

Cali M. Fidopiastis

Department of Modeling and Simulation
Institute for Simulation & Training
University of Central Florida
Orlando, FL 32816

3100 Technology Pkwy
Orlando, FL 32826
Office: (407) 882-1451
cfidopia@ist.ucf.edu

PERSONAL INFORMATION:

Citizenship: USA
Military Security Clearance (Obtained July 6, 2007)

BIOGRAPHICAL INFORMATION

Cali M. Fidopiastis obtained her PhD in Modeling and Simulation from the Institute for Simulation and Training at the University of Central Florida. Cali applies biomathematical modeling and cognitive neuroscience approaches to the elucidate mechanisms of brain plasticity. The essence of her work is to study human performance within naturalistic environments employing devices such as near infrared imaging (fNIR) and EEG to capture more than overt behavioral metrics. Her current work combines the understanding of head-mounted displays, computer graphics, and user perception to create optimal virtual environment training solutions for military, surgical, and rehabilitation applications.

Research Interests: Virtual reality applications for cognitive and physical rehabilitation, user-centered assessment of immersive and augmented virtual environments, mathematical modeling for medical applications, visual perception, skill acquisition, naturalistic decision making, and brain plasticity

Educational Background:

August 2006	University of Central Florida, Orlando, FL PhD. in Modeling and Simulation
August 2000	University of Denver, Denver, CO Advanced Certificate in Computer Science
June 1998	University of California, Irvine, CA M.A. in Experimental Psychology Master's Thesis: Color from Motion: Effects of Dot Density and Dot Placement published in <i>Perception</i> (2000), 29, 567 - 580.
June 1994	University of California, Irvine, CA B.S. in Biology (emphasis Molecular Biology) B.A. in Psychology (emphasis Neuropsychology)

Awards:

2005-Present National Scholars Honor Society
2005-Present Phi Kappa Phi Honor Society
2005-2006 NSF Fellowship for Teaching Science in K-12
2004-2005 LINK Fellowship (4 US wide Awards from all Modeling & Simulation fields)
2000-2001 Teaching Assistant Excellence Rating, University of Denver
1996-1998 Teaching Assistant Excellence Rating, University of Irvine
Summer 1997 ATR Human Information Processing Research Internship, Kyoto, Japan

Teaching Experience:

University of Central Florida, Guest lecturer. September 2005 to Present.
Modeling and Simulation- Human Factors for Virtual Environments, Perception and Sensation in Virtual Environments. Co created and taught IDS 6713 Virtual Reality as part of Modeling and Simulation curriculum development plan.

Optics in Simulation and Training, Lead Instructor. Short Course given at the Interservice/Industry Training, Simulation and Education Conference (IITSEC) 2006

University of Denver, Teaching/Research Assistant. September 2000 to June 2002. -Research Methods- Perception and Sensation-fMRI Lab

University of California, Irvine. Laboratory Teaching Assistant.
September 1995 to June 1998. -Introduction to Statistics-Observation Methods and Materials-Introduction to Experimental Psychology.

Related Employment Experience:

Applied Cognition in Immersive in Immersive Virtual Environments Laboratory. Associate Director for Applied Cognition. August 2006 to Present.

Optical Diagnostic and Applications Laboratory. Research Assistant.
August 2002 to August 2006.

Spectron Engineering, Inc. Research Assistant. April 2002 to August 2002.

University of Denver. Office for Educational Technology Assistant.
September 2000 to June 2002.

eCollege.com. Survey Research Assistant. November 1998 to September 2000.

Rehabilitation Specialist/Personal Trainer. January 1989 to 2000.

Winways Out Patient Rehabilitation. Cognitive Therapist/Physical Therapist Assistant. May 1994 to June 1995.

Publications and Technical Presentations:

Journal Publications

Fidopiastis, C. M., Rizzo, A. A., & Rolland, J. P. (Accepted). User-centered virtual environment design for cognitive rehabilitation, *Journal of NeuroEngineering and Rehabilitation*.

Rolland, J.P., Cakmakci, O., Covelli, J., **Fidopiastis, C.M.**, Fournier, F., Martins, R., F. Hamza-Lup, F. & Nicholson, D. (2007). Beyond the desktop: Emerging technologies for supporting 3D collaborative teams. *International Journal on Interactive Design and Manufacturing*, 1(4), 239-241.

Fidopiastis, C. M., Stapleton, C. B., Whiteside, J. D., Hughes, C. E., Fiore, S. M., Martin, G. A, Rolland, J. P., Smith E. M. (2006). Human experience modeler: Context-driven cognitive retraining to facilitate transfer of learning. *CyberPsychology & Behavior*, 9(2), 183-187.

Fidopiastis, C. M., Fuhrman, C., Meyer, C. & Rolland, J. P. (2005, October), Methodology for iterative evaluation of prototype head-mounted displays in virtual environments: visual metrics. *Presence: SI Immersive Projection Technology*, 14(5), 550-562.

Rolland, J. R., Ha, Y., & **Fidopiastis, C. M.** (2004). Albertian errors in head-mounted displays: I. choice of eyepoints location for a near or far field task visualization. *Journal of the Optical Society of America*, 21, 6, 901-12.

Reed, C. L., McGoldrick, J. E., Shackelford, R., & **Fidopiastis, C. M.** (2004). Are human bodies represented differently from other animate and inanimate objects? *Visual Cognition*, 11, 4, 523-550.

Pollick, F.E., **Fidopiastis, C. M.**, & Braden, V. (2001). Recognizing the style of spatially exaggerated tennis serves. *Perception*, 30, 323 - 338.

Fidopiastis, C. M., Hoffman, D.D., Prophet, W.D., & Singh, M (2000). Constructing surfaces and contours in displays of color from motion: The role of nearest neighbor and maximal disk. *Perception*, 29, 567 - 580.

Book Chapters

Fidopiastis, C. M. & Weiderhold, M. (Nov, 2008). Mindscape retuning and brain reorganization with hybrid universes: The future of virtual rehabilitation. In D. Schmorrow, J. Cohn, & D. Nicholson (eds.) *The PSI Handbook of Virtual Environments for Training & Education: Developments for the Military and Beyond*. (Vol 3., pp. 427-434). Westport, CT: Praeger Security International.

Skinner, A., Sebrechts, M., **Fidopiastis, C.**, Berka, C., Vice, J., and Lathan, C., (Accepted). Psychophysiological Measures of Virtual Environment Training, In *Human*

Performance Enhancement in High Risk Environments: Insights, Developments & Future Directions from Military Research.

Contributor for multiple sections on physical rehabilitation in Reed, Presley MD (Ed.). (2001). *The medical disability advisor: Workplace guidelines for disability duration* (4th ed.). Boulder, CO: Reed Group Ltd.

Patents

Santhanam, A., Rolland, J. P., & **Fidopiastis, C. M.**, Real-time 3D lung dynamics using high-resolution 3D lung models, US Patent Filed, January 2006.

Peer Reviewed Proceedings Publications

Fidopiastis, C. M., Vartak, A. A., Bowers, C. A., Nicholson, D. M., & Schmorrow, D. D. (2008). A framework for validating adaptive instructional trainers using psychophysiological Measures. Psychophysiology in Ergonomics Conference, New York City, NY, September 21, 2008.

Fidopiastis, C. M. & Nicholson, D. M. (2008). User-in-the-loop Adaptive System Design: Information Fusion Examples for Visualizing and Measuring Cognitive States. Workshop presented at the Applied Ergonomics International Conference, Las Vegas, NV, July 14-17, 2008.

Vartak, A. A., **Fidopiastis, C. M.**, Nicholson, D. M., Wafsy, M. B., Schmorrow, D. D. (2008, in press). Cognitive state estimation for adaptive leaning systems using wearable physiological sensors. In the proceedings of Biosignals 2008, Funchal-Madeira, Portugal, January 28-31.

Fidopiastis, C. M., Hughes, C. E., Smith, E. M. & Nicholson, D. M. (2007). Developing baseline assessments for virtual rehabilitation environments. In the *Proceedings of the 4th International INTUITION Conference*, Athens, Greece, October 4-5.

Fidopiastis, C. M., Hughes, C. E., Smith, E. M. & Nicholson, D. M. (2007). Assessing virtual rehabilitation design with biophysiological metrics. In the *Proceedings of Virtual Rehabilitation 2007*, Venice, Italy, September 27-29.

Nicholson, D. M., **Fidopiastis, C. M.**, Bowers, C. A., Mahajan, P., Vartak, A., Ballion, T., & Anglesea, A. (2007). Multiple baseline approach to understanding psychometric data in augmented cognition paradigms. In D. D. Schmorrow, D. M. Nicholson, J. M. Drexler, & L. M. Reeves (Eds.), *Foundations of augmented cognition* (4th Ed., pp. 107-111). Arlington, VA: Strategic Analysis, Inc.

Davis, L., **Fidopiastis, C. M.**, Vartak, A., Mahajan, P., & Nicholson, D. (2007). Determining the color of your mood rock: Synchronizing dynamic eye tracking data with arousal measures in a virtual environment. In D. D. Schmorrow, D. M. Nicholson, J. M. Drexler, & L. M. Reeves (Eds.), *Foundations of augmented cognition* (4th Ed., pp. 162-170). Arlington, VA: Strategic Analysis, Inc.

Nicholson, D., Davis, L., **Fidopiastis, C. M.**, Schmorrow, D., & Stanney, K. (2007, in press). An adaptive instructional architecture for training and education. In D. Schmorrow & L. Reeves (Eds.). *Foundations of Augmented Cognition, Third International Conference, FAC 2007*, Held as Part of HCI International 2007, Beijing, China, July 22-27, 2007, pp. 380-384.

Drexler, J., Shumaker, R., Nicholson, D., **Fidopiastis, C. M.**, & Davis, L. (2007). Aiding tomorrow's augmented cognition researchers through modeling and simulation curricula. In D. Schmorrow & L. Reeves (Eds.). *Foundations of Augmented Cognition, Third International Conference, FAC 2007*, Held as Part of HCI International 2007, Beijing, China, July 22-27, 2007, pp. 415-423.

Kemper, D., Davis, L., **Fidopiastis, C. M.**, & Nicholson, D. (2007). Foundations for creating a distributed, adaptive user interface. In D. Schmorrow & L. Reeves (Eds.). *Foundations of Augmented Cognition, Third International Conference, FAC 2007*, Held as Part of HCI International 2007, Beijing, China, July 22-27, 2007, pp. 251-257.

Nicholson, D., Bowers, C., Davis, L. & **Fidopiastis, C. M.** (2007). Applied cognition and training research to address emerging military requirements. *Proceedings of SPIE* (Volume 6564). Bellingham, WA: SPIE.

Nicholson, D. M., Stanney, K., Fiore, S., Davis, L., **Fidopiastis, C. M.**, Finkelstein, N., & Arnold, R. (2006). An adaptive system for improving and augmenting human performance. In D. D. Schmorrow (Ed.), *Foundations of Augmented Cognition* (pp. 215-222). Mahwah, NJ: Lawrence Erlbaum Associates.

Santhanam, A. P., **Fidopiastis, C. M.**, Davenport, P., Langen, K., Meeks, S. & Rolland, J. P. (2006). Real-Time Simulation and Visualization of Subject-Specific 3D Lung Dynamics, In the *Proceedings of the 19th IEEE Symposium on Computer-Based Medical Systems (CBMS'06)*, pp. 629-634.

Santhanam, A., **Fidopiastis, C. M.**, Langen, K., Meeks, S., Kupelian, P., Davis, L. & Rolland, J. P. (2006). Visualization of tumor-influenced 3D lung dynamics, *Proceedings of SPIE, vol. 6141*, pp. 61410C-1-61410C-12.

Santhanam, A., **Fidopiastis, C. M.**, Anton, J. & Rolland, J. P. (2006, January). Pneumothorax-Influenced 3D Lung Deformations. In J. D. Westwood, R. S. Haluck, H. M. Hoffman, G. T. Mogel, R. Phillips, R. A. Robb, & K. G. Vosburgh (Eds.), *Proceedings of the 14th Annual Medicine Meets Virtual Reality Conference, Vol. 119*, pp. 480-485. Long Beach, CA: IOS Press.

Fidopiastis, C. M., Stapleton, C. B., Whiteside, J. D., Hughes, C. E., Fiore, S. M., Martin, G. A., Rolland, J. P. & Smith E. M. (2005, September), Human experience modeler: Context driven cognitive retraining to facilitate transfer of training. *Fourth Int.*

Workshop on Virtual Rehabilitation (IWVR '05), September 19-21, 2005, Catalina Island, CA.

Hamza-Lup, F.G., Santhanam, A. P., **Fidopiastis, C. M.** & Rolland, J. P. (2005, March). Distributed Training System with High-Resolution Deformable Virtual Models, *ACMSE March 18-20, 2005, Kennesaw, GA.*

Santhanam, A. P., **Fidopiastis, C. M.**, Hamza-lup, F.G., Rolland, J.P., & Imielinska, C. (2004, September). Physically-based Deformation of High-resolution 3D lung models for Augmented Reality based Medical Visualization, *Medical Image Computing and Computer Aided Intervention. Proceedings of the AMI-ARCS 2004 Workshop*, September 30, (pp. 21-31). Rennes, France: AMI-ARCS.

