Hannes Högni Vilhjálmsson Center for Analysis and Design of Intelligent Agents School of Computer Science Reykjavik University Menntavegur 1, Reykjavik IS-101, Iceland hannes@ru.is www.ru.is/~hannes Work: +354 599-6323 Cell: +354 618-6323 Fax: +354 599 6301

# Hannes Högni Vilhjálmsson

#### RESEARCH AREAS

• Interactive virtual environments, avatars and agents in networked environments, social simulation and games for education and training, embodied conversational agents, social and linguistic behavior modeling, natural human-computer interaction, real-time graphical visualization

#### **EDUCATION**

1997-2003

• PhD in Media Arts and Sciences. Massachusetts Institute of Technology, USA. Dissertation: "Avatar Augmented Online Conversation". A theoretical and practical framework for automatically analyzing communicative function in real-time online text conversations and for enhancing those functions through an added visual modality using graphical avatars that simulate human nonverbal expression. Communicative functions included emphasis, visual reference, turn-taking, attention and feedback. A general system architecture, Spark, was developed and an implemented application for online collaboration provided empirical evidence for the strength of the approach for augmenting online conversation.

1995-1997

- MSc in Media Arts and Sciences. Massachusetts Institute of Technology, USA.
- 1991 1994
- BSc in Computer Science. University of Iceland.

#### WORK EXPERIENCE

2010-Present 2006-2010

- Associate Professor, School of Computer Science, Reykjavík University
- Assistant Professor (same)
- Research in the field of socially intelligent agents and avatars in virtual environments.
- Director of the Center for Analysis and Design of Intelligent Agents (CADIA) (Since 2013)
- Leading the Socially Expressive Computing research group.
- Teaching includes virtual environments, game technology, AI, language technology and graphics.

 $2009\text{-}\mathrm{Present}$ 

- Co-Founder and Technology Advisor, MindGames ehf., Reykjavík, Iceland
- Advising on and helping with development of innovative game technologies for training mental skills.

 $2006\text{-Present} \\ 2005\text{-}2006$ 

- Technology Advisor and Board Member, Alelo Inc., Los Angeles, CA, USA
- Co-Founder and Chief Technology Officer (same)
- Spin-off from the "Tactical Language and Culture Training" project at USC.
- Responsible for technology migration from academic research to a commercial platform.

2003-2006

• Research Scientist, USC Information Sciences Institute, CA, USA.

### WORK EXPERIENCE (continued)

- Member of the Center for Advanced Research in Technology for Education (CARTE).
- Technical Director on the DARPA "Tactical Language and Culture Training" project.
- Project lead on the DARPA "BCBM: Believable Communicative Behavior Middleware" project.
- Guiding graduate students with their research.
- Interaction and collaboration with other research institutions, industry and the government.

#### 1995-2003

- Research Assistant, MIT Media Lab, MA, USA
- Member of the Gesture and Narrative Language research group led by Prof. Justine Cassell.
- Project lead on group projects including "BEAT", "REA" and "Pantomime".
- Interaction and collaboration with other research institutions and industry.

#### 1994-1995

- Senior Software Engineer, Raffind Electronics, Ltd., Reykjavík, Iceland
- Developing control and monitoring applications for networked sensors and terminals.

1994

- Software Engineer, Hugmynd Multimedia, Reykjavík, Iceland
- Developing a kiosk system for visually browsing a multimedia database of real-estate property.

1992-1993

- Software Engineer, Fjölnemar Inc., Reykjavík, Iceland
- Developing on- and off-line visualization and analysis tools for MEDISTOR, a versatile data logger.

### GRANTS and AWARDS

### Grants Received

#### 2014

- The Icelandic Research Fund
- Cities that Sustain Us: Using Virtual Reality to Test the Restorative Potential of Future Urban Environments (PI, 30.000.000 ISK, 3 Y)
- The Icelandic Student Innovation Fund
- The Effects of Leadership on the Visible Social Behaviour of Intelligent Agents (PI, 510.000 ISK)

#### 2013 • **T**

- The Icelandic Research Fund
- $\bullet$  Icelandic Language and Culture Training in Virtual Reykjavík (PI, 20.000.000 ISK, 3 Y)
- The Icelandic Student Innovation Fund
- Optimizing expenditure on cycling roads using cyclists' GPS data (Co-PI, 2.040.000 ISK)
- $\bullet$  Development of a User Modeling System (Co-PI, 1.020.000 ISK)

#### 2012

- The Icelandic Student Innovation Fund
- Interactive 3D Social Simulation of Reykjavik Downtown (PI, 1.530.000 ISK)

#### 2011

- The Icelandic Student Innovation Fund
- Web Environment for the Deployment and User Testing of Interactive Virtual Agents (PI, 510.000 ISK)
- Emergent Virtual Stories (PI, 510.000 ISK)
- A Mind-Controlled Videogame to Help Children Improve Mental Focus (Co-PI, 510.000 ISK)
- Labeling the Line: Improving the Mind-Game Feedback Loop in Mind Training Games with Physics and Psychophysicss (Co-PI, 510.000 ISK)

#### 2010

- The Icelandic Student Innovation Fund
- Autonomous Seat Selection for Virtual Agents (PI, 700.000 ISK)
- Icelandic Speech Recognition (Co-PI, 480.000 ISK)

#### 2009

- Centre of Excellence
- Icelandic Institute for Intelligent Machines (Co-PI, 55.000.000 ISK, 7 Y)
- The Icelandic Student Innovation Fund
- The Automaded Virtual Reading Tutor (Co-PI, 280.000 ISK)

### GRANTS and AWARDS (continued)

- 2008 The Icelandic Research Fund
  - Humanoid agents in social game environments (Grant of Excellence) (PI, 40.150.000 ISK, 3 Y)
- The Icelandic Research Fund.
  - Humanoid agents in social game environments (Project Grant) (PI, 4.850.000 ISK, 3 Y)
- The Defense Advanced Research Projects Agency (DARPA)
  - BCBM: Believable Communicative Behavior Middleware (Co-PI, 700.000 USD, 3 Y)
  - The National Science Foundation (NSF)
  - Promoting Competence in Math with Collaboration, Reflection and Role Models (Co-PI,500.000 USD, 2 Y)

#### Awards and Nominations

- Nomination for President of Iceland Innovation Award for "Mind training games" Student Innovation Fund project by Arason, Pourvatan, Voludottir and Nikulasson (under my co-supervision)
- Project of Excellence for "Autonomous Seat Selection for Virtual Agents" Student Innovation Fund project by Carstensdottir and Gudmundsdottir (under my supervision)
- Nomination for President of Iceland Innovation Award for "The Automaded Virtual Reading Tutor"
  Student Innovation Fund project by Valgardsson (under my supervision)
- Top 10, Class of Excellence with "MindGames" in the Innovit Business Plan Competition 2009
- GALA Jury Award and GALA Public Award for the "BML Realizer" student project by Bjarni Pór Árnason and Ægir Porsteinsson (under my supervision) at the 8th International Conference on Intelligent Virtual Agents, Tokyo, Japan
- 2006 Best Paper Nominee at the 6th International Conference on Intelligent Virtual Agents
- DARPA Significant Technical Achievement Award for the Tactical Language and Culture Training Project (served as Technical Director on the project)
- DARPA/DARWARS Transition Award for the Tactical Language and Culture Training Project (for transitioning research into practical use)
- 2005 Best Paper Nominee at the 38th Hawaii International Conference on System Sciences
- Best Paper in Category Award and Best Paper Nominee at the Interservice/Industry Training, Simulation and Education Conference
- Best Paper Award at the 2nd International Conference on Autonomous Agents
- 1996 Presentation Award at the 3rd Conference on Lifelike Computer Characters
- Thor Thors Fellowship from the American-Scandinavian Foundation

#### REFEREED PUBLICATIONS

### Number of Citations by Peers

- Google Scholar Citations: 3093; Hirsch's h-index: 21;
- C. Oliva and H. Vilhjálmsson. (2014) "Prediction in Social Path Following". In Proceedings of the ACM SIGGRAPH Conference on Motion in Games, November 6-8, Los Angeles, CA.
- A. Cafaro, H. Vilhjálmsson, T. Bickmore, D. Heylen, C. Pelachaud (2014) "Representing Communicative Functions in SAIBA with a Unified Function Markup Language". In Proceedings of the 14th International Conference on Intelligent Virtual Agents, August 27-29, Boston, MA, Lecture Notes in Artificial Intelligence, 8637:81-94, 2014, Springer International Publishing Switzerland
- A. Cafaro, H. Vilhjálmsson, T. Bickmore, D. Heylen, D. Schulman (2013) "First Impressions in User-Agent Encounters: The Impact of an Agent's Nonverbal Behavior on Users' Relational Decisions", in Proceedings of the 12th International Conference on Autonomous Agents and Multiagent Systems (AAMAS), Saint Paul, MN, USA. May 2013.

### REFEREED PUBLICATIONS (continued)

- A. Cafaro, H. Vilhjálmsson, T. Bickmore, D. Heylen, K. Jóhannsdóttir and G. Valgarðsson (2012) "First Impressions: Users' Judgments of Virtual Agents' Personality and Interpersonal Attitude in First Encounters", in Proceedings of the 12th International Conference on Intelligent Virtual Agents, September 12-14, Santa Cruz, CA, Lecture Notes in Computer Science, 2012, Springer-Verlag, Berlin Heidelberg
- Pedica, C. and Vilhjalmsson, H. (2012), "Lifelike Virtual Characters using Behavior Trees for Social Territorial Intelligence" (poster) in Proceedings of ACM SIGGRAPH 2012. Los Angeles, August 5-9.
- Jón Guðnason, Oddur Kjartansson, Jökull Jóhannsson, Elín Carstensdóttir, Hannes H. Vilhjálmsson, Hrafn Loftsson, Sigrún Helgadóttir, Kristín Jóhannsdóttir and Eiríkur Rögnvaldsson (2012), "Almannaromur: An Open Icelandic Speech Corpus", in Proceedings of the Third International Workshop on Spoken Language Technologies for Under-resourced languages (SLTU 2012). Cape Town, South Africa
- Carstensdottir, E., Gudmundsdottir, K., Valgardsson, G. and Vilhjalmsson, H. (2011), "Where to Sit? The Study and Implementation of Seat Selection in Public Places", H. Vilhjalmsson (Eds.): Proceedings of the 11th International Conference on Intelligent Virtual Agents, September 15-17, Reykjavik, Iceland, Lecture Notes in Computer Science, 6895:473-474, Springer-Verlag, Berlin Heidelberg
- Thrainsson, P. R., Petursson, A. L. and Vilhjalmsson, H. (2011) "Dynamic Planning for Agents in Games Using Social Norms and Emotions", H. Vilhjalmsson (Eds.): Proceedings of the 11th International Conference on Intelligent Virtual Agents, September 15-17, Reykjavik, Iceland, Lecture Notes in Computer Science, 6895:473-474, Springer-Verlag, Berlin Heidelberg (Poster)
- Koutsombogera, M., Ammendrup, S. M., Vilhjálmsson, H. and Papageorgiou, H. (2011), "Nonverbal Expression of Turn Management in TV Interviews: A Cross-Cultural Study between Greek and Icelandic" in A. Esposito et al. (Eds.): COST 2102 Int. Training School 2010, Lecture Notes in Computer Science 6456:207-213, Springer-Verlag Berlin Heidelberg 2010
- Pedica, C. and Vilhjálmsson, H. (2010) "Spontaneous Avatar Behavior for Human Territoriality" in *Journal of Applied Artificial Intelligence*, Volume 24 Issue 6, July 2010, 575-593 Taylor and Francis, Inc. Bristol, PA, USA
- Pedica, C., Vilhjálmsson, H. and Larusdottir, M. (2010) "Avatars in Conversation: The Importance of Simulating Territorial Behavior" in Albeck et al. (Eds.): Proceedings of the 10th International Conference on Intelligent Virtual Agents, September 20-22, Philadelphia, PA. Lecture Notes in Computer Science, 2010, 6356: 336-342, Springer-Verlag, Berlin Heidelberg
- Pedica, C. and Vilhjálmsson, H. (2009) "Spontaneous Avatar Behavior for Human Territoriality", Zs. Ruttkay et al. (Eds.): Proceedings of the 9th International Conference on Intelligent Virtual Agents, September 14-16, Amsterdam, The Netherlands, Lecture Notes in Artificial Intelligence, 5773: 344-357, Springer-Verlag, Berlin Heidelberg
- Cafaro, A., Gaito, R. and Vilhjálmsson, H. (2009) "Animating Idle Gaze in Public Places", Zs. Ruttkay et al. (Eds.): Proceedings of the 9th International Conference on Intelligent Virtual Agents, September 14-16, Amsterdam, The Netherlands, Lecture Notes in Artificial Intelligence, 5773: 250-256, Springer-Verlag, Berlin Heidelberg
- Pedica, C. and Vilhjálmsson, H. (2008) "Social Perception and Steering for Online Avatars", H. Prendinger et al. (Eds.): Proceedings of the 8th International Conference on Intelligent Virtual Agents, September 1-3, Tokyo, Japan, Lecture Notes in Artificial Intelligence, **5208**: 104-116, Springer-Verlag, Berlin Heidelberg
- Heylen, D., Kopp, S., Marsella, S., Pelachaud, C., Vilhjálmsson, H. (2008) "The Next Step Twoards a Functional Markup Language", H. Prendinger et al. (Eds.): Proceedings of the 8th International Conference on Intelligent Virtual Agents, September 1-3, Tokyo, Japan, Lecture Notes in Artificial Intelligence, 5208: 270-280, Springer-Verlag, Berlin Heidelberg
- Vilhjalmsson, H., Cantelmo, N., Cassell, J., Chafai, N., Kipp, M., Kopp, S., Mancini, M., Marsella, S., Marshall A., Pelachaud, C., Ruttkay Z., Thorisson, K., van Welbergen, H. and van der Werf, R. (2007) "The Behavior Markup Language: Recent Developments and Challenges", C. Pelachaud et al. (Eds.): Proceedings of The 7th International Conference on Intelligent Virtual Agents, September 17-19, Paris, France, Lecture Notes in Artificial Intelligence, 4722: 99-111, Springer-Verlag, Berlin Heidelberg
- Vilhjalmsson, H., Merchant, C., Samtani, P. (2007) "Social Puppets: Towards Modular Social Animation for Agents and Avatars", D. Schuler (Ed.): Proceedings of The 2nd International Conference on Online Communities and Social Computing, July 22-27, Beijing, China, Lecture Notes in Computer Science, 4564:192-201, Springer-Verlag, Berlin Heidelberg Invited Paper
- Kopp, S., Krenn, B., Marsella, S., Marshall, A. N., Pelachaud, C., Pirker, H., Thorisson, K. and Vilhjalmsson, H. (2006) "Towards a Common Framework for Multimodal Generation in ECAs: The Behavior Markup Language", J. Gratch et al. (Eds.): Proceedings of The 6th International Conference on Intelligent Virtual Agents, August 21-23, Marina del Rey, CA, USA, Lecture Notes in Computer Science, 4133: 205-217, Springer-Verlag, Berlin Heidelberg

### REFEREED PUBLICATIONS (continued)

- Thorisson, K., Vilhjalmsson, H., Pelachaud, C., Kopp, S., Badler, N., Johnson, W. L., Marsella, S. and Krenn, B. (2006) "Representations for Multimodal Generation: A Workshop Report", AI Magazine, 27(1), AAAI Press
- Valente, A., Johnson, W. L. and Vilhjalmsson, H. (2006) "The Tactical Language and Culture Training System: A Demonstration", 21st National Conference on Artificial Intelligence, July 16-20, Boston, MA, AAAI
- Johnson, W. L., Vilhjalmsson, H. and Marsella, S. (2005) "Serious Games for Language Learning: How Much Game, How Much AI?", in Proceedings of The 12th International Conference on Artificial Intelligence in Education, July 18-22, Amsterdam, The Netherlands, IOS Press
- Vilhjalmsson, H. and Samtani, P. (2005) "MissionEngine: Multi-system integration using Python in the Tactical Language Project", *PyCon*, March 23-25, Washington, D.C., Python Software Foundation
- Vilhjalmsson, H. (2005) "Augmenting Online Conversation through Automatice Discourse Tagging", in Proceedings of The 6th Annual Minitrack on Persistent Conversation at HICSS, January 3-6, 2005, Big Island, Hawaii, IEEE
- Warwick, W. and Vilhjalmsson, H. (2005) "Engendering Believable Communicative Behaviors in Synthetic Entities for Tactical Language Training: An Interim Report", in Proceedings of Behavior Representation in Modeling and Simulation, May 16-19, Universal City, CA, SISO
- Johnson, W. L., Beal, C., Fowles-Winkler, A., Lauper, U., Marsella, S., Narayanan, S. and Vilhjalmsson, H. (2004) "Tactical Language Training System: An Interim Report", in Proceedings of The International Conference on Intelligent Tutoring Systems, August 30 September 3, Maceio, Brasil, Springer-Verlag
- Beal, C., Shaw, E., Chui, Y., Lee, H., Vilhjalmsson, H. and Qu, L. (2005) "Enhancing ITS instruction with integrated assessments of learner mood, motivation and gender", 12 International Conference on Artificial Intelligence in Education, July 18-22, IOS Press
- Johnson, W. L., Vilhjalmsson, H. and Samtani, P. (2005) "The Tactical Language Training System: Demonstration", Artificial Intelligence and Interactive Digital Entertainment, June 1-3, Marina del Rey, CA
- Johnson, W. L., Choi, S., Marsella, S., Mote, N., Narayanan, S. and Vilhjalmsson, H. (2004) "Tactical Language Training System: Supporting the Rapid Acquisition of Foreign Language and Cultural Skills", in Proceedings of NLP and Speech Technologies in Advanced Language Learning Systems, June 17-19, Venice, Italy, inSTIL
- Johnson, W. L., Marsella, S. and Vilhjalmsson, H. (2004) "The DARWARS Tactical Language Training System", in Proceedings of The Interservice/Industry Training, Simulation and Education Conference, November 26-29, Orlando, FL, USA, SSA
- Vilhjalmsson, H. (2004) "Animating Conversation in Online Games", Rauterberg, M. (Ed.), Proceedings of The 3rd International Conference on Entertainment Computing, Lecture Notes in Computer Science, **3166**: 139-150, Springer-Verlag, Berlin Heidelerg
- O'Sullivan, C., Cassell, J., Vilhjalmsson, H., Dingliana, J., Dobbyn, S., McNamee, B., Peters, C. and Giang, T. (2002) "Levels of Detail for Crowds and Groups", *Computer Graphics Forum*, **21**(4), EG
- Cassell, J., Stocky, T., Bickmore, T., Gao, Y., Nakano, Y., Ryokai, K., Tversky, D., Vaucelle, C. and Vilhjalmsson, H. (2002) "MACK: Medialab Autonomous Conversational Kiosk", in *Proceedings of IMAGINA*, February 12-14, Monte Carlo, Monaco
- Cassell, J., Bickmore, T., Campbell, L., Vilhjalmsson, H. and Yan, H. (2001) "More than just a pretty face: conversational protocols and the affordances of embodiment", *Knowledge-Based Systems*, 14, Elsevier
- Cassell, J., Vilhjalmsson, H. and Bickmore, T. (2001) "BEAT: the Behavior Expression Animation Toolkit", ACM SIGGRAPH, August 12-17, Los Angeles, CA, ACM Press, 477-486
- Cassell, J., Ananny, M., Basu, A., Bickmore, T., Chong, P., Mellis, D., Ryokai, K., Smith, J., Vilhjalmsson, H. and Yan, H. (2000) "Shared Reality: Physical Collaboration with a Virtual Peer", *ACM CHI*, April 1-6, The Hague, The Netherlands, ACM Press
- Cassell, J., Bickmore, T., Vilhjalmsson, H. and Yan, H. (2000) "More Than Just a Pretty Face: Affordances of Embodiment", *International Conference on Intelligent User Interfaces*, January 9-12, New Orelans, LA, ACM Press, 4-9
- Cassell, J. and Vilhjalmsson, H. (1999) "Fully Embodied Conversational Avatars: Making Communicative Behaviors Autonomous", Autonomous Agents and Multi-Agent Systems, 2(1), ACM Press
- Cassell, J., Vilhjalmsson, H., Chang, K., Bickmore, T., Campbell, L. and Yan, H. (1999) "Requirements for an Architecture for Embodied Conversational Characters", *Computer Animation and Simulation*, Magnenat-Thalmann, N. and Thalmann, D. (Eds.), Springer Verlag, Vienna, Austria
- Cassell, J., Bickmore, T., Billinghurst, M., Campbell, L., Chang, K., Vilhjalmsson, H. and Yan, H. (1999) "Embodiment in Conversational Interfaces: Rea", *CHI*, Pittsburgh, PI, ACM Press, 520-527
- Vilhjalmsson, H. and Cassell, J. (1998) "BodyChat: Autonomous Communicative Behaviors in Avatars", Autonomous Agents, Autonomous Agents, Minneapolis, MN, ACM Press, 269-276

### REFEREED PUBLICATIONS (continued)

### Workshop Papers

- H. Vilhjálmsson, E. Björgvinsson, H. Helgadóttir, K. Kristinsson, S. Ólafsson. (2014) "We Never Stop Behaving: The Challenge of Specifying and Integrating Continuous Behavior". In Proceedings of the Workshop on Architectures and Standards for IVAs at the 14th International Conference on Intelligent Virtual Agents, August 27-29, Boston, MA
- A. Cafaro and H. Vilhjálmsson. (2014) "First Impressions in Human-Agent Virtual Encounters". Poster at the London Virtual Social Interaction Workshop, UCL Institute of Cognitive Neuroscience, September 4-5, London UK
- Thórisson, K.R. and Vilhjálmsson, H. (2009) "Functional Description of Multimodal Acts: A Proposal" in the proceedings of the 2nd Function Markup Language Workshop "Towards a Standard markup Language for Embodied Dialogue Acts" at AAMAS, Budapest, Hungary, 2009
- Vilhjálmsson, H. and Thórisson, K.R (2008) "A Brief History of Function Representation from Gandalf to SAIBA" in the proceedings of the 1st Function Markup Language Workshop at AAMAS, Portugal, June 12-16, 2008
- Vilhjalmsson, H. and Stacy, M. (2005) "Social Performance Framework", Workshop on Modular Construction of Human-Like Intelligence at the 20th National AAAI Conference on Artificial Intelligence, July 9th, Pittsburgh, PA, AAAI
- Johnson, W. L., Marsella, S., Mote, N., Si, M., Vilhjalmsson, H. and Wu, S. (2004) "Balanced Perception and Action in the Tactical Language Training System", Workshop on Balanced Perception and Action in ECAs in conjunction with AAMAS, July 19-20, New York, NY
- O'Sullivan, C., Cassell, J., Vilhjalmsson, H., Dobbyn, S., Peters, C., Leeson, W., Giang, T. and Dingliana, J. (2002) "Crowd and Group Simulation with Levels of Detail for Geometry, Motion and Conversational Behavior", Eurographics-Irish Chapter Workshop on Computer Graphics, March 25-26, Dublin, Ireland, EG
- Vilhjalmsson, H. (1999) "Identity, Avatars and Embodiment", Workshop on Research Issues in the Design of Online Communities at ACM CHI, May 16-17, Pittsburgh, PA
- Cassell, J., Bickmore, T., Billinghurst, M., Campbell, L., Chang, K., Vilhjalmsson, H. and Yan, H. (1998) "An Architecture for Embodied Conversational Characters", First Workshop on Embodied Conversational Characters, October 12-15, Tahoe City, CA
- Vilhjalmsson, H. (1996) "Autonomous Communicative Behaviors in Avatars", *Lifelike Computer Characters*, October 8-11, Snowbird, UT

### Book Chapters and Other Publications

- Vilhjálmsson, H. (2014), "Automation of Avatar Behavior" in Tanenbaum, J., el-Nasr, M. S. and Nixon M. (Eds.): Non-Verbal Communications in Virtual Worlds. ETC Press (Carnegie Mellon University).
- Vilhjálmsson, H. (2009) "Representing Communicative Function and Behavior in Multimodal Communication" in A. Esposito et al. (Eds.): *Multimodal Signals: Cognitive and Algorithmic Issues. Lecture Notes in Artificial Intelligence*, **5398**: 47-59, Springer-Verlag, Berlin Heidelberg
- Vilhjalmsson, H. (2008) "Tölvuleikir teknir alvarlega vestanhafs", Tölvumál: The Journal of the Society for Information Processing, 33(1), Skýrslutæknifélag Íslands
- Cassell, J., Vilhjalmsson, H. and Bickmore, T. (2004) "BEAT: The Behavior Expression Animation Toolkit", Life-Like Characters: Tools, Affective Functions, and Applications, Prendinger, H. and Ishizuka, M. (Eds.), Springer-Verlag, Berlin, 163-185
- Cassell, J., Bickmore, T., Campbell, L., Vilhjalmsson, H., Yan, H. (1999) "Conversation as a System Framework: Designing Embodied Conversational Agents", *Embodied Conversational Agents*, Cassell, J. et al. (Eds.), MIT Press, Cambridge, MA, 29-63
- Vilhjalmsson, H. (1993) "Sýndarveruleiki", Tölvumál: The Journal of the Society for Information Processing, 18(3), Skýrslutæknifélag Íslands

#### **DEMOS**

• Social Gatherings in Virtual Reykjavik, The International Conference on Intelligent Virtual Agents, Boston, MA

### **DEMOS** (continued)

09/2011	• CADIA Projects
·	• Vísindavaka 2011, The Icelandic Centre for Research, Reykjavík, Iceland
03/2011	• CADIA Populus – Demo
	• UT Messan, The Association for Information Processing, Reykjavík, Iceland
09/2010	• CADIA Projects
	• Vísindavaka 2010, The Icelandic Centre for Research, Reykjavík, Iceland
09/2010	• The Autonomous Virtual Reading Teacher
	• Gathering of Animated Lifelike Agents (GALA), at IVA 2010, Philadelphia, PA
06/2010	• CADIA Populus – Demo
	• The Game AI Conference, Paris, France
09/2009	• CADIA Populus Video
	• Gathering of Animated Lifelike Agents (GALA), at IVA 2009, Amsterdam, The Netherlands
09/2009	• CADIA Populus – