

# Jonathan Gratch

Institute for Creative Technologies  
Department of Computer Science  
University of Southern California  
13274 Fiji Way, Suite 600, Marina del Rey, CA 90292

gratch AT ict.usc.edu  
<http://www.ict.usc.edu/~gratch/>

## Research Interests

Artificial Intelligence, cognitive science, emotion modeling, planning, multi-agent systems.

## Education

Ph.D. in Computer Science, University of Illinois, June 1995  
Thesis: On Efficient Approaches to the Utility Problem in Adaptive Problem Solving  
DOCTORAL COMMITTEE: G. F. DeJong (Chair), J. I. Marden, L. B. Pitt, L. A. Rendell, M. J-P. Shaw

M.S. in Computer Science, University of Illinois, May 1993.  
B.A. magna cum laude in Computer Science, University of Texas at Austin, May 1986.

## Professional Experience

Institute for Creative Technologies, University of Southern California  
Associate Director and Research Associate Professor. Head a group researching techniques for incorporating emotions, personality, and story into virtual training environments.  
March 2007 - Present

Institute for Creative Technologies, University of Southern California  
Project Leader and Research Associate Professor  
July 2006 – March 2007

Institute for Creative Technologies, University of Southern California  
Project Leader and Research Assistant Professor.  
June 2000 - July 2006

Information Sciences Institute, University of Southern California

Computer Scientist and Research Assistant Professor.  
Performed research and development into real-time planning techniques, multi-agent cooperative behavior, and behavioral modeling learning.  
August 1995 - June 2000

Beckman Institute, University of Illinois at Urbana-Champaign  
Research Assistant. Developed machine learning techniques for acquiring problem solving heuristics - research lead to significant problem solving improvements on the Deep Space Network scheduling system, a real-world scheduling application, and in several planning domains. Focused on both theoretical analysis of these learning techniques and their application to practical industrial problems.  
Fall 1989 - July 1995

Jet Propulsion Laboratory, California Institute of Technology  
Research Consultant. Worked on learning approach for the Deep Space Network scheduling project.  
July 1992 - October 1992, February 1993, September 1994

## **University Service**

### **Committees:**

Graduate Student Assistantship Committee (2000-2003)  
Research Faculty Merit Committee (Chair, 2007)  
Committee for Research Faculty Applications (2007-2008)

### **Courses:**

CS534: Affective Computing, Spring 2009  
CS534: Affective Computing, Spring 2007  
CS541: Artificial Intelligence Planning, Fall 2000  
CS593: Autonomous Learning and Discovery Agents, Fall 1997

### **Graduate Students:**

Wenji Mao, PhD 2006  
Thesis: Modeling Social Causality and Social Judgment in  
Multi-agent Interactions  
Anna Okhmatovskaia, M.S. 2006  
Hyeoksoo Kim, PhD 2008  
Thesis: A Planner-Independent Approach to Human-Computer Interactive  
Planning  
Celso de Melo  
Ning Wang, PhD 2008  
Lixing Huang

### **Dissertation Committees:**

Lixing Huang (USC), Chair  
Celso de Melo (USC), Chair

Hyeoksoo Kim (USC), Chair  
Wenji Mao (USC), Chair  
Sejin Oh (GIST Korea), Member  
Ahyoung Choi (GIST Korea), Member  
James Pita (USC), Member  
Abe Kazemzadeh (USC), Member  
Jina Lee (USC), Member  
Marc Sparagen (USC), Member  
Nan Jing (USC), Member  
Henriette van Vugt (Vrije Universiteit), Member  
Mei Si (USC), Member  
Robert Marinier (University of Michigan), Member  
Evan Drumwright (USC), Member  
Erdan Gu (University of Pennsylvania), Member  
Janusz Marecki (USC), Member  
Young-jun Kim (USC), Member  
Matheen Siddiqu (USC), Member  
Dusan Jan (USC), Member

## **Grants and Contracts**

HCC: Small: Learning by Explaining to a Virtual Human, NSF (2009-2012), \$496,000, PI  
Validating a computational model of emotion's consequences for decision-making,  
AFOSR, \$933,000 (2009-2012), Co-PI  
Stress and Emotion Project, U.S. Army RDECOM, \$826,493 (2009), PI  
MAJOR: Collaborative Research: Modeling Creative and Emotive Improvisation in  
Theatre, NSF (2008-2010), Senior personal  
Virtual Humans in Kinetic Environments, USC/ICT, \$500,000 (2008), PI  
Is rapport in the eye, ear, or mind of the beholder? Phase 2. U.S. Army RDECOM,  
\$100,000 (2008), PI  
HCC: Building Rapport with Virtual Humans, NSF, \$450,000 (2007-9), PI  
Collaborative Research—Dyadic rapport within and across cultures: Multimodal  
assessment of human-human and human-computer interaction, NSF \$650,000 (2007-  
2009), Co-PI  
Quantifying the Human Interactional Efficacy of Advanced Virtual Human Agents for  
Training, U.S. Army RDECOM, \$116,000 (2008), PI  
Is rapport in the eye, ear, or mind of the beholder? U.S. Army RDECOM, \$100,000  
(2007), PI  
Modeling and Validating Emotion's Impact on Cognition, AFOSR, \$840,000 (2006-08),  
Co-PI  
SocSim, Bavaria California Technology Center, \$4000 (2006), Co-PI  
Stress and Emotion Project, U.S. Army RDECOM, \$1,775,000 (2006-7), PI  
Virtual Human Rapport, U.S. Army RDECOM, \$100,000 (2006), PI  
HUMAINE Network on Emotion and Man-machine Interaction, EU, \$20,000 (2005-7),  
Co-PI  
Stress and Emotion Project, U.S. Army RDECOM, \$867,000 (2005), PI  
Stress and Emotion Project, Army Research Office, \$800,000 (2004), PI

Workshop on Perceptive Animated Interfaces and Virtual Humans, NSF, \$40,000, 2003,  
Co-PI  
Stress and Emotion Project, Army Research Office, \$580,000 (2003), PI  
Stress and Emotion Project, Army Research Office, \$398,000 (2002), PI  
Emotional Synthetic Forces, Army Research Institute, \$294,000 (1997-2000), PI

## **Honors and Professional Activities**

### **Editorial Board:**

Editor-in-Chief (founding), IEEE Transactions on Affective Computing  
Associate Editor, Emotion Review (2007-)  
Associate Editor, Journal of Autonomous Agents and Multiagent Systems (2010-)  
Guest Editor, IEEE Intelligent Systems, special issue on Social and Economic  
Computing

### **Elected Office:**

President, HUMAINE Association (2009-2011)  
President Elect, HUMAINE Association (2007-2009)  
Executive Committee Member, HUMAINE Association (2007-2013)

### **Program Chair or Co-Chair:**

Affective Computing and Intelligent Interaction Conference, Demo Chair, 2009  
Affective Computing and Intelligent Interaction Conference, Tutorial Chair, 2007  
Workshop on rapport and social emotions, Chair, 2007  
International Workshop on Modeling the Cognitive Antecedents  
and Consequences of Emotion, Co-chair, 2006  
International Conference on Intelligent Virtual Agents, Chair, 2006  
International Working Conference on Intelligent Virtual Agents, co-chair, 2006  
International Workshop on Virtual Humans: Design Criteria, Techniques  
and Case Studies for Creating and Evaluating Interactive  
Experiences, Workshop Co-chair, 2004  
Workshop on Accelerating Progress in Perceptive Animated Agents  
and Virtual Humans, Workshop Co-chair, 2004  
International Workshop on Virtual Humans, Workshop Co-chair, 2002  
19th International Soar Workshop, Workshop Chair, 2000

### **Senior Programming Committee Member:**

International Conference on Autonomous Agents and Multiagent Systems (2010)  
International Conference on Intelligent Virtual Agents, Organizing Committee (2006-)  
Conference on Behavioral Representation in Modeling and Simulation (2007)  
International Conference on Virtual Storytelling (2003)  
National Conference on Artificial Intelligence (1998)

### **Program Committee Member:**

International Conference on Affective Computing and Intelligent Interaction (2011)  
International Society for Research on Emotions (2011)  
International Workshop on Human Behavior Recognition (2010)

