

## Education

- 2007–2012 | **Ph.D in Media Arts and Technology, University of California Santa Barbara, USA.**  
2000–2002 | **MSc in Electrical and Computer Engineering, University of Los Andes, Bogotá, Colombia.**  
1994–2000 | **BS in Electrical Engineering, Javeriana University, Bogotá, Colombia.**

## Appointments

- Fall 2014 | **Lecturer, School of Information: Science, Technology and Arts (SISTA), University of Arizona, Tucson**  
Teaching the advanced creative coding class. This class includes programming real-time graphics, audio processing, images and computer vision and using depth sensing cameras.
- 2013–2014 | **Postdoctoral Research Associate, School of Information: Science, Technology and Arts (SISTA), University of Arizona, Tucson**  
Assist Dr. Forbes with research projects, user studies, and coding; help to set up the SISTA multimedia lab; edit and author original publications related to the SISTA multimedia lab; and pursuit independent projects related to Dr. Forbes research interests in multimedia art and visualization.
- 2008–2011 | **Teaching Assistant, Media Arts & Technology Department, University of California, Santa Barbara.**  
Assist students, design course material, help determine grades for the courses of digital audio programming and media signal processing.
- Summer 2010 | **Video Processing Researcher, Intel Corporation, Digital Home Group, Chandler Arizona.**  
Exploratory research on 2D to 3D conversion. Literature survey and summary of the state of the art. Implement Depth Image-Based Rendering (DIBR) algorithm (2D + depth to L&R views). Implement depth extraction approach based on geometry, image type and gradient templates. Implement other approaches to depth extraction based on static cues (sharpness, contrast, etc.). Implement motion based approaches to depth extraction. Integrate all modules on a single Matlab application, including control and debug hooks. Document results and provide recommendations for future work.
- 2005–2007 | **Assistant Professor, Department of Electrical Engineering, Javeriana University, Bogotá Colombia.**  
Teach undergraduate courses for Electrical Engineering. Lecturer of the graduate courses of stochastic processes and Digital Signal Processing. Scientific Director of the XI National Symposium of signal Processing, Images and Artificial Vision, STSIVA 2006.
- 2002 | **Research Assistant, University of Los Andes, Microelectronics center (CMUA).**  
Construction of the prototype of the acoustic prosthesis “Pauper Tango,” performing real time pitch extraction of speech signals using the DSP56002 processor.

## Projects

- 2008–2010 | **Collaborator, “Zoomorph” Software simulating how non-human animals see.**  
Design algorithms to manipulate images that represent the vision of different types of animals.
- 2008, 2010 | **Project Engineer, “We Are Stardust,” interactive installation. Pasadena and Vancouver.**  
Design and implement software to manipulate a robotic infra-red camera. Create the algorithm for the real time processing of an infra-red camera image. Develop an OpenGL animation using data from the NASA Spitzer Space Telescope.
- 2004–2005 | **Researcher, Visual Telephony System Over Very Low Capacity Channels.**  
Development of algorithms for real time segmentation of the human mouth region. Instructor in the workshop of visual speech. STSIVA Manizales 2004.

## Skills

Signal Processing	Algorithms and techniques for signal/image manipulation for analysis and synthesis, pattern recognition, and computer vision.
Programming	Creative coding frameworks including Processing and Openframeworks. Interactive web programming in Javascript and HTML5. Signal/image processing applications in C/C++ and Matlab. Shader programming in GLSL. Use of open source libraries for signal and image processing like OpenCV and libtsp. 3D scene and animation creation in WebGL, OpenGL and Maya MEL. Multiplatform open source libraries for multimedia programming like: OpenCV, RtAudio, PortAudio, libtsp, Juce. Fixed and floating point DSP processors like the TMS320C6713 and the DSP56002.

## Awards and Honors

2014	“Best Paper Award”, 8th International Workshop on Video Processing and Quality Metrics for Consumer Electronics, Chandler, Arizona.
2011	“Narrative Line,” Short animation, 2 <sup>nd</sup> place in animation category, Swan Lake: Moving Image & Music Awards 2011, Mittweida Germany.
2010	“Merit Award,” Video Processing Intern, Intel corporation, Digital Home Group, Chandler Arizona.
2009	“The Fitting Dance,” Experimental animation, Short animation division, Jury recommended work 2009 Japan media Arts Festival. Japan.
2007	“Regents Special Fellowship,” University of California, Santa Barbara.

## Teaching

### The University of Arizona

ISTA 403	Advanced Creative Coding, F2014. Lecturer
ISTA 416	Human-Computer Interaction, S2014. Guest Lecturer.
ISTA 352	Images: Past, Present, and Future, F2013. Guest Lecturer.

### University of California Santa Barbara

MAT 200C	Research Tactics, S2011. Teaching Assistant
MAT 259	Visualizing Information, W2011. Teaching Assistant
MAT 201B	Computing with Media Data, F2010,W2010. Teaching Assistant
MAT 240F	Music Systems Programming in SuperCollider, S2010. Teaching Assistant
MAT 240C	Spatial Sound Manipulation, F2009. Teaching Assistant
MAT 201A	Media Signal Processing, S2009. Teaching Assistant
MAT 240A	Sound IO & Streaming. F2008.Teaching Assistant

### Pontificia Universidad Javeriana

	Computer Vision and Image processing using OpenCV, Summer 2009, Lecturer.
	Stochastic Processes, Graduate Course. Lecturer.
	Digital Signal Processing, Graduate Course. Lecturer.
	Communication Systems, Under Graduate Course. Lecturer.
	Signal Analysis, Under Graduate Course. Lecturer.

### Universidad de los Andes

	Digital Systems, Under Graduate Course. Lecturer.
	Digital Signal Processing, Graduate Course. Lecturer.

## Publications

- 2015 J. Villegas, R. Etemadpour, and A Forbes. Evaluating the perception of different matching strategies for time-coherent animations. In *Proceedings of the IS&T/SPIE Electronic Imaging, Human Vision and Electronic Imaging Conference, San Francisco*, February 2015
- 2014 Javier Villegas and Angus Graeme Forbes. Analysis/synthesis approaches for creatively processing video signals. In *Proceedings of the ACM International Conference on Multimedia*, MM '14, pages 37–46, New York, NY, USA, 2014. ACM
- 2014 C. Jette, K. Thomas, J. Villegas, and A. Forbes. Translation as technique: Collaboratively creating an electro-acoustic composition for saxophone and live video projection. In *Proceedings of the 40th International Computer Music Conference, Athens, Greece*, September 2014
- 2014 A. Forbes, J. Villegas, K. Almryde, and E. Plante. A stereoscopic system for viewing the temporal evolution of brain activity clusters in response to linguistic stimuli. In *Proceedings of the IS&T/SPIE Electronic Imaging, Stereoscopic Displays and Applications Conference, San Francisco*, February 2014
- 2014 J. Villegas and A. Forbes. Interactive non-photorealistic video synthesis for artistic user experience on mobile devices. (Best Paper Award). In *Proceedings of the 8th International Workshop on Video Processing and Quality Metrics for Consumer Electronics (VPQM), Chandler, Arizona*, February 2014
- 2014 A. Forbes and J. Villegas. Creative applications of microvideos. In *Proceedings of the Sixth International Conferences on Advances in Multimedia, Nice, France*, February 2014
- 2014 J. Villegas and G. Legrady. Creating Coherent Animations from Video. *Int. J. of Arts and Technology*, 7(2/3):148–162, 2014
- 2013 J. Villegas and A. Forbes. Double-meaning: Interactive animations with simultaneous global and local narrative. In *Proceedings of the Re-new Digital Arts Festival*, pages 302–306, Oct. 2013
- 2012 J. Villegas and G. Legrady. Generating Time-Coherent Animations from Video Data. In Anthony L. Brooks, editor, *Arts and Technology*, volume 101 of *Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, pages 108–117. Springer Berlin Heidelberg, 2012
- 2011 J. Caviedes and J. Villegas. Real Time 2d to 3d Conversion: Technical and Visual Quality Requirements. In *Consumer Electronics (ICCE), 2011 IEEE International Conference*, pages 897–898, Jan. 2011
- 2010 J. Villegas. The Autonomous Duck: Exploring the Possibilities of a Markov Chain Model in Animation. *Arts and Technology*, pages 272–278, 2010
- 2009 G. Legrady, J. Villegas, and A. Burbano. The "We Are Stardust" Installation. In *Proceedings of the 17th ACM International Conference on Multimedia*, pages 1087–1090. ACM, 2009
- 2005 P. Vizcaya, L. Valderrama, C. Soto, R. Solano, R. Carrillo, M. Díaz, E.M. Bárcenas, J. Villegas, and O. Ayala. Codificación de Telefonía Visual Empleando un Conjunto de Imágenes. *Revista Energía y Computación*, 13(2), 2005
- 2005 E. Bárcenas, M. Díaz, R. Carrillo, R. Solano, C. Soto, L. Valderrama, J. Villegas, and P. Vizcaya. A Coding Method for Visual Telephony Sequences. pages 87–92, 2005
- 2002 A.G. Rozo, R. Perry, and J. Villegas. Construcción de la Prótesis Táctil Pauper Tango. *Revista de Ingeniería*, pages 27–30, 2002
- 2002 A.R. Palacios and J.V. Plazas. A Foveal Architecture for Stereo Matching. In *Image Processing. 2002. Proceedings. 2002 International Conference on*, volume 2, pages II–521 – II–524 vol.2, 2002

## Exhibitions & Performances

- 2014 “Abstract Mobile Mirrors,” Art App, Currents 2014, The Santa Fe International New Media Festival - El Museo Cultural de Santa Fe. Santa Fe, NM. 2014.
- 2014 “Herbaceous,” Digital Latin America - 516 ARTS Albuquerque, NM. 2014;
- 2013 “Ant Theater,” Currents 2013, The Santa Fe International New Media Festival - El Museo Cultural de Santa Fe. Santa Fe, New Mexico. 2013.
- 2013 “ $v \rightarrow t \rightarrow d$ ”, Live visuals for electro-acoustic composition with saxophone, Conflucenter for creative inquiry’s Show and Tell at Playground, Tucson, Az, 2013.
- 2013 “Background Singer,” Golden Orchid International Animation Festival, Pennsylvania State University, Pennsylvania 2013.
- 2013 “Background Singer,” Crosstalk Video Art Festival Budapest, Budapest 2013.
- 2013 “Background Singer,” RABISCUITS - Bienal de Arte Experimental, Alcobaa 2013
- 2013 “Real Time Ambiguous Animations”, Poster & Demo in the International symposium of computational Aesthetics in Graphics, Visualization and Imaging (CAe) , Anaheim, CA, 2013.
- 2013 “Background Singer,” EFF Portland 2013 - Experimental Film Festival. Portland 2013;
- 2013 “Background Singer,” Experiments in Cinema Festival v8.53,Albuquerque, NM 2013
- 2013 “Background Singer,” International Speechless Film Festival in Mankato, Minnesota. 2013
- 2012 “Background Singer,” VAFA 2012 - Video Art for All, International Video Art Festival. Macau 2012.
- 2012 “Herbaceous,” Prospectives 12, International Festival of Digital Art - University of Reno Nevada, Prologue Yields exhibition, Sheppard Fine Arts Gallery, Department of Art. 2012.
- 2012 “Self-Portrait with Lines,” “Self-Portrait with Ellipses,” Exhibition of Mathematical Art, joint mathematics meetings 2012.
- 2011 “Slave of your words,” in Questionable Utility Media Arts & Technology Art show, University of California Santa Barbara 2011.
- 2011 “Please Stand By,” in Questionable Utility Media Arts & Technology Art show, University of California Santa Barbara 2011.
- 2011 “The Fitting Dance,” Short animation, Byte Gallery International Exhibition summer 2011. Transylvania University.
- 2010 “Meshflow: A Grid-Warping Mirror,” Advances in Computer Entertainment Technology (ACE), Creative Showcase, Taipei Taiwan, 2010.
- 2010 “We Are Stardust,” with George Legrady, in the CODE LIVE exhibition at the Vancouver Olympics 2010.
- 2010 “Meshflow,” in Everybody Wants Everything Media Arts & Technology Art show, University of California Santa Barbara 2010.
- 2010 “Triangles and Cats,” in Everybody Wants Everything Media Arts & Technology Art show, University of California Santa Barbara 2010.
- 2009 “We Are Stardust,” in “Observe” exhibition with George Legrady, at the Art Center College of Design 2009.
- 2009 “The Fitting Dance,” Short animation division, 13<sup>th</sup> Japan media Arts Festival. Japan 2009.

## Invited Talks

- 2014 “Interactivity in Digital Art,” Panel with exhibition artists, Digital Latin America, Albuquerque, NM, 2014.
- 2014 “An Analysis-Synthesis Approach to the Creative Processing of Video Signals,” Rochester Institute of technology. Rochester, NY 2014.
- 2013 “Interactive Abstract Mirrors on Mobile Devices,” Mobile Matters, Innovation in Action, Symposium, University of Arizona 2013.
- 2013 “An Analysis-Synthesis Approach to the Creative Processing of Video Signals,” Computer Vision Group, University of Arizona 2013.
- 2010 “What Do You See? Zoomorph: Software Simulating How Non-Human Animals See,” Seminar Media Arts & Technology, University of California Santa Barbara 2010.
- 2009 “We Are Stardust,” with George Legrady, Seminar Media Arts & Technology, University of California Santa Barbara 2009.
- 2009 “Audio and Video Processing Using Public Domain Multi-platform Libraries,” Escuela Colombiana de Ingenieria Julio Garavito, Bogotá 2009.