
Bilbao, Spain conducted workshop at the Universidad del Pais Vasco on <i>techniques for using mathematics to generate portraits. Presented interactive and print work at La 17 Exposición de Audiovisuale.</i>	12/04
Bilbao, Spain <i>Sharing the Virtual Ecosystem (the Interactive Web of Virtual Life and Avatars)</i> Art and Technology Symposium, Universidad del Pais Vasco	12/03
Stanford University, Palo Alto, CA <i>Avatar-Centric Communication in There</i> , co-lectured with Dr. Chuck Clanton , at the Human-Computer Interaction Seminar	4/03
Dundee, Scotland <i>Artful Biology: Simulated Creatures for Software Entertainment</i> , presented at International Centre for Computer Games and Virtual Entertainment	2/01
Paris, France <i>Avatar Physics and Genetics</i> , presented at Virtual Worlds, 2000	7/00
San Jose, CA presented artificial life research at Digital Biota conference	11/99
Syracuse, NY Presented overview of artistic development Syracuse University Visual and Performing Arts Dept.	2/99
Paris, France <i>Designing Emergence in Animated Artificial Life Worlds</i> presented at Virtual Worlds 98	7/98
Los Angeles, CA <i>Attractiveness vs. Efficiency (How Mate Preference Affects Locomotion in the Evolution of Artificial Swimming Organisms)</i> - presented at Artificial Life VI	6/98
Brighton, England Darwin Pond - Demonstration presented at the European Conference on Artificial Life	7/97
Montreal, Canada <i>Eukaryotic Virtual Reality (The Emergent Art of Artificial Life)</i> - presented in a Panel at ISEA95 conference	9/95
Geneva, Switzerland <i>Disney Meets Darwin</i> - Paper presented at Computer Animation, '95	4/95
Cambridge, MA <i>Explorations in the Emergence of Morphology and Locomotion Behavior in Animated Characters</i> - Paper presented at Artificial Life IV , MIT	7/94
San Diego, CA Artificial Life and a Computer Art of Emergence - slide and video lecture: Center for Research and Computing in the Arts, UCSD	5/92
New London, CT <i>A Genetic Approach to Computer Art</i> - Visiting Artist, lectured and conducted workshops on mathematical images, Center for Arts and Technology, Connecticut College	10/91
San Francisco, CA <i>Factors Inducing Periodic Breathing in Humans (a case study in</i>	

<i>scientific data visualization</i>), co-lectured with Dr. Wayne Fordyce, at Visualization '90	10/90
Halifax, Nova Scotia <i>Computer Graphics for the Human</i> - a half-day tutorial, presented at Graphics Interface/Vision Interface	5/90
Williamsburg, VA A Computergraphical Model of Multi-generational Family Systems – Presented (with Jim Amodio and Tom Schur) at Advanced Computing for the Social Sciences	5/90
New London, CT <i>Using Mathematics to Arrive at Imagery</i> - Presented at the Arts and Technology Symposium II Connecticut College	2/89
Syracuse, NY Television Interview (with computer animations) on 6:00pm news story on Chaos: interviewer, Scott Atkinson, News Center Five	7/88
Syracuse, NY Fractal Geometry in Art - The Mandelbrot Colloquium, with four other speakers <i>including Dr. Mandelbrot</i>	11/86

Published Works

Composite Number Polyrythms: Animating and Sonifying the Divisor Plot

Paper published in Bridges 2022 Conference Proceedings, 2022

The Family Tree of Fractal Curves

A book of original research, math, geometry: fractalcurves.com

Embodied AI Characters for Emergent Narrative

OurMedia Blog: <http://ourmedia.org/embodied-ai-characters-for-emergent-narrative/>

Brainfilling Curves – a Fractal Bestiary

A color book about a system for discovering and rendering plane-filling fractal curves.

[Book web site](#)

From Ragdoll Physics to Expressive Avatars

Paper published in the International Journal of Design and Innovation Research: 2011

[see abstract](#)

Virtual Body Language

Currently available at www.virtualbodylanguage.com - published by [ETC Press](#) in 2011

Self-Portraits in Mandelbrot Genetics – Springer: conference proceedings of [Smart Graphics, 2010](#)

The Gestural Turing Test - published in the conference proceedings of [AAMAS, 2010](#)

Glider Dynamics on the Sphere: Exploring Cellular Automata on Geodesic Grids. to be published in the Journal of Cellular Automata (Editor Andy Adamatzky)

<http://www.ventrella.com/Alife/Cells/GlidersOnSpheres.pdf>

A Spherical XOR Gate Implemented in the Game of Life to be published in the book: Game of Life Cellular Automata, Editor Andy Adamatzky, Springer.