Workshop on Specification and Computation of Affect in Collaborative and Social  
NETworks (2009)  
International Symposium on Ubiquitous Virtual Reality (2008-2009)  
International Workshop on Social Computing (2008)  
Cognitive Science Conference, Prize Committee (2007)  
International Conference on Cognitive Modeling (2007)  
International Society for Gesture Studies (2007)  
International Conference on Autonomous Agents and Multiagent  
Systems (2002-2008)  
National Conference on Artificial Intelligence (1996, 1997, 1998,  
2004, 2006, 2010)  
Workshop on Perception and Interactive Technologies (2005, 2006)  
International Conference on Affective Computing and Intelligent  
Interaction (2005)  
Portuguese Conference on Artificial Intelligence (2005)  
Cognitive Science Conference (2004)  
Conference on Behavior Representation in Modeling and Simulation (2003)  
Conference on Computer Animation and Social Agents (2003)  
International Conference on Autonomous Agents (2001)  
International Conference on Virtual Storytelling (2001)  
International Conference on Artificial Intelligence Planning  
Systems (2000)  
International Joint Conference on Artificial Intelligence (1997)  
International EMCSR Symposium on Affective Computational Entities (2004)  
IUI workshop on Affective Interactions (2005)  
Workshop on Human-like Intelligent Interfaces (2004)  
Workshop on Affective Dialogue Systems (2004)  
AAAI Spring Symposium on Emotion Architectures (2004)  
Workshop on Affective and Attitude User Modeling (2003)  
International Working Conference on Intelligent Virtual Agents (2003)  
Florida Artificial Intelligence Research Symposium (1998)

**Reviewer:**

Transactions of Affective Computing (2011)  
Transactions on Interactive Intelligent Systems (2011)  
Autonomous Robotics (2010)  
Air Force Office of Scientific Research (2009-2010)  
Oxford University Press (2010)  
Dutch National Science Foundation (2010)  
NSF Review Panel, Social-Computational Systems (2010)  
Cognitive Science (2009)  
NSF Career Award (1998, 2009)  
Transactions on Vision and Computer Graphics (2009)  
Journal of Brazilian Computer Society  
European Science Foundation, Committee for the Social Sciences (2009)  
Air Force Office of Scientific Research (2009)

International Journal of Human-Computer Studies (2009)  
Artificial Intelligence Journal (2007, 2008)  
Journal of Autonomous Agents and Multi-agent Systems (2008)  
Adaptive Behavior (2008)  
NSF Review Panel, CreativeIT program (2007)  
Language and Speech (2007)  
Journal of Natural Language Engineering (2007)  
Cognition and Emotion (2006)  
Transactions in Robotics (2006)  
International Journal of Humanoid Robotics (2005, 2006)  
Journal of Computer Science Technology (2006)  
Eurographics (2005)  
Journal of Cognitive Systems Research (2004, 2006)  
Journal of Artificial Intelligence Research (2003, 2004)  
AI Magazine (2002)  
Journal of Visualization and Computer Animation (2002)  
User Modeling and User-Adapted Interaction: An International Journal  
(special Issue on User Modeling and Intelligent Agents. (2001)  
IEEE Transactions on Systems, Man, and Cybernetic (special issue on  
"Socially Intelligent Agents - The Human in the Loop"), 2001  
Machine Learning Journal (1996)  
Journal of Artificial Intelligence Research (1996)  
Journal of Decision Support Systems (1995)  
Annals of Operation Research (1995)  
National Conference on Artificial Intelligence Student Program (1994)  
European Conference on Artificial Intelligence (1994)  
Third International Workshop on Knowledge Compilation and Speed-up  
Learning (1993)

**Miscellaneous:**

International Joint Conference on Artificial Intelligence (IJCAI), Local Arrangements  
Committee, 2009  
National Academy of Sciences: Committee member for study on Opportunities in  
Basic Research in the Behavioral and Social Sciences for the US Military  
Invited Research Fellow, Center for Advanced Media Research Amsterdam, Free  
University Amsterdam (Summer, 2008)  
US Joint Forces Command Study on Large-Scale Joint Experimentation  
Enabled by Scalable Parallel Processor Computing  
DARPA ISAT study on Mixed-Initiative Control and Monitoring within Human-Bot  
Systems, 2001  
Advisory Board Member, UCLA Center for Computational Social Science  
Soar Advisory Board Member  
Member of IEEE  
Member of the International Society for Research on Emotions  
Member of the American Association for Artificial Intelligence  
Member of the HUMAINE Associate for research on emotion and human-machine

interaction  
Member of the Operations Research Society of America and the Institute  
of Management Sciences

## **Awards**

ACM/SIGART Autonomous Agents award, 2010  
Best Paper, International Conference on Autonomous Agents and Multiagent  
Systems (2010)  
Best Paper, International Conference on Affective Computing and Intelligent Interaction,  
2009  
Best Paper Finalist, Intelligent Virtual Agents 2009  
Best Paper, International Conference on Multimodal Interaction, 2008  
Best Paper, Intelligent Virtual Agents 2008  
Best Paper, Interservice/Industry Training, Simulation & Education Conference (I/ITSEC),  
Emerging Concepts and Innovative Technology track, 2007  
Best Paper Finalist, Intelligent Virtual Agents 2007  
"Best of AAMAS" special issue article, Journal of Autonomous Agents and Multiagent  
Systems, 2005  
Best Paper, Autonomous Agents and Multiagent Systems 2003, Innovative Systems Track  
Best Paper, Autonomous Agents Conference 2001, Software Prototype Track  
Recommended Reading List, Computer Generated Forces and Behavioral Simulation  
2002  
Best Paper, Computer Generated Forces and Behavioral Simulation 2001,  
NASA Group Achievement Award for Advanced Development for the Deep Space  
Mission System, 1999

## **Invited Lectures, Seminars, and Colloquia:**

Keynote speaker, Workshop  
Standards in Emotion Modeling, 2011  
Lorentz Center, Leiden.  
Keynote speaker, Workshop on Computational Approaches to Subjectivity and Sentiment  
Analysis at ACL-HLT 2011, Portland, Oregon, June 2011  
Keynote speaker, IEEE International Conference on Automatic Face and Gesture  
Recognition, Santa Barbara, March 2011  
Keynote speaker, Summer School on Affective Computing and Social Signal Processing,  
Edinburgh, Scotland, August 2010  
Keynote speaker, International Conference on Cognitive Modeling, Philadelphia, PA,  
June 2010  
Lifetime achievement award keynote, International Conference on Autonomous Agents  
and Multiagent Systems, Toronto, Canada, May 2010

Invited speaker, Social Science Colloquium, University of California, Santa Barbara, April 2010

Invited speaker, SCIS Colloquium Series, Florida International University, November 2009

Invited speaker, University of Maryland virtual brown bag on culture and negotiation, October 2009

Keynote speaker, International Conference on Affective Computing and Intelligent Interaction, Amsterdam, September 2009

Invited speaker, Symposium on Social Interactions in Virtual Worlds, A\*STAR, Singapore, April 2009

Invited speaker, Annenberg Research Seminar, USC Communications Department, March 2009

Panel organizer and speaker, International Conference on Human-robot Interaction, March 2009

Invited speaker, ProjectOne Workshop, University of California, San Diego, December 2008

Invited speaker, AI Festival, Reykjavík University, November 2008

Panel organizer and speaker, National Communications Association, San Diego, November 2008

Carnegie Mellon University, Human Computer Interaction Institute, Seminar Speaker, October, 2008

Keynote speaker, International Symposium on Ubiquitous Virtual Reality, July 2008  
Greifswald University, Department of Psychology, July 2008

Vrije University of Amsterdam, Joint colloquium for Media Psychology and Computer Science, June 2008

University of Duisburg-Essen, Department of Media and Social Psychology, June 2008

NSF Workshop on Human-Computer Interaction for 21st Century Discovery, April 2008

Future of Games Speaker Series, North Carolina State University, April 2008

National Academy of Sciences, Committee on Opportunities in Neuroscience for Future Army Applications, February 2008.

Pomona College, Computer Science Colloquium Series, December 2007

USC Conference on Emotion, Decision Making, and the Brain, August 2007

Computer Game Design Seminar, University of Applied Sciences, Augsburg, Germany, June 2007

National Academy of Sciences, Board on Army Science and Technology, Washington D.C., December 2006.

