

STEVE DiPAOLA CV

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Principal Fields of Interests:

Computational Expression, Emotion and Creativity Systems
Artificial Intelligence & Computational Cognition Systems
3D Computer Graphics, Animation, Simulation
Computer based Games and Visualization
Facial, Character, and Agent based Systems
Art Research & Computer Creativity Practices
Digital & Interactive Fine Art

Education

PhD	Interdis: Computer & Cognitive Science	Univ. of British Columbia, BC	2013
Master of Arts	Computer Graphics	New York Institute of Technology, NY	1991
Bachelor of Science	Computer Science	State University of New York at Stony Brook, NY	1981

ACADEMIC EXPERIENCE:

Professor	<u>Simon Fraser University</u>	2001 - present
Professor , School of Interactive Arts and Technology		Associate Faculty , Program in Cognitive Science
Graduate Chair , School of Interactive Arts and Technology		2011-2012
Director, Cognitive Science Program		2010-2012; 2013-2015 (sabbatical in between)

Developing programs, curriculum and research in this new **interdisciplinary school of SFU**, which actively mixes **science, interactive design, and art**. A research-based institution, the SFU School of Interactive Arts and Technology has over 800 undergrads and 120 graduates & PhDs. **Conduct funded research** and **supervise graduates** and PhDs and active on graduate, research and school issues.

Adjunct Researcher, Univ. of British Columbia - Media and Graphics Interdisciplinary Centre (MAGIC) 2006 – present

<u>Faculty</u>	<u>Stanford University</u>	2000 - 2001
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As **lecturer** and then **faculty** in the **Dept. of Art and Art History** was **invited to create and teach original courses** on **Interactive Narrative, The Illusion of Life: Facial Animation**, and **3D Digital Production** to an interdisciplinary group of undergraduates, graduates, and PhDs. All courses had significant project-based outcomes. Helped grow the **Stanford Univ. Digital Arts Center (SUDAC)**, an interdisciplinary teaching laboratory (art,HCI,CS) in digital arts - “an academic space dedicated to the practical and theoretical exploration of information technology and art”. Working with the Director Greg Niemeyer, helped to make SUDAC a productive center currently offering 6 courses per year. All SUDAC courses were developed with an emphasis on project-based learning, which culminated in annual presentations of digital art in public spaces and of CG short feature animations.

~ See Industry Experience for work between 1992-2000 ~

<u>Research Scientist</u>	<u>New York Institute of Technology (NYIT)</u>	1984 - 1992
	<u>Computer Graphics Laboratory</u>	

As a **senior research staff** member of this **renowned computer animation research center**, participated in several initiatives in all aspects of computer animation R&D. Most researchers were both artists and technologists, creating and collaborating with visiting artists Peter Gabriel, Kraftwerk, Twyla Tharp, Frank Stella and Philip Pearlstein.

- Designed and implemented an interactive 3D facial modeling & animation system, used in award winning projects.
- Authored several papers on 3D computer facial and character animation. (See papers and lectures section.)
- Animated and directed research pieces screened at SIGGRAPH juried film shows every year from 1984-89.
- Technical art director for many commercial & art animation projects appearing in films, TV, and music videos.
- As adjunct faculty with NYIT, supervised graduate students in projects and taught computer graphics courses.
- Architect of proposed 3D Student Lab, an interdisciplinary facility offering coursework for artists and engineers.

INDUSTRY EXPERIENCE:

Consultant Highlights

- **Eastman Kodak** - Expert consultant with research group on recording of digital personas.
- **Institute for the Future** - Invited expert on "The Future of Identity" for their Fortune 500 report and conference.
- **Electronic Arts/Maxis** - Created facial creation system for the simulation game, "The Sims" using my theories on expression systems and my research on genetically generated faces. "The Sims" became the #1 selling game of 2001.

Chief Technology Officer

Apearance Technologies

2001 - 2002

Co-founder of San Francisco start-up, which used my research in **3D facial animation and communication** to create a software API product for web-based communication, interactive cinema and electronic games. A prototype of this software was used to create a facial creation system for Maxis' game, "The Sims".

V.P. Creative Development

Muse Communications

2000 - 2001

Directed Creative Development. Muse is **creating a next generation, broadband platform** that integrates multiple technologies such as HTML, rich media, 3D graphics, and multi-user community into a unified, synergistic environment.

Creative Director

Saatchi & Saatchi Interactive (Darwin)

1997 - 1999

As Creative Director, founded and co-ran the San Francisco office of Saatchi & Saatchi Interactive.

- Darwin is the interactive innovation arm of Saatchi & Saatchi. Working independently & with Saatchi. Darwin's **mandate is to explore strategic applications of emerging technologies.**
- With business partner, developed the independent SF office to almost 20 employees with positive earnings.
- Won business of Hewlett-Packard, PeopleSoft, SJ Mercury Times, Macromedia, eTrade and others.

Created award-winning work with strengths in creative, strategic and technical areas:

- HP Palmtop Tour, first commercial site to include interactive characters.
- Kayak Decision Assistant a tool for e-purchasing HP computers. Awards by Macromedia: best use - database driven Flash, & Communication Arts.

Director of Development

Communities.com

1999 - 2000

Creative Director & Architect

OnLive! Technologies (now part of Communit.es.com)

1994 - 1997

Directed the high end OnLive division specializing in: broadband, 3d & audio based virtual communities.

- Team included: 2D/3D artists, web & UI designers, audio experts, production managers and programmers.
- Defined artistic, functional and overall direction of entire 3D product and worlds including:
 - 3D world and avatar design, web site production, content programming, UI design, VR paradigms.

Co-Designed OnLive Traveler software, environments and avatars: <http://www.digitalspace.com/>

- OnLive's highly acclaimed Internet-based 3D Virtual World software and communities allow groups of people to socialize by navigating through 3D spaces while talking with their own voices via emotive, lip-syncing, 3D head avatars. Traveler's sites have including: ABC Sports, MTV Tikkiland, NEC (Japan) and MCA/Universal.
- Considered one of the leading software innovations for the PC, Traveler has been written up in or broadcast on:
 - The New York Times Wall Street Journal - Demoed on stage by both Bill Gates & Andy Grove.
 - Wired Magazine USA Today - Discovery Channel MSNBC's The Site c|net Central

Computer Animation Director

Electronic Arts

Advanced Technology Group 1992- 1994

Managed a large group of 2D / 3D artists on two cross-platform CD-ROM projects:

- Established SGI based environment (7 Alias seats) and upgraded artists' skill set to 3D production standards.
- Researched, developed and wrote plan for all art processes including:
 - Large scale SGI-based 3D character animation generation with automatic lip-sync strategies.
 - Motion capture, video, audio and music recording sessions. Plus watercolor & ink processing batch tool.
- Co-Designed & produced 3D Atlas - To date over 2 million units sold. Garnished major awards and top reviews.

Company-wide expert for Electronic Arts on 3D animation and multimedia:

- Developed company wide 3D character and motion capture strategies.
- Defined cross-platform strategies and multi-project tool needs to acquire or develop in-house.