Evolving Structure in Liquid Music [The Art of Artificial Evolution](#), Natural Computing Series, Springer-Verlag, Editors: Romero, J., and Penousal, M. November, 2007

<http://www.springer.com/west/home/computer/foundations?SGWID=4-156-22-173745009-0>

Evolving The Mandelbrot Set to Imitate Figurative Art *Innovations in Evolutionary Design*, Natural Computing Series, Springer-Verlag, Editors: Hingston, P., Barone, L., and Michalewicz, Z. Berlin, 2007
<http://www.ventrella.com/Tweaks/Portraits/EvolvingMandelbrot.pdf>

Gliders and Riders - A Particle Swarm Selects for Coherent Space-time Structures in Evolving Cellular Automata – a chapter in *Stigmergic Optimization*, from the Studies in Computational Intelligence Series. Vol 21, Springer-Verlag. eds. Ajith, Grosan, and Ramos. page 131, 2006
<http://www.springer.com/east/home/computer?SGWID=5-146-22-173661230-0>

GenePool – Exploring the Interaction Between Natural Selection and Sexual Selection –Chapter 4 in *Artificial Life Models in Software*. ed. Andrew Adamatzky and Maciej Komosinski. Springer, 2005. Page 81
<http://www.springerlink.com/content/tv10101372574541/>

Animated Artificial Life, Chapter 3 in *Virtual Worlds (Synthetic Universes, Digital Life, and Complexity)* (ed. Heudin, J.C.) Perseus Books, 1999 pages 67-94
http://www.ventrella.com/Alife/Animated/animated_0.html

A Computergraphical Model of Multi-Generational Family Systems, chief author and editor (with James H. Amodio, MPS, and Thomas J. Schur, MSW), in *Social Science Computer Review*, Spring 1991 Volume 9 Number 1, pages 13-26
<http://ssc.sagepub.com/cgi/content/abstract/9/1/13>

A Particle Swarm Selects for Evolution of Gliders in Non-uniform 2D Cellular Automata published in *Alife X* conference proceedings, MIT Press, 2006
<http://www.ventrella.com/Alife/Cells/GlidersAndRiders/SwarmGliders.pdf>

Avatar Physics and Genetics, published in *Virtual Worlds*, 2000 (ed. Heudin, J.C.), Springer-Verlag Berlin/Heidelberg
<http://portal.acm.org/citation.cfm?id=647690.731011&coll=GUIDE&d=GUIDE&CFID=15151515&CFTOKEN=6184618>

Designing Emergence in Animated Artificial Life Worlds, *Virtual Worlds*, 98 (ed. Heudin, J.C.) 1998, Springer-Verlag pages 143-155 <http://portal.acm.org/citation.cfm?id=733452>

Attractiveness vs. Efficiency: (How Mate Preference Affects Locomotion in the Evolution of Artificial Swimming Organisms), *Artificial Life VI*, 1998, MIT Press
<http://portal.acm.org/citation.cfm?id=286160&d=&coll=&CFID=15151515&CFTOKEN=6184618>

Sexual Swimmers: Emergent Morphology and Locomotion Without a Fitness Function, From *Animals to Animats*, (page 484) 1996, MIT Press http://www.ventrella.com/Alife/Sexual/sexual_0.html

Disney Meets Darwin: The Evolution of Funny Animated Figures, *Computer Animation '95 Proceedings - Geneva Switzerland* <http://portal.acm.org/citation.cfm?id=791214.791452>

Explorations in the Emergence of Morphology and Locomotion Behavior in Animated Characters, *Artificial Life IV* proceedings, MIT Press, 1994

Other Published Materials:

Write-up on Air Traffic Control Visualization Prototype: Enhancing Air Traffic Control Information, by David L. Chandler, in the [MIT Technology Review](#), pages 10-11 8/94

Co-designed cover of **IBM Systems Journal** (vol. 33, No 2 1994) with J.F. Musgrave, image depicts a family of images I designed. 6/94

Created five illustrations for book: [**The Children's Machine \(Rethinking School in the Age of the Computer\)**](#), by Seymour Papert, 6/93

Two images published in the large color-illustration book: **Digitale Visionen**, IBM Germany, by Dr. [Herbert Franke](#), 1989

Creatures du Plan Complexe, (French translation of IRIS Universe '88 article with color illustrations, in Tech Images, January issue: Paris France, 1/89