Technology and Social Behavior Speaker Series, Northwestern University, November, 2006

International Symposium on Robot and Human Interactive Communication (RO-MAN 2006), Hertfordshire, UK, Invited tutorial, September 2006

Novel Translational Research to Treat Social and Communication Deficits in Autism, Marina del Rey, CA, invited speaker, August 2006

Believable Agents Workshop, invited speaker, Marina del Rey, CA, August, 2006

International Conference on Artificial Intelligence and Interactive Digital Entertainment, Marina del Rey, CA, invited speaker, July 2006

ZiF-Zentrum für interdisziplinäre Forschung, invited speaker, Bielefeld, Germany, April 2006

Pedagogical Catalysts for Adaptable Leaders Workshop, invited speaker, Marina del Rey, CA, December 2005

University of Santa Barbara Research Center for Virtual Environments and Behavior, invited speaker, November 2005.

University of Michigan Automotive Research Center, invited speaker, Oct 2005

HUMAINE Network of Excellence on Emotion and Human-Machine Interaction, Invited panel speaker, Newcastle, Northern Ireland, June 2005, June 2006

DARPA Workshop on Technologically Enhanced Training Agents, Marina del Rey, April, 2005

Workshop on Integrated Models of Cognitive Systems, invited speaker, Saratoga Springs, NY, March 2005

Imagina: European Digital Content Creation Trade Show, invited panelist, Monte Carlo, February, 2005

Pell Center for International Relations and Public Policy, December 2004 Conference on Behavioral Representation in Modeling and Simulation, invited panelist, Arlington, VA, 2004

University of Chicago, Psychology Department, 2004 Dagstuhl-Seminar on Evaluating Embodied Conversational Agents, 2004

AAAI Spring Symposium on Affective Architectures, 2004, Invited panel organizer

University of Hertfordshire, Adaptive Systems Research Group, 2003

Soar Workshop, Michigan, 2003

University of Michigan, Psychology Department, 2003

Austrian Research Institute for Artificial Intelligence, 2003

Vienna Workshop on Educational Agents - More than Virtual Tutors, 2003

Symposium on The Dis/simulations of War and Peace, Brown University, 2003

IJCAI Cognitive Modeling Workshop, Acapulco, Mexico, 2003, Invited panel participant

Cognitive Architecture Workshop, Stanford, CA, 2003  
Harvard University Artificial Intelligence Group (2002)  
Keynote Speaker, PRICAI Workshop on Lifelike Animated Agents, Tokyo, Japan, 2002  
Computational Social Sciences Conference, Lake Arrowhead, CA, 2002  
Intelligent User Interfaces Conference, 2002, Invited panel participant  
Keynote Speaker, Computer Animation Conference, Seoul, Korea, 2001  
Conference on the New Biopolitics (Rational Choice is Nearly Dead), UCLA, 2000  
Institute for Research in Cognitive Science, University of Pennsylvania, 2000  
Workshop on Multiagent Spatial Modeling, UCLA, 2000  
MIT Media Lab, 2000  
Brown Department of Media and Cultural Studies, 2000  
Watson Institute for International Studies, Virtual Y2K Conference, 1999  
Jet Propulsion Laboratory, California Institute of Technology, 1992,1996  
Duke University - Department of Computer Science, 1995  
AT&T Bell Labs, 1995  
University of California at Irvine - Department of Computer Science, 1995  
Haverford College - Department of Computer Science, 1995  
AAAI Spring Symposium on Goal Driven Learning, Stanford, CA, 1994  
University of Iowa - Department of Management Sciences, 1992  
NASA Ames Research Center, 1992

## **Journal Publications**

Sin-Hwa Kang and Jonathan Gratch. "People Like Virtual Counselors That Highly-Disclose About Themselves," *Annual Review of Cybertherapy and Telemedicine* (in press).

Wenji Mao, Jonathan Gratch, Xiaochen Li. Probabilistic Plan Inference for Group Behavior Prediction. *IEEE Intelligent Systems* (in press)

Astrid M. von der Pütten, Nicole C. Krämer, Jonathan Gratch and Sin-Hwa Kang. It doesn't matter what you are! Explaining social effects of agents and avatars. *Computers in Human Behavior*. In press.

Sin-Hwa Kang and Jonathan Gratch. Virtual Humans Elicit Socially Anxious Interactants' Verbal Self-Disclosure. *Journal of Visualization and Computer Animation*, 21(3-4) pp 473-482. 2010.

Celso de Melo, Patrick Kenny, and Jonathan Gratch. Real-Time Expression of Affect through Respiration. *Journal of Visualization and Computer Animation*. 21(3-4). Pp. 225-234. 2010.

Louis-Philippe Morency, Ivan de Kok and Jonathan Gratch. A Probabilistic Multimodal Approach for Predicting Listener Backchannels. *Journal of Autonomous Agents and Multi-Agent Systems*, Springer, 20(1), 2009, 70-84

Jonathan Gratch, Stacy Marsella and Paolo Petta, "Modeling the Antecedents and Consequences of Emotion," *Journal of Cognitive Systems Research*, 10(1), 2009, pp. 1-5.

Stacy Marsella and Jonathan Gratch, "EMA: A process model of appraisal dynamics," *Journal of Cognitive Systems Research*, 10(1), 2009, pp. 70-90.

Wenji Mao and Jonathan Gratch. "Modeling Social Inference in Virtual Agents. *Journal of Artificial Intelligence and Society*, 24(1), 2009, pp. 5-11.

Core, M. G., Traum, D., Lane, H. C., Swartout, W., Marsella, S., Gratch, J., and van Lent, M., "Teaching negotiation skills through practice and reflection with virtual humans," *Simulation*, 82, 2006, pp. 685-701

William Swartout, Jonathan Gratch, Randall Hill, Eduard Hovy, Stacy Marsella, Jeff Rickel and David Traum, "Toward Virtual Humans," *AI Magazine*, 27(1) 2006

Jonathan Gratch and Stacy Marsella, "Evaluating a computational model of emotion," in *Journal of Autonomous Agents and Multiagent Systems*, Special Issue on the Best of AAMAS 2004, 11(1), July 2005, pp. 23-43.

Jonathan Gratch and Stacy Marsella, "Some Lessons for Emotion Psychology for the Design of Educational Agents," *Journal of Applied Artificial Intelligence* (special issue on "Educational Agents - Beyond Virtual Tutors"), vol. 19, 2005, 215-233.

Jonathan Gratch and Stacy Marsella, A Domain-independent Framework for Modeling Emotion, *Journal of Cognitive Systems Research*, Volume 5, Issue 4, 2004, Pages 269-306.

Randall W. Hill, Jr., Jonathan Gratch, Stacy Marsella, Jeff Rickel, William Swartout, and David Traum, "Virtual Humans in the Mission Rehearsal Exercise System," in *Kunstliche Intelligenzi* special issue on Embodied Conversational Agents, AI number 4/03, pp. 5-10, 2003.

Jonathan Gratch and Stacy Marsella, Fight the way you train: the role and limits of emotions in training for combat, *Brown Journal of World Affairs*, vol. X, issue 1, 63-76, 2003.

Jonathan Gratch, Jeff Rickel, Elisabeth Andre, Norman Badler, Justine Cassell, and Eric Petajan, "Creating Interactive Virtual Humans: Some Assembly Required," in *IEEE Intelligent Systems* July/August 2002, pp. 54-63.

Jeff Rickel, Stacy Marsella, Jonathan Gratch, Randall Hill, David Traum and Bill Swartout, "Towards a New Generation of Virtual Humans for Interactive Experiences," in *IEEE Intelligent Systems* July/August 2002, pp. 32-38

Jonathan Gratch and Gerald DeJong, "A Decision-theoretic Approach to Adaptive Problem Solving," *Artificial Intelligence*, (88) 1-2, 1996, pp. 101-142.

Jonathan Gratch and Steve Chien, "Adaptive Problem-solving for Large-scale Scheduling Problems: A Case Study," *Journal of Artificial Intelligence Research* 4, 1996, pp. 365-396.

Steve Chien, Jonathan Gratch, and Michael Burl, "On the Efficient Allocation of Resources for Hypothesis Evaluation: A Statistical Approach," *IEEE Transaction on Pattern Analysis and Machine Learning (PAMI)*, 17(4), 1995, pp. 652-665.

## **Fully Refereed Conference Publications**

Yvonne Jung, Arjan Kuijper, Dieter Fellner, Michael Kipp, Jan Miksatko, Jonathan Gratch, and Daniel Thalmann. Believable Virtual Characters in Human-Computer Dialogs. State-of-the-Art Report, 32nd annual conference of the European Association for Computer Graphics (Eurographics). 2011.