WRITTEN, LECTURE AND EXHIBITED WORK:

Journals: Authored (Peer reviewed) Total: 30 Journals , 80 Conf papers, 1 Book, 6 Book Chapters

- Vanessa Utz V, DiPaola, S. Using an AI creativity system to explore how aesthetic experiences are processed along the brain's perceptual neural pathways, *Cognitive Systems Research*, Vol 59, pp 63-72, 2020.
- Yalcin ON, DiPaola S, "A computational model of empathy for interactive agents", *Biologically Inspired Cognitive Architectures Journal (BICA Journal)*. Vol 26, pp 20-25, BICA Research Award Winning Paper. 2018
- DiPaola S, McCaig G, Gabora L, "Informing Artificial Intelligence Generative Techniques using Cognitive Theories of Human Creativity". *Procedia Computer Science*, Special Issue: Biologically Inspired Cognitive Architectures, Vol 145, pp 158-168., 2018.
- DiPaola S, "Exploring the Cognitive Correlates of Artistic Practice Using a Parameterized Non-Photorealistic Toolkit", *Leonardo* Vol 50, pp 531-452, 2017
- Shakeri H, Nixon M, & DiPaola S, "Saliency-Based Artistic Abstraction with Deep Learning and Regression Trees", *Journal of Imaging Science and Technology*, Vol 61, No 6, pp. 60402-1-60402-9(9), 2017.
- Carlson K, Schiphorst T, & DiPaola S, Moving Collaborations: A Critical Inquiry Into Designing Creative Interactive Systems for Choreography. *EAI Journal of Creative Technologies*, Special Issue: Intelligent Technologies for Interactive Entertainment, Vol 16, No 6, 10pages. 2016.
- Etemad A, Arya A, Parush A, DiPaola S, "Perceptual validity in animation of human motion", *Computer Animation and Virtual Worlds Journal*, Vol 27, No 1, pp 58–71. 2016.
- DiPaola S, "Using a Contextual Focus Model for an Automatic Creativity Algorithm to Generate Art Work", *Procedia Computer Science. Special Issue: Bio Inspired Cognitive Architectures*, Vol 41, pp. 212-219. 2014.
- Saberi M, Bernardet U, & DiPaola S, "An Architecture for Personality-Based, Nonverbal Behavior in Affective Virtual Humanoid Character", *Procedia Computer Science. Special Issue: Bio Inspired Cognitive Architectures*, Vol 41, pp. 204-211. 2014.
- Karimghalou N, Bernardet U, DiPaola S, "A Model for Social Spatial Behavior in Anthropomorphic Virtual Characters", *Computer Animation and Virtual Worlds Journal*, Vol 25, No 3-4, pp 507–519, 2014.
- DiPaola S, Riebe C, Enns J T, "Following the masters: Portrait viewing and appreciation is guided by selective detail", *Perception*, Vol 42, No 6, pp 608–630, 2013.
- McIntosh L, Riecke B, DiPaola, S, "Efficiently Simulating the Bokeh of Polygonal Apertures in a Post-Process Depth of Field Shader", *Computer Graphics Forum*. Vol 31, No 6, pp 1810-1822, 2012.
- Seifi H, DiPaola S, Arya A, "Expressive Animated Character Sequences Using Knowledge-based Painterly Rendering", *International Journal of Computer Games Technology*, vol. 2011, Article ID 164949, 7 pages, 2011.
- Sorenson N, Pasquier, P, DiPaola S, "A Generic Approach to Challenge Modeling for the Procedural Creation of Video Game Levels", *Transactions on Computational Intelligence and AI in Games*, Vol 3, No 3, pp 229-244, 2011.
- DiPaola S, Turner J, Browne P, "Binding the pair: making a historical case for avicentric self-expression within 3D virtual communities", *International Journal of Web-Based Communities*, Vol 7, No 2, pp 157-173, 2011.
- DiPaola S, Riebe C, Enns J, "Rembrandt's Textural Agency: A Shared Perspective in Visual Art and Science", *Leonardo*, Vol 43, No 3, pp 145-151, 2010.
- Riebe C, DiPaola S., & Enns J, "Following The Masters: Viewer Gaze is Directed by Relative Detail in Painted Portraits", *Journal of Vision*, Vol 9, No 8, pp 368-368 (abstract), 2009.
- Arya A, DiPaola S, Parush A, "Perceptually Valid Facial Expressions for Character-based Applications", *International Journal of Computer Games Technology*, Vol 2009, Article ID 462315, 13 pages, 2009.
- DiPaola S, Gabora L, "Incorporating Characteristics of Human Creativity into an Evolutionary Art Algorithm", *Genetic Programming and Evolvable Machines Journal*, Vol 10, No 2, pp 97-110, 2009.
- DiPaola S, Turner J, "Authoring the Intimate Self: Identity, Expression and Role-playing within a Pioneering Virtual Community", *Loading: Journal of the Canadian Games Studies Association*, Vol 2, No 3, pp 1-14, 2008.
- DiPaola S, "Computationally Rendered Painterly Portrait Spaces", *Arctencia: Art & Science Journal*, Vol 4, No 9, pp 1-8, October-January, 2008.
- DiPaola S, "Darwin's Enduring Legacy" – Images of my research in "computer model of evolution acting on the painting, ..." selected by the Nature editors to accompany this essay (invited, not peer reviewed). *The Journal Nature*, Vol 451, pp 632-633, Feb, 2008.
- DiPaola S, Akai C, "Blending Science Knowledge and AI Gaming Techniques for Experiential Learning", *Loading: Journal of the Canadian Games Studies Association*, Vol 1, No 1, pp 1-9, 2007.
- Arya A, DiPaola S, "Face Modeling and Animation Language for MPEG-4 XMT Framework", *IEEE Transactions on Multimedia*, Vol 9, No 6, pp 1137-1146, 2007.
- DiPaola S, Akai C, Kraus B, "Experiencing Belugas: Developing an Action Selection-Based Aquarium Interactive", *Adaptive Behavior - Animals, Animats, Software Agents, Robots, Adaptive Systems (Special Issue on Action Selection)*, Vol 15, No 1, pp 99-113, 2007.
- Arya A, DiPaola S, "Multi-Space Behavioral Model for Face-based Affective Social Agents", *Journal of Image and Video Processing*. Special Issue on Facial Image Processing, Vol. 2007, Article ID 48757, pp 1-12, 2007.

- Arya A, Enns J, Jefferies L, DiPaola S, "Facial Actions as Visual Cues for Personality", Computer Animation and Virtual Worlds (CAVW) Journal, Vol 17, No 3-4 , pp 371–382, 2006.
- DiPaola S, "Artificial Intelligence Systems in New Media Art and Design", Artciencia: Art & Science Journal, Vol 2, No 4, pp 1-8, August-October, 2006.
- DiPaola S, "Extending the Range of Facial Types", IEEE Journal of Visualization and Computer Animation, Vol 2, No 4, pp 129-131, 1991.

Books & Book Chapters: Authored

- Turner J, Bernardet U, Nixon M, DiPaola S, "Integrating Cognitive Architectures into Virtual Character Design", Book, IGI Global, 2016. <http://www.igi-global.com/book/integrating-cognitive-architectures-into-virtual/146983>
- DiPaola S, "Face, Portrait, Mask - Using a Parameterized System to Explore Synthetic Face Space", Book Chapter, *Electronic Visualisation in Arts and Culture*, Bowen, Keene, Ng, (Eds), pp 213-227, Springer, 2013.
- DiPaola S, Sorenson N, "Cartesian Genetic Programming, Creativity and Art", Book Chapter, *Cartesian Genetic Programming*. Editor: Miller J, pp 293-306, Springer, 2011.
- DiPaola S, "Designing Socially Expressive Character Agents to Facilitate Learning ", Book Chapter, *Educational Gameplay and Simulation Environments*, Editors: Kaufman D, Sauvé L, pp 213-230, 2009.
- DiPaola S, *Computer Facial Animation*, by Parke F, Waters K, 2nd Edition, AK Peters, Book Excerpt, pp 133-136, 225-251, 368-369. 2008.
- DiPaola S, *Avatars*, by Damer B, Peach Pit Press, Book Excerpt, pp 193-234, 446-448, cover/back art. 1998.
- DiPaola S, *Computer Facial Animation*, by Parke F, Waters K, AK Peters, Book Excerpt, pp 101-104, 214-219, cover artwork. 1996.