Sangani, H., Bradley, K. & **Fidopiastis, C. M.** (2004, February). The effectiveness of training mental rotation and laparoscopic surgical skills in a virtual environment, *Proceedings of the Swedish American Workshop on Modeling and Simulation 2004 (SAWMAS-2004)*, (pp. 28-31), February 2-3, Cocoa Beach, Florida.

Santhanam, A. P., **Fidopiastis, C. M.**, Tal, A., Hoffman-Ruddy, B., Rolland, J. P. (2004, January). An adaptive driver and real-time deformation algorithm for visualization of high-density lung models, In J. D. Westwood, R.S. Haluck, H.M Hoffman, G.T. Mogel, R. Philips, and R.A. Robb (Eds), *Proceedings of the 12th Annual Medicine Meets Virtual Reality Conference 2004, Vol. 98*, (pp. 333-339), Newport Beach, CA: IOS Press.

Fidopiastis, C. M. & Rolland, J. P. (2003). User centered evaluation of prototype head mounted displays in virtual environments: Projection display case study. In H. Thwaites (Ed.), *Hybrid reality: Art, technology and the human factor. Proceedings of the 9th annual International Conference on Virtual Systems and Multimedia, October 15-17*, (pp. 273-280). Montreal, Canada: International Society on Virtual Systems and Multimedia.

Fidopiastis C. M., Meyer C., Fuhrman C., Rolland J. P. (2003). Quantitative assessment of visual acuity in projection head-mounted displays. In C.E. Rash, E. R. Colin (Eds.) *Proceedings of the SPIE Aerosense: Helmet- and Head-Mounted Displays VIII: Technologies and Applications 5079*, pp. 399-406.

Speck, R. P., **Fidopiastis, C. M.** & Herz, N. E. (2003). "HMD cueing mode degradation", In: Rash CE, Colin ER (Eds.). *Proceedings of the SPIE Aerosense: Helmet- and Head-Mounted Displays VIII: Technologies and Applications 5079*, pp. 117-126.

McAler, P., **Fidopiastis, C. M.**, Braden, V., & Pollick, F. E. (2003). Obtaining features for the recognition of human movement style [Abstract]. *Journal of Vision*, 3(9), 527.

Pollick, F.E., **Fidopiastis, C. M.**, & Braden, V. (1999). Training the recognition of biological motion. *Investigative Ophthalmology and Visual Science*, 40, S740.

Fidopiastis, C. M. & Pollick, F. E. (1998). Recognition of exaggerated human movement. *Investigative Ophthalmology and Visual Science*, 39, S1094.

Other Proceedings Publications

Whiteside, J. & **Fidopiastis, C. M.** (2006, November). Mixed reality enhances learning for a stroke patient. Poster presented at the American Speech-Language-Hearing Association (ASHA) Convention, Miami, FL.

Santhanam, A., **Fidopiastis, C. M.**, & Rolland, J. P. (2004, March). PRASAD: A non-invasive pre-operative visualization framework for breathing lungs. Poster presented at IEEE VR 2004.

Santhanam, A., **Fidopiastis, C. M.**, & Rolland, J.P. (2003, November). “A framework for pre-operative visualization of dyspnea using augmented reality”, Poster presented at the Digital Biology: The emerging paradigm symposium National Institute of Health.

Fidopiastis, C. M., Goldiez, B., & Long, G. (2003, Spring). “Medical Simulation and Training Surgical and Therapy Applications”. Paper presented at the Spring Interoperability Workshop.

Professional Affiliations and Services:

Societies Affiliations

Member, Institute of Electrical and Electronics Engineers (IEEE) & IEEE Engineering and Biology Society

Member, SPIE International

Member, Vision Sciences Society

Member, Organization for Human Brain Mapping

Member, Psychophysiology in Ergonomics

Editorial Positions

IEEE and ACM International Symposium on Mixed and Augmented Reality (ISMAR),
Reviewer

Human Computer Interaction International Conference, Reviewer

Augmented Cognition International Conference, Reviewer

International Workshop on Virtual Rehabilitation now Virtual Rehabilitation Conference,
Reviewer

Selected Conference/Session Leadership and Chair Position

Co-Coordinator for the 4th Augmented Cognition International Conference held in conjunction with the 51st meeting of the Human Factors and Ergonomics Society in Baltimore, MD, October 1-5, 2007.

Poster Session Chair for the Virtual Rehabilitation 2007 Conference held in Venice, Italy, September 27-29, 2007.

Session Chair for the 3rd Augmented Cognition International Conference held in conjunction with the 12th HCI International Conference in Beijing, P.R. China, July 22-27, 2007.

Program and Technical Committee Member

Planning committee member for Research Week 2007 at the University of Central Florida