Celso de Melo, Jonathan Gratch, and Peter Carnevale. Reverse Appraisal: Inferring from Emotion Displays who is the Cooperator and the Competitor in a Social Dilemma. *33rd Annual Conference of the Cognitive Science Society (CogSci)*, Boston, MA, 2011

Morteza Dehghani, Jonathan Gratch, S. Sachdeva, Kenji Saga. Analyzing Conservative and Liberal Blogs Related to the Construction of the 'Ground Zero Mosque'. *33rd Annual Conference of the Cognitive Science Society (CogSci)*, Boston, MA, 2011

Khooshabeh, P., McCall, C., Gandhe, S., Gratch, J., & Blascovich, J. J. (2011). Does it matter if a computer jokes. *Proceeding of the Annual Conference on Human Factors in Computing Systems (CHI)*. Presented at the ACM SIGCHI, Vancouver, British Columbia.

Dimitrios Antos, Barbara Grosz, Jonathan Gratch and Celso de Melo. The influence of emotion expression on perceptions of trustworthiness in negotiation. *25<sup>th</sup> AAAI Conference on Artificial intelligence*, San Francisco, CA, 2011.

Celso de Melo, Peter Carnevale, and Jonathan Gratch. The Effect of Expression of Anger and Happiness in Computer Agents on Negotiations with Humans. the Tenth International Conference on Autonomous Agents and Multiagent Systems. Taipei, Taiwan. 2011.

Sin-Hwa Kang and Jonathan Gratch. People Like Virtual Counselors That Highly-Disclose About Themselves, Accepted for the 16th Annual CyberTherapy & CyberPsychology Conference, Qc, Canada. 2011.

Lixing Huang, Louis-Philippe Morency, Jonathan Gratch. Learning Backchannel Prediction Model from Parasocial Consensus Sampling: A Subjective Evaluation. *10<sup>th</sup> International Conference on Intelligent Virtual Agents*, Philadelphia, PA. 2010.

Astrid von der Pütten, Jonathan Gratch, Nicole Krämer. How Our Personality Shapes Our Interactions with Embodied Conversational Agents. *10<sup>th</sup> International Conference on Intelligent Virtual Agents*, Philadelphia, PA. 2010.

Celso de Melo, Peter Carnevale, Jonathan Gratch. The Influence of Emotions in Embodied Agents on Human Decision-Making. *10<sup>th</sup> International Conference on Intelligent Virtual Agents*, Philadelphia, PA. 2010.

Ning Wang, W. Lewis Johnson, Jonathan Gratch. Facial Expressions and Politeness Effect in Foreign Language Training System. In *Proceedings of Intelligent Tutoring Systems (1)*.2010. pp.165~173

Kallirroi Georgila, Ning Wang, and Jonathan Gratch. Cross-domain speech disfluency detection. *SIGdial 2010, the 11th Annual SIGdial meeting on Discourse and Dialogue*, Tokyo, September 24-25, 2010.

Lixing Huang, Louis-Philippe Morency, Jonathan Gratch. Parasocial Consensus Sampling: Combining Multiple Perspectives to Learn Virtual Human Behavior. *9<sup>th</sup> International Conference on Autonomous Agents and Multiagent Systems*. Toronto, Canada, 2010.

Birgit Endrass, Lixing Huang, Elisabeth André, Jonathan Gratch, A data-driven approach to model culture-specific communication management styles for virtual agents. *9<sup>th</sup> International Conference on Autonomous Agents and Multiagent Systems*. Toronto, Canada, 2010.

Ning Wang and Jonathan Gratch. Don't Just Stare at Me! *28th ACM Conference on Human Factors in Computing Systems (CHI10)*. Atlanta, GA 2010

Jonathan Gratch, Stacy Marsella, Ning Wang, Brooke Stankovic. Assessing the validity of appraisal-based models of emotion. *International Conference on Affective Computing and Intelligent Interaction*. Amsterdam, IEEE, 2009.

Stacy Marsella, Jonathan Gratch, Ning Wang, Brooke Stankovic. Assessing the validity of a computational model of emotional coping. *International Conference on Affective Computing and Intelligent Interaction*. Amsterdam, IEEE. 2009.

Celso de Melo, Jonathan Gratch. Expression of Emotions using Wrinkles; Blushing; Sweating and Tears. *9<sup>th</sup> International Conference on Intelligent Virtual Agents*, Amsterdam. 2009.

Celso de Melo, Liang Zheng, Jonathan Gratch. Expression of Moral Emotions in Cooperating Agents. *9<sup>th</sup> International Conference on Intelligent Virtual Agents*, Amsterdam. 2009.

Celso de Melo, Jonathan Gratch. Creative Expression of Emotions in Virtual Humans. *Proceedings of the International Conference on the Foundations of Digital Games*, Port Canaveral, FL, 2009

Celso de Melo and Jonathan Gratch. The Effect of Color on Expression of Joy and Sadness in Virtual Humans. *International Conference on Affective Computing and Intelligent Interaction*. Amsterdam, IEEE. 2009.

Ning Wang and Jonathan Gratch. Can a Virtual Human Build Rapport and Promote Learning? *14th International Conference on Artificial Intelligence in Education*. Brighton. 2009

Sin-Hwa Kang, Jonathan Gratch, James Watt. The Effect of Affective Iconic Realism on Anonymous Interactants' Self-Disclosure. *International Conference for Human-Computer Interaction (CHI-2009)*, Boston, 2009.

Sin-Hwa Kang, James H. Watt, Jonathan Gratch, and Ning Wang. Associations between interactants' personality traits and their feelings of rapport in interactions with virtual humans. *The 59th Annual Conference of the International Communication Association*. Chicago, 2009.

L.-P. Morency, I. de Kok and J. Gratch. Context-based Recognition during Human Interactions: Automatic Feature Selection and Encoding Dictionary, *10th International Conference on Multimodal Interfaces (ICMI 2008)*, October 2008 **Best paper**

Vadim Bulitko, Steven Solomon, Jonathan Gratch and Michael van Lent. Modeling Culturally and Emotionally Affected Behavior. *Fourth Conference on Artificial Intelligence and Interactive Digital Entertainment*, Stanford, CA, October 2008

Louis-Philippe Morency, Iwan de Kok, Jonathan Gratch, Predicting Listener Backchannels: A Probabilistic Multimodal Approach, *8<sup>th</sup> International Conference on Intelligent Virtual Agents*, Tokyo, Japan, September 2008 **Best Paper**

David Traum, Jonathan Gratch, Stacy Marsella, Jina Lee, Arno Hartholt, Multi-party, Multi-issue, Multi-strategy Negotiation for Multi-modal Virtual Agents, *8<sup>th</sup> International Conference on Intelligent Virtual Agents*, Tokyo, Japan, September 2008

Patrick Kenny, Thomas Parsons, Jonathan Gratch, Albert Rizzo, Evaluation of Justina: A Virtual Patient with PTSD, *8<sup>th</sup> International Conference on Intelligent Virtual Agents*, Tokyo, Japan, September 2008

Sin-Hwa Kang, Jonathan Gratch, Ning Wang, James Watts, Agreeable People Like Agreeable Virtual Humans *8<sup>th</sup> International Conference on Intelligent Virtual Agents*, Tokyo, Japan, September 2008

Sinhwa Kang, Jonathan Gratch, Ning Wang, James Watt. Does Contingency of Agents' Nonverbal Feedback Affect Users' Social Anxiety? *7<sup>th</sup> International Conference on Autonomous Agents and Multiagent Systems*. Estoril, Portugal. May 2008.

Jonathan Gratch, Ning Wang, Jillian Gerten, Edward Fast, Robin Duffy. Creating Rapport with Virtual Agents. *7<sup>th</sup> International Conference on Intelligent Virtual Agents*, Paris, France, September 2007. **Best Paper Finalist**

Patrick Kenny, Thomas D. Parsons, Jonathan Gratch, Albert A. Rizzo. Virtual Patients for Clinical Therapist Skills Training. *7<sup>th</sup> International Conference on Intelligent Virtual Agents*, Paris, France, September 2007.

Gudný R. Jónsdóttir, Jonathan Gratch, Edward Fast, Kristinn R. Thórisson. Fluid Semantic Back-Channel Feedback in Dialogue: Challenges and Progress. *7<sup>th</sup> International Conference on Intelligent Virtual Agents*, Paris, France, September 2007.