Conference Papers: Authored (Peer reviewed)

- Yalçın Ö.N., Moreno S., DiPaola S. (2020) Social Prescribing Across the Lifespan with Virtual Humans, *ACM Intelligent Virtual Agents*.
- Utz V., DiPaola S. Aesthetic Judgments, Movement Perception and the Neural Architecture of the Visual System. In: Samsonovich A. (eds) *Biologically Inspired Cognitive Architectures 2019. BICA 2019. Advances in Intelligent Systems and Computing*, vol 948. Springer, Cham. 2019.
- DiPaola S., Yalçın Ö.N. A multi-layer artificial intelligence and sensing based affective conversational embodied agent, *Proc: Affective Computing and Intelligent Interaction Workshops and Demos (ACIIW)*, pp 91-92, 2019.
- Yalçın Ö.N., DiPaola S. (2020) M-Path: A Conversational System for the Empathic Virtual Agent. In: Samsonovich A. (eds) *Biologically Inspired Cognitive Architectures 2019. BICA 2019. Advances in Intelligent Systems and Computing*, vol 948. Springer, Cham 2019.
- Kitson A, DiPaola S, and Riecke E. Lucid Loop: A Virtual Deep Learning Biofeedback System for Lucid Dreaming Practice. In *Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems (CHI EA '19)*. ACM, New York, NY, USA, Paper LBW1322, 6 pages. 2019
- Bernardet U, Kanq S, Feng A, DiPaola S and Shapiro A, "Speech Breathing in Virtual Humans: An Interactive Model and Empirical Study," *2019 IEEE Virtual Humans and Crowds for Immersive Environments (VHCIE)*, pp. 1-9., Osaka, Japan, 2019.
- Song M, Tadeo T, Sandor I, Ulas S, and DiPaola S. 2019. BioFlockVR: exploring visual entrainment through amorphous nature phenomena in bio-responsive multi-immersant VR interactives. In *Proceedings of the 2nd International Conference on Image and Graphics Processing (ICIGP '19)*. ACM, New York, NY, 2019
- Yalçın, Ö.N. & DiPaola S, Evaluating levels of emotional contagion with an embodied conversational agent. in *Proceedings of the 41st Annual Conference of the Cognitive Science Society, 2019 Montreal, 2019*.
- Nixon M, DiPaola S, Bernardet U, "An Eye Gaze Model for Controlling the Display of Social Status in Believable Virtual Humans. *IEEE Conference on Computational Intelligence and Games (IEEE CIG)*. Maastricht, Netherlands (10). In Press, 2018.
- Turner JO, DiPaola S, "Transforming Kantian Aesthetic Principles into Qualitative Hermeneutics for Contemplative AGI Agents", *International Conference on Artificial General Intelligence (AGI)*, pages 238-247. 2018.
- DiPaola S, Mumford M, "A framework for developing multi-modal media-spaces using AI techniques", *Proceedings of Electronic Literature Organization (ELO)*, 2018
- Quesnel D, DiPaola S, Rieke B, "Deep Learning for Classification of Peak Emotions within Virtual Reality Systems", *Proceedings of Semantic Ambient Media Experiences (SAME 2017): Artificial Intelligence MEETS Virtual and Augmented Worlds (AIVR) - in conjunction with SIGGRAPH Asia*. pages 6-11. 2018
- Bernardet U, S Kang S, A Feng A, DiPaola S, Shapiro A, "A Dynamic Speech Breathing System for Virtual Characters", *Intelligent Virtual Agents*, pages 43-52, 2017
- Cuykendall S, Sun P, Muntean R, DiPaola S. "A Framework for Hybrid Multimodal Interactive Performances: Exploring the Virtual, Physical, and the Space in Between". *Proceedings of Electronic Visualisation and the Arts*, British Computer Society, 159-166. 2017.
- Feldman S, Yalcin ON, DiPaola S, "Engagement with artificial intelligence through natural interaction models", *Proceedings of Electronic Visualisation and the Arts*, British Computer Society, 296-303. 2017.

- Kadir A, Hennessy K, Yalcin ON, DiPaola S, “Embodied interactions with a sufi dhikr ritual: negotiating privacy and transmission of intangible cultural heritage in virtual sama”, Proceedings of the conference on Electronic Visualisation and the Arts, 365-372 Best Paper Award, 2017.
- Song S, DiPaola S, “Framework for a bio-responsive VR for interactive real-time environments and interactives” Proceedings of the conference on Electronic Visualisation and the Arts, 377-384. 2017.
- Bernardet U, Chollet M, DiPaola S, Scherer, S. An Architecture for Biologically Grounded Real-time Reflexive Behavior. In Intelligent Virtual Agents (in press). Lecture Notes in Computer Science. Springer. 2016
- Bernardet U, Saberi M, DiPaola S, Simulink Toolbox for Real-time Virtual Character Control. In Intelligent Virtual Agents (in press). Lecture Notes in Computer Science. Springer. 2016
- Cuykendall S, Soutar-Rau E, Schiphorst T, DiPaola S, “If Words Could Dance: Moving from Body to Data through Kinesthetic Evaluation”, Proceedings: ACM Conference on Designing Interactive Systems, pp. 234-238, 2016.
- Bernardet, U, Adhia D, ... DiPaola S, ... Schiphorst T. (2016). m+ m: A novel Middleware for Distributed, Movement based Interactive Multimedia Systems, Proc: Movement and Computing, ACM. pp.21-30, 2016.
- Salevati S, DiPaola S, Carlson K, Movement Awareness through Emotion Based Aesthetic Visualization, Proceedings of Electronic Visualisation and the Arts, British Computer Society, 8 pages, London, 2016.
- McCaig R, DiPaola S, Gabora L, “Deep Convolutional Networks as Models of Generalization and Blending Within Visual Creativity”, Proceedings of International Conference on Computational Creativity, 8 pages, 2016.
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- Saberi M, Bernardet U, & DiPaola, S, “Effect of a Virtual Agent’s Contingent Smile Response on Perceived Social Status. International Conference on Intelligent Virtual Agents”, pp. 488–491, Springer. 2015.
- Choi S K, DiPaola S, “Touch of the Eye: Does Observation Reflect Haptic Metaphors in Art Drawing?”, Proceedings of ACM Conf on Human Factors in Computing Systems (CHI '15), pp 579-588, 2015.
- Bayatpour S, Bernardet U, DiPaola S, Kitson A, & Riecke B, (2015).” Exploring Facial Expressions for Human-Computer Interaction: Combining Visual Face Tracking and EMG Data to Control a Flight Simulation Game”. ISEA 21st International Symposium on Electronic Art (ISEA), Vancouver, 6 pages. 2015.
- Song M, DiPaola S, “Exploring Different Ways of Navigating Emotionally-responsive Artwork in Immersive Virtual Environments”, Proceedings of Electronic Visualisation and the Arts, British Computer Society, 8 pages, London, 2015.
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- Salevati M, DiPaola S, “Enhancing Viewer’s Emotional Connections to The Traditional Art Creative Process Via an AI Interactive System”, Proceedings of Electronic Visualisation and the Arts, Florence, 8 pages, 2015.
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- Salevati M, DiPaola S, “Using a Creative Evolutionary System for Experiencing the Art of Futurism”, Proceedings of Electronic Visualisation and the Arts, Florence, Italy, 8 pages, 2014.
- DiPaola S, McCaig R, Carlson K, Salevati S, & Sorenson N, “Adaptation of an Autonomous Creative Evolutionary System for Real-World Design Application Based on Creative Cognition”, Proceedings of International Conference on Computational Creativity, pp 40-4, 2013.
- Bizzocchi J, Nixon M, DiPaola S, & Funk N, “The Role of Micronarrative in the Design and Experience of Digital Games”, Proceedings of Digital Games Research Association Conference (DIGRA), Atlanta, Georgia, pp. 161-197, 2013.
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- DiPaola S, Smith A, “Interactively Exploring Picasso’s Multi-dimensional Creative Process in Producing Guernica”, Proceedings of Electronic Visualisation and the Arts, pp. 25-31. British Computer Society, London, 2013.
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- DiPaola, S, Smith A, "Formalizing An Interconnected Syntax For Picasso's Creative Process In Producing Guernica", Proceedings of Conceptual Structure, Discourse and Language, 6 pages, 2012.
- Choi S K, DiPaola, S, Schiphorst T, "The Tacit And The Trace: Towards Syntax Of The Creative Act", Proceedings of Conceptual Structure, Discourse and Language, 6 pages, 2012.
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- Dalvandi A, Amini P, DiPaola S, "Exploring Persian Rug Design Using a Computational Evolutionary Approach", Proceedings of Electronic Visualisation and the Arts, pp. 121-128. British Computer Society. London, 2010.
- DiPaola S, "Darwin, Creativity, and Evolutionary Programming", 150 Years after Origin: Biological, Historical and Philosophical Perspectives, Proceedings of Canadian Darwin Conference, University of Toronto, 4 pages, 2009.
- DiPaola S, "Intelligent Expression-based Character Agent Systems", Proceedings of ACM Intelligent Virtual Agents, Springer, Amsterdam, Keynote Short Paper, pp 3-7, 2009.
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- DiPaola S, "Quantifying artist's use of human vision constructs to influence viewer eye gaze," In Proc: SPIE Human Vision and Imaging, Int. Society for Optical Engineering, 6 pages, 2009.
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- Zammito V, DiPaola S, Arya A, "A Methodology for Incorporating Personality Modeling in Believable Game Characters", Inter. Conference on Games Research and Development (CyberGames), 8 pages, Beijing, China. 2008.
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- DiPaola S, Akai C, "Blending Science Knowledge and AI Gaming Techniques for Experiential Learning", Proceedings of CGSA (Canadian Game Studies Association) 2006, 8 pages, Toronto, 2006.
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- Arya A, DiPaola S, Jefferies L, and Enns J, "Socially communicative characters for interactive applications," 14th International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision (WSCG-2006), 8 pages, Czech Republic, January 30 - February 3, 2006.
- DiPaola S, Akai C, "Shifting Boundaries: the Ontological Implications of Simulating Marine Mammals", New Forms Festival Conference, Museum of Anthropology, 7 pages, Vancouver, 2005.
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- DiPaola S, Dorash D, Brandt G, “Ratava’s Line: Emergent Learning and Design Using Collaborative Virtual Worlds”, In ACM SIGGRAPH 2004 Educators Program (Los Angeles, California, August 08 - 12, 2004). SIGGRAPH '04. 4 pages, ACM, New York, NY, 25. 2004.
- DiPaola S, Arya A, “Affective Communication Remapping in MusicFace System”, Proceedings of Electronic Visualisation and the Arts, EVA-2004, 8 pages, London, England, July 26-31, 2004.
- Arya A, DiPaola S, “Face as a Multimedia Object”, 5th International Workshop on Image Analysis for Multimedia Interactive Services, 5 pages, Lisbon, Portugal, April 21-23, 2004 .
- DiPaola S, Collins C, “A Social Metaphor-based 3D Virtual Environment”, In ACM SIGGRAPH 2003 Educators Program (San Diego, California, July 27 - 31, 2003), 2 pages, SIGGRAPH '03, ACM, New York, NY, 2003.
- DiPaola S, "Investigating Face Space", In ACM SIGGRAPH 2002 Conference Abstracts and Applications (San Antonio, Texas, July 21 - 26, 2002). SIGGRAPH '02. ACM, New York, NY, pp 207-207. 2002.
- DiPaola S, "FaceSpace: A Facial Spatial-Domain Toolkit", Proceedings of IEEE Information Visualization, London, pp 105-109, 2002.
- DiPaola S, Collins C, "A 3D Virtual Environment for Social Telepresence", Western Computer Graphics Symposium, '02, 7 pages, 2002. (Not peer reviewed)
- DiPaola S, Collins C, "A 3D Natural Emulation Design to Virtual Communities" , In ACM SIGGRAPH 99 Conference Abstracts and Applications, pp 208-208, SIGGRAPH '99, Los Angeles, 1999.
- DiPaola S, "3D Parameterized Facial Modeling & Animation", ACM Siggraph Facial Animation Tutorial, 1989.

Juried or Commissioned Art Exhibitions

Known 40 year pioneer in computer based art with commissioned/juried work at major NYC/London museums including **MoMA, Tate, Smithsonian and Whitney** and major gallery’s in NYC, London, LA. Over 60 majors shows, over 15 one man shows. Recently the Whitney Museum of Art a retrospective show on computer art -1970-present where my work was represented as one of the showcase pieces. The show had 800,000 viewers during the 6 months and was majorly reviewed as the best of computer art. **Museums and major Galleries bolded.**

- **Museum of Modern Art (MoMA)**, NYC - major commissioned work - God in Three Persons w/ John Sanborn/The Residents. - Multiscreen, multimedia piece using AI art . NYC, 2020
- Generative Art, The Little Art Gallery, Univ. of Calgary , showcased two artists: my AI art work and Sara Diamond's work (head of OCAD). Show was up for 3 weeks in sync with major book release ' Generative Art' (by Jim Parker) with my Art on the cover and insets.
- Commissioned Multi monitor AI art videos "Pareidolia", major one person show,. Surrey Art Gallery (Surrey, BC), Up for 1 year. 2019-2020
- DiPaola, **Whitney Museum**, New York, New York - Invited Artist, Programmed: Rules, Codes, and Choreographies in Art, Contributed to a Nam June Paik installation. Fin de Siecle II, 1989. Video installation, 207 television sets with seven video channels, 168 × 480 × 60 in. (426.7 × 1219.2 × 152.4 cm). Whitney Museum of American Art
- DiPaola, Multi Screen Ai art piece - Abstraction and Meaning., "Mind the Gap", **UQAM** - Design Center Gallery, Montreal.
- DiPaola ,Cuykendal, Muntean & Sun Fractured Perspectives: Movement and Light - a multi camera and 360 degree camera, AI abstraction, dance, movement, spacial performance art video. **British Computer Society, London, UK.** 2017.
- DiPaola, Texture and Flow – AI based Art video (6 minutes), Film show at Electronic Literature Organization Conference, Victoria, BC, 2016. Juried
- The Real, the Virtual and The We (re-activating Lygia Clark’s The I and the you: Clothing/Body/Clothing, 1967) is an interactive performance and two channel video installation that explores questions of human connection in a world mediated by digital technologies. This 2016 performance re-imagines Lygia Clark’s original 1967 performance, The I and The You: Clothing/Body/Clothing (1967).
- DiPaola, Hidden Pasts, Digital Futures: A Festival of Immersive Arts, Woodward’s Experimental Theater, Bringing out the Ghosts, 3 monitor and stills work, Vancouver, 2015. Juried
- Computational Aesthetics Art Show, Blurred Lines “Portraits Triptych: Meaning and Process III”, Multi monitor multimedia Installation, Emily Carr University Gallery – co- located Conf. of ACM SIGGRAPH, 2014. Juried.
- **Tate Modern**, London, UK, “Kraftwerk 1 2 3 4 5 6 7 8 9“, our (Allen, DiPaola) cover art was hung in the museum; our 3D animated visuals were projected during the 9 nights of performances by Kraftwerk. The 25 yr old work was credited by the Kraftwerk but not formally at the museum. 2013. Commissioned.

- **Museum of Modern Art**, NY, “Kraftwerk 1 2 3 4 5 6 7 8 9“, our (Allen, DiPaola) cover art was hung in the museum; our 3D animated visuals were projected during the 9 nights of performances. The 25 yr old work was credited by the Kraftwerk but not formally at the museum. 2012. Commissioned.
- Anecy Art Festival, part of CAe, Anecy, France, “Jane Portrait Series: Mixing Cognitive & Artistic Knowledge in a Generative Painting System”, France, 2012, Juried.
- **High Museum of Art** - ACM Creativity & Cognition 2011, Genetic Art
- Computational Aesthetics in Graphics, Visualization and Imaging, 2011 (co-hosted with ACM Siggraph), Swimming Away from Darwin - installation piece.
- International Digital Media and Arts Association, Juried Art Installation, Emily Carr University Art Gallery, "Evolving Darwin's Gaze". Generative Hung Art via Genetic Programming Creativity Algorithm and video insulation.
- **Tenderpixel Gallery**, “Computational Creativity”, One Person Show, London, 2010. Commissioned.
- University of Toronto, Inst. History and Phil of Science and Tech (IHPST), "Evolving Darwins Gaze", One Person Show, Victoria College, Toronto, 2009. Commissioned.
- **Cambridge University, Kings Art Centre**, "Evolving Darwin’s Gaze", One Person Show, Cambridge, U.K. 2009.
- **MIT Museum**, Evolving Darwin's Gaze, Cambridge Science Festival, M.I.T, Cambridge, MA, 2009. Commissioned.
- Vancouver Science World, The Creative Mind: Illusions and Perceptions & Modern Alchemists, part of a 4 invited artist exhibit, Vancouver, BC, Jan. 2009. Commissioned.
- Intersections Digital Studios Gallery, Emily Carr University, ” Omar’s Act” -an ambient video using 3D Facial Animation and Stochastic Noise Perturbation, Commissioned for the opening of gallery - 3 person show, 2008, Commissioned.
- Digital Shrine at Parade of the Lost Souls, "someone_who_once_was", digital still, Vancouver.2008 Juried.
- SmartLab/Matrix East Exhibition Space, “Bringing Out the Ghost” - a 24 screen multimedia installation, London. 2008. Commissioned.
- Time's Up Workspace Gallery, "Steve DiPaola: Facades", One Person Show - NY, NY, 2007. Commissioned.
- Monegros Festival, "Kraftwerk Video & Set Installation ", Candanos, Spain, 2006. Commissioned
- Code - Human Systems, Digital Bodies - "Evolved Portraits" - Oxford, Ohio. 2006. Juried.
- Computational Poetics - Logic Machines and Creative Process - "Poetics of Image" -Vancouver, Canada, 2006. Invited.
- Kraftwerk World Tour, "Musique NonStop" - Video & Set Installation - Europe, Asia, Americas, 2005. Commissioned.
- Time's Up Workspace Gallery, Group Show - New York, NY, 2005. Commissioned.
- New Forms Festival, “Muses” - Video Painting, Vancouver, Canada, 2004. Juried.
- ACM Siggraph Art Show , “inside-out”, music & music generated animation art by DiPaola, Los Angeles 2004 - Juried.
- **A.I.R. Gallery**, “Wish You Were Here”, New York, NY, (Sold Piece) July 2004 - Invited.
- **A.I.R. Gallery**, “Plays Well with Others”, New York, NY April 2004 - Commissioned.
- Dorosh ArcScience Group Show, A.I.R. Gallery, New York, NY 2004 (Upcoming) - Invited Artist.
- The Nobel Wedding, Physical/Virtual Interactive Performance, SFU Interactivity Lab Performance Space, Surrey, Canada, 2003. Juried grant/Collaboration.
- "Exposure" -multimedia show, Somar Gallery, San Francisco, CA, 2003. Invited Artist.
- New Forms Festival, “Concerto for Strings and Face - Music Generated Faces”, Vancouver, Canada, 2003. Juried.
- "Ratava's Line", Physical/Virtual Interactive Performance, Fashion Inst of Tech Gallery, New York, NY, 2002.
- “Experimental Media Group Show”, Western Front Gallery, Vancouver, Canada, 2002. Invited Artist.
- "The Magic Cube", Interactive Virtual Cube, Sigma Square Opening, Malmo, Sweden, 2001. Invited Artist.
- "Chasing Alice", 3D Interactive Performance, Stanford Department of Art Lobby, Stanford, California, 2000.
- Tapestry ' 99 Group Show, Herbst Theater, San Francisco, CA, 1999. Juried.
- **Smithsonian National Museum**, Permanent Research Collection, Washington, DC, 1998. Juried.
- Contact Consortium Show, Anon Salon, San Francisco, California, 1997. Invited Artist.
- **Yerba Buena Center for the Arts**, Interactive Performance “Virtual Voce”, San Francisco, California, 1997. Invited Artist.
- Digital Be-In, Invited Interactive Performance “Virtual Voce”, San Francisco, California, 1996. Invited Artist.
- Montage 93, International Festival of the Image, Rochester, New York, 1993. Juried.
- Siggraph '89, Film and Video Exhibition, 1989. Juried.
- "Image World: Art and Media Culture", Whitney Museum of American Art, NYC (Contributor w/ Nam June Paik), 1989. Juried.
- "Digital Explorations ... Emerging Visions in Art", **Tibor de Nagy Gallery, New York**, New York (Co-curator / artist), 1988. Juried.
- Siggraph '88, Film and Video Exhibition, 1988. Juried.
- Atelier Grapoui, Brussels, Belgium, 1988. Juried.
- **Cincinnati Contemporary Arts Center**, Cincinnati, Ohio;
- Image Du Futur, Montreal, Canada, 1988. Juried

- "Computers and Art", **Everson Museum**, Syracuse, New York, Juried
- **IBM Gallery of Science and Art**, New York, New York;
- Siggraph '87, Film and Video Exhibition, 1987. Juried.
- **Center for the Fine Arts**, Miami, Florida 1987.
- Nouvelles Images de Monte Carlo, Monte Carlo, Monaco, 1987. Juried.
- Nicograph '87, Nicograph, Tokyo, Japan, 1987. Juried.
 - Siggraph '87 Art Show, Anaheim, California, 1987. Juried.
 - Zagreb Animation Festival, Zagreb, Yugoslavia, 1987. Juried.
 - Siggraph '86, Film and Video Exhibition, 1986. Juried.
 - Parigraph Animation Festival, Paris, 1986. Juried.
 - Nouvelles Images de Monte Carlo, Monte Carlo, Monaco, 1986. Juried.

Talks and Keynotes

DiPaola gives scores of Talks per year (too numerous to list, > 300) including over 20 invited major conference keynotes. Besides major keynotes (list on request,) other major talks include: Harvard (vision sciences), Stanford University (10 talks in last 10 years), Cambridge University (6 talks in last 10 years), MIT keynote, National Gallery, London, UCLA, UC Berkeley, ...

Grants and Awards Totals: DiPaola has been awarded / Pled over **\$2 Million of grants**

Contract/Grant: Operating Grant **Awarded:** 2019 **Period:** 2019 - 2024

Project Title: Cognitive based computational modelling of human expression

Funding: NSERC DISCOVERY GRANT **Type:** External **Annual:** \$23,000 **Total:** \$115,000

Involvement: Principal Investigator **Collaboration:** Sole PI

Contract/Grant: Research Grant **Awarded:** 2017 **Period:** 2017 - 2021

Project Title: Deep reflection: framing the problem of computationally subjective creative spaces with an emergent painting network

Funding: SSHRC Insight **Type:** External **Annual:** 60000 **Total:** 308,000

Involvement: Principal Investigator **Collaboration:** DiPaola

Contract/Grant: Research Grant **Awarded:** 2019 **Period:** 2019 - 2020

Project Title: Artificial Intelligent naturally communicating virtual characters

Funding: NSERC Engage **Annual:** \$25,000 **Total:** \$25,000

Involvement: Principal Investigator **Collaboration:** With **Virtro** Entertainment

Contract/Grant: Operating Grant **Awarded:** 2018 **Period:** 2018 - 2018

Project Title: Commissioned Multi monitor AI art videos "Pareidolia"

Funding: Surrey Art Gallery (Surrey, BC) Commission **Annual:** 4100 **Total:** 4100

Involvement: Principal Investigator **Collaboration:** Commission for a digital Art piece for Surrey, BC government Art Gallery

Contract/Grant: Research Grant **Awarded:** 2018 **Period:** 2018 - 2018

Project Title: Communication and Interaction Design for Chronic Health Situations

Funding: NSERC **Type:** External **Annual:** 25,000 **Total:** 25,000

Involvement: Principal Investigator **Collaboration:** DiPaola

Contract/Grant: Research Grant **Awarded:** 2017 **Period:** 2017 - 2018

Project Title: AI-generated Anonymization in VR Journalism.

Funding: Knight Foundation/ Google News Lab Journalism 360 Challenge Grant. **Type:** External **Annual:** 30,000 **Total:** 30,000

Involvement: Co-Investigator **Collaboration:** Shared PI with Kate Hennessy (SFU) and Taylor Owen (UBC)

Institution of Co-Investigator(s): UBC, SFU

Contract/Grant: Research Grant **Awarded:** 2012 **Period:** 2012 - 2016

Project Title: Moving stories: digital tools for movement, meaning and interaction

Funding: SHRC Institution partner grant **Type:** External **Total:** \$2,200,000

Involvement: Joint Investigator **Collaboration:** PI is Thecla Schiphorst of SFU. ~\$2.2 M – I receive 5% of this grant.

- Contract/Grant:** Research Grant **Awarded:** 2014 **Period:** 2014 - 2015
Project Title: Improving engagement and learning within museums using user experience based interactive systems
Funding: NSERC Engage **Type:** External **Annual:** \$25,000 **Total:** \$25,000
Involvement: Principal Investigator
- Contract/Grant:** Research Grant **Awarded:** 2014 **Period:** 2014 - 2015
Project Title: Movement and Meaning: Research Middleware
Funding: Canarie NEP (Network Enabled Platforms) Middle Ware Program **Type:** External **Annual:** \$225,000 **Total:** \$550,000
Involvement: Principal Investigator **Collaboration:** Co-PI (w/ PI Thecla Schiphorst)
Institution of Co-Investigator(s): University of Illinois at Urbana-Champaign
- Contract/Grant:** Research Grant **Awarded:** 2013 **Period:** 2013 - 2014
Project Title: Artificial Intelligence-based interactives to improve the hospital therapeutic experience
Funding: NSERC Engage **Type:** External **Annual:** \$25,000 **Total:** \$25,000
Involvement: Principal Investigator
- Contract/Grant:** Research Grant **Awarded:** 2012 **Period:** 2012 - 2013
Project Title: Cognitive Artificial Intelligence and Knowledge Spaces
Funding: VPR Bridge Grant **Type:** Internal **Annual:** \$25,000 **Total:** \$25,000
Involvement: Principal Investigator
- Contract/Grant:** Research Grant **Awarded:** 2012 **Period:** 2012 - 2012
Project Title: Formalizing Processes of Attention Cuing based on Character Behavior within Video Games w/ Electronic Arts
Funding: NSERC Engage **Type:** External **Annual:** \$25,000 **Total:** \$25,000
Involvement: Principal Investigator **Collaboration:** w/ Electronic Arts, Vancouver - User Experience Group
- Contract/Grant:** Research Grant **Awarded:** 2011 **Period:** 2011 - 2011
Project Title: Generative Vector-Based Artwork using Evolutionary Algorithms
Funding: NSERC Engage **Annual:** \$25,000 **Total:** \$25,000
Involvement: Principal Investigator **Collaboration:** Working with prestigious Design Firm Farmboys Fine Arts (Vancouver) in Generative Art making
- Contract/Grant:** Research Grant **Awarded:** 2011 **Period:** 2011 - 2011
Project Title: TRA(P) - A Language for Describing Motion in 2D Contemporary Art
Funding: MITACS ACCELERATE **Annual:** \$15,000 **Total:** \$15,000
Involvement: Principal Investigator **Collaboration:** With prestigious design firm on Language, Image Analysis, Artificial Intelligence, Visualization, Contemporary Art & Design, Motion
- Contract/Grant:** Research Grant **Awarded:** 2010 **Period:** 2010 - 2011
Project Title: Emotional and Expression based Character Sequences
Funding: NSERC Engage **Annual:** \$21,436 **Total:** \$21,436
Involvement: Principal Investigator **Collaboration:** Working with Ex-Pixar Cinematographic Jerrica Cleland on cognitive based emotional depiction in character animations
- Contract/Grant:** Research Grant **Awarded:** 2006 **Period:** 2006 - 2011
Project Title: Intelligent Character Systems
Funding: NSERC Discovery Grant **Annual:** \$13,000 **Total:** \$65,000
Involvement: Principal Investigator **Collaboration:** Individual Grant
- Contract/Grant:** Research Grant **Awarded:** 2008 **Period:** 2008 - 2010
Project Title: Intelligent Expression Systems
Funding: SFU Start-Up Grant **Type:** Internal **Annual:** \$20,000 **Total:** \$60,000
Involvement: Principal Investigator **Collaboration:** Individual Grant
- Contract/Grant:** Research Grant **Awarded:** 2007 **Period:** 2008 - 2009
Project Title: Creativity Assisted Technology for Gaming and Interactive Systems.
Funding: Heritage Canada - New Media Network Fund **Annual:** \$700,000 **Total:** \$1.4M (\$400,000 under my PI)
Involvement: Principal Investigator **Collaboration:** Lead PIs at SFU (DiPaola - most moneys ~\$400), Seneca (Gunter), and U Western Ontario (Katchabaw).
Institution of Co-Investigator(s): University of Western Ontario, Seneca College

- Contract/Grant:** Research Grant **Awarded:** 2008 **Period:** 2008 - 2008
Project Title: Artificial Intelligence and Expression Systems
Funding: SFU - Presidents Research Grant **Type:** Internal **Annual:** \$10,000 **Total:** \$10,000
Involvement: Principal Investigator **Collaboration:** Individual
- Contract/Grant:** Research Grant **Awarded:** 2003 **Period:** 2003 - 2007
Project Title: Simulation and Advanced Gaming Environments (SAGE)
SSHRC – INE Collaborative Research Initiative grant
Funding: SSHRC **Annual:** ~\$1M **Total:** ~\$4M (\$70,000 for me)
Involvement: Joint Investigator **Collaboration:** Under CoLead (David Kaufman - SFU / Louise Sauve - U of Quebec) - DiPaola - funding to 1 post doc and 2 masters grads.
Institution of Co-Investigator(s): SFU, Univ of Quebec, Concordia Univ
- Contract/Grant:** Research Grant **Awarded:** 2005 **Period:** 2005 - 2005
Project Title: Interactive Marine Mammal Learning Systems:
Artificial Intelligence and Physically based 3D Simulation of Whales
Funding: Vancouver Aquarium **Annual:** \$10,000 **Total:** \$10,000
Involvement: Principal Investigator **Collaboration:** Individual Grant - worked with Vancouver Aquarium Marine Research Centre
Funding payed for my grad student.
Institution of Co-Investigator(s): SFU, Vancouver Aquarium Marine Research Centre
- Contract/Grant:** Research Grant **Awarded:** 2004 **Period:** 2004 - 2004
Project Title: Next generation intelligent facial system research.
Funding: Radical Entertainment **Annual:** \$50,000 **Total:** \$50,000
Involvement: Principal Investigator **Collaboration:** Individual Grant; Moneys went to my Post Doc (Arya).
Institution of Co-Investigator(s): SFU; Radical Entertainment. Research Group. SFU Post Doc Arya, now Assist. Prof at Carleton.
- Contract/Grant:** Fellowship **Awarded:** 2001 **Period:** 2001 - 2004
Project Title: ASI Provincial Research Grant
3D Facial Expression in Sciences and Arts.
Funding: Advanced Science Institute, BC **Annual:** \$40,000 **Total:** \$160,000
Involvement: Principal Investigator **Collaboration:** Individual Fellowship
- Contract/Grant:** Research Grant **Awarded:** 2000 **Period:** 2000 - 2001
Project Title: Genetic Programming Techniques for 3D Facial Creation
Funding: Electronic Arts **Annual:** \$37,500 US **Total:** \$75,000 US
Involvement: Principal Investigator **Collaboration:** Individual: worked directly with Will Wright of Maxis, EA. while I was at Stanford University.
Institution of Co-Investigator(s): Stanford University (where I was), Electronic Arts (Maxis Research Group)

Reviews (of artwork or research work)

- Popular Press: (selected recent) scores more in last view years

- Vancouver Observer, “Cetaceans in captivity: An SFU researcher may have a solution”, July 2010
- Scientist Discover Magic of Rembrandt : It is in the Eye Gaze –> 200 articles in Press, Radio and TV in 14 countries including
 - Globe&Mail, Vancouver Sun , Toronto Sun, The Province, Montreal Gazette, Winnipeg Free Press, Métro Montréal , TruroDaily News, Oxford Science News
 - CBC TV, Discovery Channel, Nation Public Radio, newstalk1010, Live Science, Science News Daily, yahoo.com, physorg.com, esciencenews.com, scienceblog.com , boingboing.net
- CityTV, Two TV news features on my research and its humanistic approach to technology, - March, 2004.
- The Vancouver Sun, “BC innovative thinkers” where I was discussed under Computer Science. 2004.
- The Vancouver Sun, “The Changing Face of E-Mail”, pg B2-B3 - Article on my work - February 20, 2004.
- Women’s Wear Daily, “Partnership Gives Design an Upgrade” By Valerie Seckler, April 23, 2003.
- The Now Newspaper, “Simulating the Future” (Article on my human approach to technology), Jan. 24, 2002.
- The New York Times, “Put Your Face in the Line of Fire...” by Jeffrey R Young, August 14, 2001.
- The New York Times, “The Internet in Three Dimensions”, November 25, 1996.
- Also TV: Scientific American Discovery Channel MSNBC’s The Site c|net Central
Press: Wall Street Journal Wired Magazine USA Today Newsweek
Work demonstrated on stage by both Bill Gates (Microsoft) and Andy Grove (Intel).

- Critical Press:

- Brown, Janet, Looking at Darwin: portraits and the making of an icon. Isis. Sept, Vol 100, No 3, pp 542-70, 2009. Note: Janet Brown (Harvard) is the foremost writer on Darwin. In this major journal article, she singles out my genetic programming/creativity work at MIT/Cambridge/UofT/London/the journal Nature, from page 1:
- "... Meanwhile, on the ... of Steve DiPaola, another mutating portrait is under way. Using algorithms drawn from genetic sequencing programs, this computer engineer/artist has grown a succession of abstract forms deriving from the well-known oil portrait of Darwin by the Victorian painter John Collier. Like the iron filings, the computer-generated processes play on the notion of change over time. Both installations allude to the closing words of Darwin's *On the Origin of Species*: "from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved."¹ In them, viewers encounter the passage of time and the transitory nature of life. More than this, the modes of production call to mind the processes that are being commemorated.
- Interdisciplinary Perspectives on Multimodality: Theory and Practice. By Baldry & Montagna(eds.), Palladino. My Virtual Worlds research is discussed in the chapter "Multimodal Learning Conversations Online", 2007.
- ArtSEEN Magazine, "Another way of being", Article on my Stanford interactive narrative work. Issue 3, 2006.
- SECOND NATURE: Reproduction and the Artificial in Art, Science and New Media, my evolutionary art and AI systems are discussed; "Biomimetics: Emulation and Propagation in Post-traditional Ecologies", 2006.
- Evolutionary Art by P Machado and J Romero, evolutionary artwork is discussed and shown in the book. 2006.
- UBC eStrategy News & BC.NETwork News, "Simulated Gaming for Medical Learning" June & July 2005.
- Avatara, a DVD documentary about DiPaola's 3D community Traveler by Turner, Mancini, Harrison. Shown at international art galleries, film festivals, and conferences. 2003 See <http://www.flickharrison.com/avatara/>
- President's Unconventional Learning Report, Simon Fraser University 2003. See <http://www2.sfu.ca/report2003/Learning/unconventionalllearning-fashion.htm>
- Chronicle of Higher Education, "Information Technology: Haute Cyber" by Jeffrey R Young, May 30, 2003.
- Higher Learning Magazine, "Virtual Faces Deliver Emotion to Your Inbox", Mar-Apr 2003.
- Communication Arts, "New in New Media Design", (Article on our HP Design), 2000
- Sculpture Magazine, "Special Installation Issue", March/April 1990.
- Computer Graphics World, "Computers and Fine Art", (Cover Art & Lead Story), October 1988.

ACADEMIC RESEARCH WORK & SERVICE:

University Courses Taught and Developed:

- **New York Institute of Technology, Computer Graphics Lab**
Advanced Computer Graphics - Graduate Supervisor - Fall 90 - Winter 91
- **Stanford University, Department of Art (Stanford University Digital Art Center)**
Art 175 C Digital Narrative Production (co-taught) Spring 01
Art 173A The Illusion of Life: Facial Animation Winter 01 (co-listed with Computer Science)
Art 173 Interactive Digital Narrative Fall 00: (co-listed with Computer Science)
- **Simon Fraser University, School of Interactive Arts & Technology (formerly TechBC)**
Note: Develop & teach courses in both Science and Artistic concentrations.