Jina Lee, Stacy Marsella, David Traum, Jonathan Gratch and Brent Lance. The Rickel Gaze Model: A Window on the Mind of a Virtual Human. *7<sup>th</sup> International Conference on Intelligent Virtual Agents*, Paris, France, September 2007.

Sejin Oh, Jonathan Gratch, Woontack Woo. Explanatory Style for Socially Interactive Agents. *2<sup>nd</sup> International Conference on Affective Computing and Intelligent Interaction*, Lisbon, Portugal September 2007.

Paul Thagard, Peter Ditto, Jonathan Gratch, Stacy Marsella and Drew Westen. Emotional Cognition in the Real World. *Proceedings of the Twenty-Ninth Annual Meeting of the Cognitive Science Society*. Nashville, TN: Lawrence Erlbaum Associates. 2007

Patrick Kenny, Albert A. Rizzo, Thomas D. Parsons, Jonathan Gratch & William Swartout. A Virtual Human Agent for Training Novice Therapist Clinical Interviewing Skills. *International Conference on Cybertherapy*, 2007.

Kenny, P., Hartholt, A., Gratch, J., Traum, D., Marsella, S., Swartout, W., The More the Merrier: Multi-Party Negotiation with Virtual Humans, The Twenty-Second AAI Conference on Artificial Intelligence (AAAI-07). (Intelligent Systems Demo Track), Vancouver, British Columbia, Canada. 2007

Gratch, J., Wang, N., Okhmatovskaia, A., Lamothe, F., Morales, M and Louis-Philippe Morency. Can virtual humans be more engaging than real ones? *12th International Conference on Human-Computer Interaction*, Beijing, China 2007

Jonathan Gratch, Stacy Marsella, Wenji Mao. Towards a Validated Model of "Emotional Intelligence." Twenty-First National Conference on Artificial Intelligence (AAAI06). Boston, MA. 2006

Jonathan Gratch, Anna Okhmatovskaia, Francois Lamothe, Stacy Marsella, Mathieu Morales, R. J. van der Werf and Louis-Philippe Morency. Virtual Rapport. 6th International Conference on Intelligent Virtual Agents, Marina del Rey, CA, 2006.

Stacy Marsella, Sharon Carnicke, Jonathan Gratch, Anya Okhmatovskaia and Albert Rizzo. An exploration of Delsarte's structural acting system 6th International Conference on Intelligent Virtual Agents, Marina del Rey, CA, 2006.

Gluck, K. A., Gunzelmann, G., Gratch, J., Hudlicka, E., & Ritter, F. Modeling the Impact of Cognitive Moderators on Human Cognition and Performance. In R. Sun & N. Miyake (Eds.), *Proceedings of the Twenty-Eighth Annual Meeting of the Cognitive Science Society*. Mahwah, NJ: Lawrence Erlbaum Associates. 2006.

Stacy Marsella and Jonathan Gratch, EMA: a computational model of appraisal dynamics, *Agent Construction and Emotion*, Vienna, 2006.

Wenji Mao and Jonathan Gratch, Evaluating a Computational Model of Social Causality and Responsibility, 5th International Joint Conference on Autonomous Agents and Multiagent Systems, Hakodate, Japan, 2006

Martijn Maatman, Jonathan Gratch and Stacy Marsella, Natural Behavior of a Listening Agent, 5th International Working Conference on Intelligent Virtual Agents, Kos, Greece, 2005.

Wenji Mao and Jonathan Gratch, Social Causality and Responsibility: Modeling and Evaluation, 5th International Working Conference on Intelligent Virtual Agents, Kos, Greece, 2005.

David Traum, William Swartout, Stacy Marsella and Jonathan Gratch, Fight, Flight, or Negotiate: Believable Strategies for Conversing under Crisis, 5th International Working Conference on Intelligent Virtual Agents, Kos, Greece, 2005.

Bilyana Martinovski, Wenji Mao, Jonathan Gratch and Stacy Marsella, "Mitigation Theory: An Integrated Approach," in *Proceedings of the 27th Annual Conference of the Cognitive Science Society*, Turin, Italy, 2005

Albert Rizzo, Jackie Morie, Josh Williams, Jarrell Pair, Jonathan Gratch, and J. G. Buckwalter, "Human Emotional State and its Relevance for Military VR Training" in the

Proceedings of the 11th International Conference on Human Computer Interaction. L.A. Erlbaum: New York. 2005.

Jonathan Gratch and Stacy Marsella, "Evaluating the modeling and use of emotion in virtual humans," in Proceedings of the Third International Joint Conference on Autonomous Agents and Multiagent Systems, New York, New York, 2004.

Wenji Mao and Jonathan Gratch, "Social Judgment in Multiagent Interactions," in Proceedings of the Third International Joint Conference on Autonomous Agents and Multiagent Systems, New York, New York, 2004.

Hyeok-Soo Kim and Jonathan Gratch, "A Planner-Independent Collaborative Planning Assistant," in Proceedings of the Third International Joint Conference on Autonomous Agents and Multiagent Systems, New York, New York, 2004.

David Traum, Jeff Rickel, Jonathan Gratch, and Stacy Marsella, "Negotiation over tasks in hybrid human-agent teams for simulation-based training," in Proceedings of the Second International Joint Conference on Autonomous Agents and Multiagent Systems, Melbourne, Australia, 2003.

**Best paper**

Stacy Marsella and Jonathan Gratch, "Modeling Coping Behaviors in Virtual Humans: Don't worry, be happy," in Proceedings of the Second International Joint Conference on Autonomous Agents and Multiagent Systems, Melbourne, Australia, 2003.

Wenji Mao and Jonathan Gratch, "The Social Credit Assignment Problem" in 4th International Working Conference on Intelligent Virtual Agents, Kloster Irsee, Germany, 2003

Jonathan Gratch and Wenji Mao, "Automating After Action Review: Attributing Blame or Credit in Team Training," in 12th Conference on Behavior Representation in Modeling and Simulation, Scottsdale, AZ, May 2003

Stacy Marsella and Jonathan Gratch, "A step toward irrationality: using emotion to change belief," in Proceedings of the First International Joint Conference on Autonomous Agents and Multiagent Systems, Bologna, Italy, 2002.

Randall Hill, Youngjun Kim and Jonathan Gratch, "Anticipating where to look: predicting the movements of mobile agents in complex terrain," in Proceedings of the First International Joint Conference on Autonomous Agents and Multiagent Systems, Bologna, Italy, 2002.

Jonathan Gratch and Stacy Marsella, "Tears and Fears: Modeling emotions and emotional behaviors in synthetic agents," in Proceedings of the 5th International Conference on Autonomous Agents, Montreal, Canada, June 2001

Stacy Marsella and Jonathan Gratch, "Modeling the Interplay of Emotions and Plans in Multi-Agent Simulations," in Proceedings of the 23rd Annual Conference of the Cognitive Science Society, Edinburgh, Scotland, 2001

Swartout, W., Hill, R., Gratch, J., Johnson, W.L., Kyriakakis, C., Labore, K., Lindheim, R., Marsella, S., Miraglia, D., Moore, B., Morie, J., Rickel, J., Thieboux, M., Tuch, L., Whitney, R. Toward the Holodeck: Integrating Graphics, Sound, Character and Story, in Proceedings of 5th International Conference on Autonomous Agents, Montreal, Canada, June 2001

**Best paper**

Jonathan Gratch, "Emile: Marshalling Passions in Training and Education," in Proceedings of the 4th International Conference on Autonomous Agents, Barcelona, Spain, June 2000

R. Hill, J. Gratch, P. Rosenbloom (2000). Flexible Group Behavior: Virtual Commanders for Synthetic Battlespaces. Proceedings of the Fourth International Conference on Autonomous Agents, Barcelona, Spain, June 2000.

Randall Hill, Johnny Chen, Jonathan Gratch, Paul Rosenbloom, Milind Tambe, "Intelligent Agents for the Synthetic Battlefield," in "Joint proceedings of the Fourteenth National Conference on Artificial Intelligence and the Ninth Conference on Innovative Applications of Artificial Intelligence (AAAI/IAAI97), Providence, RI, 1997, pp. 1006-1012.

Jonathan Gratch, "Sequential Inductive Learning," "Proceedings of Thirteenth National Conference on Artificial Intelligence (AAAI96), 1996, pp. 778-786

Jonathan Gratch, Steve Chien, and Gerald DeJong, "Improving Learning Performance Through Rational Resource Allocation," "Proceedings of the Twelfth National Conference on Artificial Intelligence (AAAI94), Seattle, WA, 1994, pp. 576-581.

Jonathan Gratch, Steve Chien, and Gerald DeJong, "Learning Search Control Knowledge for the Deep Space Network Scheduling Problem," Proceedings of the Tenth International Machine Learning Conference (ML93), Amherst, MA, 1993, pp. 135-142.

Jonathan Gratch and Gerald DeJong, "COMPOSER: A Probabilistic Solution to the Utility Problem in Speed-up Learning," Proceedings of the Tenth National Conference on Artificial Intelligence (AAAI92), San Jose, CA, 1992, pp. 235-240.

Jonathan Gratch and Gerald DeJong, "An Analysis of Learning to Plan as a Search Problem," "Proceedings of the Ninth International Machine Learning Conference (ML92), Aberdeen, Scotland, 1992, pp. 178-188.

Jonathan Gratch and Gerald DeJong, "A Hybrid Approach to Guaranteed Effective Control Strategies," "Proceedings of the Eighth International Workshop on Machine Learning (ML91), Evanston, IL, 1991, pp. 509-513.

## Other Publications

Lixing Huang, Louis-Philippe Morency and Jonathan Gratch. A Multimodal End-of-Turn Prediction Model: Learning from Parasocial Consensus Sampling. *the Tenth International Conference on Autonomous Agents and Multiagent Systems*. Taipei, Taiwan. 2011.

Sin-Hwa Kang, Candy Sidner, Jonathan Gratch, Louis-Philippe Morency. Turn-taking patterns in self-disclosure interactions with Virtual Agents. *10<sup>th</sup> International Conference on Intelligent Virtual Agents*, Philadelphia, PA. 2010.

Stacy Marsella, Jonathan Gratch, Paolo Petta. Computational Models of Emotion. A blueprint for affective computing sourcebook and manual. Scherer, K.R., Bänziger, T., & Roesch, E. (Eds.). Oxford: Oxford University Press, 2010.

Jonathan Gratch. Emotionally-Resonant Media: advances in sensing, understanding and influencing human emotion through interactive media. Handbook of Emotions and the Mass Media, Döveling, von Scheve, & Konijn (Eds.), ROUTLEDGE, Taylor & Francis Group, London, UK, 2010.

Dirk Heylen and Elisabetta Bevacqua and Catherine Pelachaud and Isabella Poggi and Jonathan Gratch and Marc Schröder. Generating Listening Behaviour. Handbook of Emotion-Oriented Technologies. Paolo Petta, Catherine Pelachaud, Roddy Cowie (eds.). Springer. 2010.

Tibor Bosse, Jonathan Gratch, Johan F. Hoorn, Matthijs Pontier, and Ghazanfar F. Siddiqui. Comparing Three Computational Models of Affect, *8th International Conference on Practical Applications of Agents and Multi-Agent Systems*, Salamanca, Spain 2010

Astrid von der Pütten, Nicole Krämer, Jonathan Gratch. Who's there? Can a Virtual Agent Really Elicit Social Presence. *The 12th Annual International Workshop on Presence*. Los Angeles, CA 2009.

Astrid von der Pütten, Jonathan Gratch, Sinhwa Kang, Nicole Krämer (2009): It doesn't matter what you are! Comparing interacting with an autonomous virtual person with interacting with a virtually represented human. Proceedings of the 6th Conference of the Media Psychology Division of the German Psychological Society. 09-11. September 2009, Duisburg, Germany. Publisher: Pabst Science Publishers

Arno Hartholt, Jonathan Gratch, Anton Leuski, Louis-Philippe Morency, Stacy Marsella, Matt Liewer, Marcus Thiebaut, Prathibha Doraiswamy, Andreas Tsiartas, Lori Weiss.

At the Virtual Frontier: Introducing Gunslinger; a Multi-Character; Mixed-Reality; Story-Driven Experience. *9<sup>th</sup> International Conference on Intelligent Virtual Agents*, Amsterdam. 2009.

Ning Wang and Jonathan Gratch. Rapport and Facial Expression. International Conference on Affective Computing and Intelligent Interaction. Amsterdam, IEEE. 2009

Sin-Hwa Kang, Jonathan Gratch. Interactants Most Intimate Self-Disclosure in Interactions with Virtual Humans. *9<sup>th</sup> International Conference on Intelligent Virtual Agents*, Amsterdam. 2009.

Patrick Kenny, Thomas Parsons, Jonathan Gratch, Albert Rizzo. Evaluation of Novice and Expert Interpersonal Interaction Skills with a Virtual Patient. *9<sup>th</sup> International Conference on Intelligent Virtual Agents*, Amsterdam. 2009.

David Traum, William Swartout, Jonathan Gratch, Stacy Marsella, "A Virtual Human Dialogue Model for Non-team Interaction", in *Recent Trends in Discourse and Dialogue* Springer, Laila Dybkjaer and Wolfgang Minker, Eds, pp. 45—67, 2008.

Vadim Bulitko, Steven Solomon, Jonathan Gratch, Michael van Lent. Modeling Culturally and Emotionally Affected Behavior. The 10th International Conference on the Simulation of Adaptive Behavior (SAB); Workshop on the role of emotion in adaptive behavior and cognitive robotics. Alberta, Canada. July 2008.

Nicole Novielli, Peter Carnevale and Jonathan Gratch. Cooperation Attitude In Negotiation Dialogs. Proceedings of LREC2008 Workshop on Corpora for Research on Emotion and Affect, Marrakech, Morocco 2008

Celso de Melo, Jonathan Gratch, Evolving Expression of Emotions in Virtual Humans using Lights and Pixels, *8<sup>th</sup> International Conference on Intelligent Virtual Agents*, Tokyo, Japan, September 2008 (poster publication)

Committee on Opportunities in Basic Research in the Behavioral and Social Sciences for the U.S. Military (James J. Blascovich and Christine R. Hartel, Editors). *Human Behavior in Military Contexts*. National Academies Press. 2008

Patrick Kenny, Arno Hartholt, Jonathan Gratch, William Swartout, David Traum, Stacy Marsella, Diane Piepol. Building Interactive Virtual Humans for Training Environments. *Interservice/Industry Training, Simulation, and Education Conference (IITSEC) 2007*  
**Best Paper**

Wenji Mao and Jonathan Gratch, "Modeling Social Inference in Virtual Agents," Workshop on Social Intelligence Design, Trento Italy, 2007.

Jonathan Gratch, "True emotion vs. Social Intentions in Nonverbal Communication: Towards a Synthesis for Embodied Conversational Agents," *Modeling Communication*

*with Robots and Virtual Humans*, Wachmuth and Knoblich (eds.), LNAI 4930, Berlin, Springer, 2008.

Jonathan Gratch and Stacy Marsella, "The Architectural Role of Emotion in Cognitive Systems," in *Integrated Models of Cognitive Systems*, Wayne Gray (ed.), Oxford University Press, 2007

Jonathan Gratch, Anna Okhmatovskaia and Susan Duncan, *Virtual Humans for the Study of Rapport in Cross-cultural Settings*, in the 25th Annual Army Science Conference, Orlando, FL, 2006

Jonathan Gratch, Stacy Marsella, Arjan Egges, Anton Eliens, Katherine Isbister, Ana Paiva, Thomas Rist, Paul ten Hagen, "Design criteria, techniques and case studies for creating and evaluating interactive experiences for virtual humans, in *Evaluating Embodied Conversational Agents*, Zsofi Ruttkay, Elizabeth André, W. L. Johnson and Catherine Pelachaud (Eds.), *Dagstuhl Seminar Proceedings 04121*, 2006

Jonathan Gratch, Michael Young, Ruth Aylett, Daniel Ballin, Patrick Olivier, (eds.), *Proceedings of the 6th International Conference on Intelligent Virtual Agents*, in *Lecture Notes in Computer Science, Volume 4113*, Springer-Verlag GmbH, 2006

Themis Panayiotopoulos, Jonathan Gratch, Ruth Aylett, Daniel Ballin, Patrick Olivier, Thomas Rist (eds.), *Proceedings of the 5th International Working Conference on Intelligent Virtual Agents*, in *Lecture Notes in Computer Science, Volume 3661*, Springer-Verlag GmbH, 2006

Jonathan Gratch, Wenji Mao, and Stacy Marsella, "Modeling Social Attributions and Social Emotions in Soar," in *Cognitive Modeling and Multi-Agent Interactions*, Ron Sun (ed.), Cambridge University Press, 2006

Traum, D., Swartout, W., Gratch, J., Marsella, S., Kenny, P., Hovy, E., Narayanan, S., Fast, E., Martinovski, B., Baghat, R., Robinson, S., Marshall, A., Wang, D., Gandhe, S., Leuski, A. *Dealing With Doctors: A Virtual Human for Non-team Interaction*. Special Interest Group for Digital Linguistics (Sigdial), Lisbon, Portugal; September 2005.

W. Swartout, J. Gratch, R. Hill, E. Hovy, R. Lindheim, S. Marsella, J. Rickel, D. Traum, "Simulation meets Hollywood: Integrating Graphics, Sound, Story and Character for Immersive Simulation," *Multimodal Intelligent Information Presentation*, Eds. Oliviero Stock and Massimo Zancanaro, 2005.

Traum, D., Swartout, W., Gratch, J., Marsella, S. *Virtual Humans for Non-team Interaction Training*. *Autonomous Agents and Multi-Agent Systems (AAMAS) Workshop on Creating Bonds with Humanoids* (Utrecht, The Netherlands; July 2005).

Albert Rizzo, Jarrell Pair, Peter J. McNerney, Ernie Eastlund, Brian Manson, Jonathan Gratch, Randall Hill, Michael Roy and William Swartout, "Design and Development of a

VR Therapy Application for Iraq War Veterans with PTSD." Proceedings of The 13th Annual Medicine Meets Virtual Reality Conference. Long Beach, CA. Jan. 2005

Jonathan Gratch and Stacy Marsella, "Towards a validated model of the influence of emotion on human performance," in the 24th Annual Army Science Conference, Orlando, FL, 2004

Albert Rizzo, Jarrell Pair, Peter J. McNerney, Ernie Eastlund, Brian Manson, Jonathan Gratch, Randall Hill, Michael Roy and William Swartout, "From Training to Toy to Treatment: Design and Development of a Post Traumatic Stress Disorder Virtual Reality Therapy Application for Iraq War Veterans." Proceedings of the 3rd Annual International Workshop on Virtual Rehabilitation. 2004, pp. 35-42.

Albert Rizzo, Jarrell Pair, Peter J. McNeary, Ernie Eastlund, Brian Manson, Jonathan Gratch, Randy Hill, Michael Roy and Bill Swartout, "The Full Spectrum PTSD Immersive VR Therapy Application for Iraq War Veterans: From Training to Toy to Treatment", in the 24th Annual Army Science Conference, Orlando, FL, 2004.

Wenji Mao and Jonathan Gratch, "A Utility-based Approach to Intention Recognition," in AAMAS Workshop on Agent Tracking: Modeling Other Agents from Observations (MOO2004), New York, 2004.

Swartout, W., Gratch, J., Hill, R., Hovy, E., Marsella, S., Rickel, J., Traum, D. Toward Virtual Humans. in working notes of the AAAI Fall symposium on Achieving Human-Level Intelligence through Integrated Systems and Research, Crystal City, Va, October 2004.

David Traum, Stacy Marsella and Jonathan Gratch, "Emotion and Dialogue in the MRE Virtual Humans," Workshop on Affective Dialogue Systems, Kloster Irsee, Germany, 2004

Tijmen Muller, Arno Hartholt, Stacy Marsella, David Traum, and Jonathan Gratch, "Do you want to talk about it?" Workshop on Affective Dialogue Systems, Kloster Irsee, Germany, 2004

Jonathan Gratch and Stacy Marsella, Evaluating a General Model of Emotional Appraisal and Coping, AAAI Spring Symposium on Architectures for Modeling Emotion: Cross-disciplinary Foundations, Palo Alto, CA 2004

Stacy Marsella, Jonathan Gratch and Jeff Rickel, Expressive Behaviors for Virtual Worlds, in Like-like Characters. Tools, Affective Functions and Applications, Helmut Prendinger and Mitsuru Ishizuka (eds.), Springer-Verlag, 2004.

Hyeoksoo Kim and Jonathan Gratch, "A planner independent approach to human interactive planning," IJCAI Workshop on mixed-Initiative Intelligent Systems, Acapulco, Mexico, 2003.

Stacy Marsella and Jonathan Gratch, "Modeling the influence of emotion on belief for virtual training simulations," in Proceedings of the 11th Conference on Computer Generated Forces and Behavioral Simulation, Orlando, FL, 2002.

Jeff Rickel, Jonathan Gratch, Randall Hill, Stacy Marsella and William Swartout, "Steve goes to bosnia: towards a new generation of virtual humans for interactive experiences," in AAAI Spring Symposium on Artificial Intelligence and Interactive Entertainment, 2001.

Jay Douglas and Jonathan Gratch, "Interactive Storytelling, or How AI, Hollywood, and Multiprocessing Operating Systems can Live Happily Ever After," in Proceedings of the International Conference on Virtual Storytelling, Avignon, France, 2001 (also appears in Lecture Notes in Computer Science, v. 2197, pp. 100-112, 2001).

Jonathan Gratch, "Socially Situated Planning," in Socially Intelligent Agents - creating relationships with computers and robots, Dautenhahn, Bond, Canamero, and Edmonds (eds.), Kluwer Academic Publishers, (in press). Also appears in AAAI Fall Symposium on Socially Intelligent Agents - The Human in the Loop, North Falmouth, MA, November 2000.

Jonathan Gratch and Stacy Marsella, "Modeling Emotions in the Mission Rehearsal Exercise" in Proceedings of the 10th Conference on Computer Generated Forces and Behavioral Representation, May 2001

### **Outstanding paper**

Stacy Marsella, Jonathan Gratch, and Jeff Rickel, " The Effect of Affect: Modeling the Impact of Emotional State on the Behavior of Interactive Virtual Humans," in Proceedings of the Agents2001 Workshop on Representing, Annotating, and Evaluating Non-Verbal and Verbal Communicative Acts to Achieve Contextual Embodied Agents, Montreal, Canada, June 2001

Jonathan Gratch, "Human-like behavior, alas, demands human-like intellect," Agents 2000 Workshop on Achieving Human-like Behavior in Interactive Animated Agents, Barcelona, Spain, June 2000.

Jonathan Gratch, "Modeling the interplay between emotion and decision making: Proceedings of the 9th Conference on Computer Generated Forces and Behavioral Representation, May 2000.

Youngjun Kim, Randall Hill, and Jonathan Gratch, "How long can you look away from a target," Proceedings of the 9th Conference on Computer Generated Forces and Behavioral Representation, May 2000.

Randall Hill, Jonathan Gratch and Paul Rosenbloom, "Flexible group behavior: lessons learned building virtual commanders," Proceedings of the 9th Conference on Computer Generated Forces and Behavioral Representation, May 2000.

Jonathan Gratch and Randall W. Hill, Jr., "Continuous Planning and Collaboration for Command and Control in Joint Synthetic Battlespaces," in Proceedings of the Eighth Conference on Computer Generated Forces and Behavioral Representation, 1999.

Jonathan Gratch, "Why you should buy an emotional planner," Proceedings of the Agents'99 Workshop on Emotion-based Agent Architectures (EBAA'99)

Jonathan Gratch and Randy Hill, "Continuous Planning and Collaboration for Command and Control in Joint Synthetic Battlespaces," "Proceedings of the 8th Conference on Computer Generated Forces and Behavioral Representation, Orlando, FL, 1999.

Jonathan Gratch, Stacy Marsella, Randy Hill and LTC George Stone, "Deriving Priority Information Requirements for Synthetic Command Entities," "Proceedings of the 8th Conference on Computer Generated Forces and Behavioral Representation, Orlando, FL, 1999.

Jonathan Gratch, "Reasoning about multiple plans in dynamic multi-agent environments," in AAAI Fall Symposium on Distributed Continual Planning, Orlando, FL, 1998.

Jonathan Gratch, "Metaplanning for multiple agents," AIPS98 Workshop on Plan Execution, PA, 1998.

Randall Hill, Johnny Chen, Jonathan Gratch, Paul Rosenbloom, Milind Tambe, "Soar-RWA: Planning, teamwork, and intelligent behavior for synthetic rotary wing aircraft," in "Proceedings of the Seventh Conference on Computer Generated Forces and Behavioral Representation, Orlando, FL, 1998.

Jonathan Gratch, "Task-decomposition Planning for Command Decision Making," "Proceedings of the Sixth Conference on Computer Generated Forces and Behavioral Representation, Orlando, FL, 1996, pp. 37-45.

Jonathan Gratch and Steve Chien, "Active Learning for Adaptive scheduling: A Statistical Approach," "Proceedings of the AAAI Fall Symposium on Active Learning, Boston, MA, 1995, pp. 43-44.

Steve A. Chien and Jonathan Gratch, "Producing Satisficing Solutions to Scheduling Problems: an Iterative Constraint Relaxation Approach," Proceedings of the Second International Conference on Artificial Intelligence Planning Systems (AIPS94), Chicago, IL, 1994, pp. 78-87.

Jonathan Gratch, Gerald DeJong, and Steve Chien, "Deciding When and How to Learn," "Proceedings of the AAAI Spring Symposium on Goal-Driven Learning, Stanford, CA, 1994, pp. 36-45.

Steve Chien, Jonathan Gratch, and Michael Burl, "A Statistical Approach to Adaptive Problem-Solving for Large-Scale Scheduling and Resource Allocation Problems," "Proceedings of the AAAI Spring Symposium on Decision-Theoretic Planning, Stanford, CA, 1994, pp. 27-33.

Colin Bell and Jonathan Gratch, "Use of Lagrangian Relaxation and Machine Learning Techniques to Schedule Deep Space Network Data Transmissions," in "36th Joint National Meeting of the Operations Research Society of America, the Institute of Management Sciences, Phoenix, AZ, 1993.

Jonathan Gratch, Gerald DeJong, and Yuhong Yang, "Rational Learning: Finding a Balance Between Utility and Efficiency," in "Selecting Models from Data: Artificial Intelligence and Statistics IV, P. Cheeseman and R. W. Oldford (eds.), Springer-Verlag, 1994, pp. 11-20 (also appears in "Proceedings of the Fourth International Workshop on Artificial Intelligence and Statistics, 1993).

Jonathan Gratch, Steve Chien, and Gerald DeJong, "Learning Search Control Knowledge to Improve Schedule Quality," "Proceedings of the 1993 Workshop on Knowledge-based Production Planning, Scheduling, and Control, Chamberry," France, 1993, pp. 159-168.

Jonathan Gratch and Gerald DeJong, "Assessing the Value of Information to Guide Learning Systems," "Proceedings of the Third International Workshop on Knowledge Compilation and Speed-up Learning, Amherst, MA, 1993, pp 65-71.

Jonathan Gratch and Gerald DeJong, "A Framework of Simplifications in Learning to Plan," "Proceedings of the First International Conference on Artificial Intelligence Planning Systems (AIPS92), College Park, MD, 1992, pp. 78-87.

Jonathan Gratch and Gerald DeJong, "A Framework for Evaluating Search Control Strategies," "Proceedings of the Workshop on Innovative Approaches to Planning, Scheduling, and Control, San Diego, CA, 1990, pp. 337-347.

Michael Case, Jonathan Gratch, and Lee Quek, "A Component-Oriented Tool for the Development of Knowledge Systems," "Proceedings of the 1988 ASME International Computers in Engineering Conference and Exhibition, San Francisco, CA, 1988.

## **Technical Reports**

Francois Lamothe and Matthew Morales, "Response Behavior," University of Southern California Technical Report ICT-TR-01.2006, Marina del Rey, CA, 2006.

Rick van der Werf, "Creating Rapport with Virtual Humans," University of Southern California Technical Report ICT-TR-02.2006. Marina del Rey, CA, 2006

Arien Kock and Jonathan Gratch, "An evaluation of automatic lip-syncing methods for game environments," University of Southern California Technical Report ICT-TR-01.2005, Marina del Rey, CA, 2005

R. M. Maatman, Jonathan Gratch and Stacy Marsella, "Responsive Rebehavior of a Listening Agent," University of Southern California Technical Report ICT-TR-02.2005, Marina del Rey, CA, 2005

Jonathan Gratch and Stacy Marsella, "Technical details of a domain-independent framework for modeling emotion," Institute for Creative Technologies Technical Report ICT-TR-04.2004, Marina del Rey, CA, 2004.

Jonathan Gratch, "Details of the CFOR Planner," Institute for Creative Technologies Technical Report ICT-TR-02.2002, Marina del Rey, CA, 2002.

Jonathan Gratch, "Why You Should Buy and Emotional Planner", Information Sciences Institute (ISI) Research Report ISI/RR-99-464, March 1999.

Jonathan Gratch, "How to Make Your Planner Rude and Other Issues in Multi-agent Planning", Information Sciences Institute (ISI) Research Report ISI/RR-99-464, March 1999

Jonathan Gratch, "An Effective Method for Correlated Selection Problems," Ph.D Dissertation, Technical Report UIUCDCS-R-94-1898, Urbana, IL, 1994.

Jonathan Gratch and Steve Chien, "An Adaptive Problem-solving Solution to Large-scale Scheduling Problems," Beckman Institute, University of Illinois Technical Report UIUC-BI-AI-94-06, Urbana, IL 1994.

Steve Chien, Jonathan Gratch, and Michael Burl, "On the Efficient Allocation of Resources for Hypothesis Evaluation in Machine Learning: A Statistical Approach," Beckman Institute, University of Illinois Technical Report UIUC-BI-AI-94-01, Urbana, IL 1994

Colin Bell and Jonathan Gratch, "Use of Lagrangian Relaxation and Machine Learning Techniques to Schedule Deep Space Network Data Transmissions," Beckman Institute, University of Illinois Technical Report UIUC-BI-AI-94-02, Urbana, IL 1994.

Jonathan Gratch, "COMPOSER: A Decision-theoretic Approach to Adaptive Problem Solving," Department of Computer Science, University of Illinois Technical Report UIUCDCS-R-93-1806, Urbana, IL, 1993.

Jonathan Gratch and Gerald DeJong, "Rational Learning: A Principled Approach to Balancing Learning and Action," Department of Computer Science, University of Illinois Technical Report UIUCDCS-R-93-1801, Urbana, IL, 1993.

Jonathan Gratch and Steve Chien, "Learning Search Control Knowledge for the Deep Space Network Scheduling Problem: Extended Report and Guide to Software," Department of Computer Science, University of Illinois Technical Report UIUCDCS-R-93-1789, Urbana, IL, 1993.

Jonathan Gratch and Gerald DeJong, "COMPOSER: A Probabilistic Solution to the Utility Problem in Speed-up Learning," Department of Computer Science, University of Illinois Technical Report UIUCDCS-R-92-1724, Urbana, IL, 1992.

Jonathan Gratch and Gerald DeJong, "An Analysis of Learning to Plan as a Search Problem," Department of Computer Science Technical Report UIUCDCS-R-92-1723, Urbana, IL, 1992.

Jonathan Gratch, Gerald DeJong, and Youhong Yang, "Rational Learning: (extended version)," Department of Computer Science, University of Illinois Technical Report UIUCDCS-R-92-1756, Urbana, IL, 1992.

Gerald DeJong and Jonathan Gratch, "Review of Steve Minton's PRODIGY/EBL," "Artificial Intelligence 50 (1991) pp. 117-127.

Jonathan Gratch and Gerald DeJong, "On Comparing Operationality and Utility," Department of Computer Science, University of Illinois Technical Report UIUCDCS-R-91-1713, Urbana, IL, 1991.

Jonathan Gratch and Gerald DeJong, "The Trouble with Gestalts: The Composability Problem in Control Learning," Department of Computer Science, University of Illinois Technical Report UIUCDCS-R-91-1684, Urbana, IL, 1991.

Jonathan Gratch and Gerald DeJong, "Utility Generalization and Composability Problems in Explanation-Based Learning," Department of Computer Science, University of Illinois Technical Report UIUCDCS-R-91-1681, Urbana, IL, 1990.

Jonathan Gratch and Gerald DeJong, "A Framework for Evaluating Search Control Strategies," Department of Computer Science, University of Illinois Technical Report UIUCDCS-R-90-1620, Urbana, IL, 1990.