Undergraduate Courses:

ITEC 322	Introduction to Computer Animation	Fall 01,02,03,04
ITEC 323	Advanced Computer Animation Method	Fall 01,02, 03,04
IART 445	Immersive Environments	Spring 03,04,05,07,08,09,10, f11, f12,17,18,19,21
IART 219,220,221 (241 now 343)	Animation	Spring 02,03,04, f05,06, f09,s14,17,18,19,20
IAT 342	Adv Animation	Fall 05,06
Cogs 310	Consciousness (In Cognitive Science)	Fall 11

Graduate Courses:

IART 607,694	Designing Virtuality	Fall 01,02, 04
IART 605, 609	Authoring Methodologies	Spring 02,03
ITEC 614	3D Computer Animation	Spring 03,04
IAT 811	Computational Poetics	Spring 05, 11, Summer14
IAT 800	Computational Art and Design	Fall 07
IAT 813	Artificial Intelligence (SIAT)	Fall 08,09,Fall14,17,19
IAT 848	Virtual Reality	Spr 19,Spr 21

Graduate & Research Supervision:

Supervise or co-supervise (committee) the following Post Docs, Masters and PhD students. Most students explore their research via the Interactive Visualization Lab - iVizLab, that I direct:

Post Doc Supervision:

- Mayra Barrera Machuca VR systems- Spatial Intelligence 2020-21 -
- Ozge Nilay Yalcin Embodied Conversational Agents AI systems 2019 -20
- Ali Arya Facial Animation and Communication Postdoctoral Research Associate 03 - 06
(now an Associate Professor of Computer Science at Carleton University, 2006)
- Ulysses Bernardet Artificial Intelligence and Avatar Systems Postdoctoral Research Associate 12-15
(now Assis Prof Auston, UK)

Graduate & PhD Supervision (or committee):

Senior Supervisory Duties of a Thesis/Dissertation/or Major Project --- Completed Thesis = **

- Procheta Nag Gender Stereotypes in Virtual Agents 2020 ***
- Ozge Nilay Yalcin PhD Modeling Empathy in Embodied Conversational Agents 2019 **
- Ethan Soutar-Rau MS Perceptron Redux 2019 **
- Jeremy Turner PhD Artificial Intelligence for Deep Reflection AGI 2018 **
- Nixon, Michael PhD Non-Verbal 3D Character Animation and Simulation 2018 ** Now Prof Uof Toronto CS
- Smith, Aaron PhD Natural Language Processing Techniques 2017 **
- Salevati, Sara PhD Exploring User Experience and Affect to Enhance Creative Artificial Intelligence Systems 2017 **
- Saberi, Maryam Ph.D. A Computational Framework for, Non-verbal Behaviour for Affective 3D Character Agents 2016 **
- Akhgari, Mozghan MSc Temporal Coherency in Painterly Rendered Computer Animation Using a Cognitive-Based Approach 2016 **
- Karimaghalou, Nahid MSc Social Spatial Behavior for 3D Virtual Characters 2016 **
- Wang, John MSc Computer Based Full Body Gestural System for Art Therapy 2015 **
- McIntosh, Lorne M.Sc. Character based Motion Planning for Physically-Simulated BDI-Agents w/Spacetime 2014 **
- Seifi, Hasti M.Sc. Cognitive Depiction Rendering for Computer Facial Systems 2013 **, Now UBC PhD
- Sorenson, Nathan M.Sc. Automatic Game Level Design using a Creative Genetic Algorithm Technique 2012 **
- Zammitto, Veronica M.Sc. Towards Personality Demographic for Game Design 2010 **
- Liu, Chen M.Sc. Analysis of the Current & Future of 3d Facial Animation Techniques & Systems 2009 **
- Akai, Caitlin M.Sc. Depth Perception in Real and Virtual Environments 2009 **
- Suk Kyoung Choi PhD Cognitive and Vision based Analysis of Art Practice
- R. Graeme McCaig PhD Artificial Intelligence System in Creativity
- Abukhodair, Nouf PhD Genetic Algorithm Approaches to Non Photo-Realistic Rendering
- Utz Vanessa PhD Cognitive Science Modeling of Visual AI Systems
- Undergraduate Research Supervision (Directed Studies and Research Assistants): ~ 21 students 03-present

Active Service to the Academic Community

Graduate Chair, School of Interactive Art And Technology (SIAT), SFU Currently ~60Masters, 60 PhDs, 2011-Director, Cognitive Science Program, 2010-present (1 yr off for Sabbatical 2012-13)

Grant Reviews and Review Committees

- 2003 - 2018 Reviewer - NSERC, Reviewer over these years for many NSERC grants including
Strategics, Discoveries, and New Media Grants.
- 2008 Grant Reviewer, Atlantic Innovation Fund
- 2007 Tenure Reviewer, Carlton University, Computer Science
- 2006 Tenure Reviewer, Miami University, Ohio

Journal Reviewer

- 2010 Paper Reviewer, IEEE Computer Graphics and Applications
- 2007 - 2010 Paper Reviewer, International Journal of Computer Games Technology (07,09,10)
- 2009 Paper Reviewer, International Journal of Arts and Technology (IJART)
- 2008 Paper Reviewer, Marine Mammal Science Journal
- 2007 - 2008 Paper Reviewer, Journal of the Canadian Game Studies Association (Loading) 07,08

Board Member

- 2007 - 2017 Board Member, Canadian Game Studies Association
- 1998 - 2005 CCON Board Member, This non-profit supports special interest groups, holds conferences, including: Avatars - conf. on virtual communities; Digital Biota - conf. on engineering of biologically-inspired, synthetic organisms combing in evolutionary biologists and VLearn3D - an educational 3D virtual worlds conf. since 1999.

Conference Board Member

- 2008 - 2011 Board Member, EvoStar - European Evolutionary Computation Conference (EvoMusArt)
- 2006 - 2009 Board Member, Electronic Visualization and the Arts Conference, London, UK
- 1998 - 2004 Board Member, VLearn3D - an educational 3D multi-user virtual worlds conference since 1999.

Conference Reviewer

- 2010 Paper Reviewer, Eurographics - European Conference on Computer Graphics
- 2009 Paper Reviewer, ACM Creativity and Cognition
- 2007 - 2013 Paper Reviewer, Electronic Visualization and the Arts Conference 07.08.09
- 2007 - 2008 Paper Reviewer, Graphics Interface (07,08)
- 2007 Paper Reviewer, ACM SIGGRAPH Sandbox Game Conference
- 2007 Paper Reviewer, Computational Intelligence on Consumer Games and Graphics Hardware CIGPU
- 2007 Paper Reviewer, FuturePlay Conference

Service to the Community At Large

- 2003 - present Public Speaker, Ambassador: Science and Math Outreach, Give public talks (invited and volunteered) at scores of public events showing the wonderment of Science and Math at museums, events, universities (public events) and high schools including MIT Museum, Cambridge Science Festival, Vancouver Aquarium, Vancouver Science World, Darwin Festival at Cambridge UK, Google Tech Talks (online on YouTube) ... As well as science based radio and TV appearances:
- 2002 - 2015 Mentor, Computer Startups, Actively mentor (> 300 hours) new startup ventures in my field that have aboriginal or woman leads. Including animation company raventales.com, artistic lead Simon James of the Kwakwakuwakw nation
- 2002 - present Speaker, Lab instructor, Empowering women and aboriginal youth in math and science. Volunteer for many events/labs including Girl Power Tech Summer Camps and Aboriginal Tech Summer Camps for several years at SFU Surrey over the summer. As well as active mentor of the WiML – Women in Machine Learning.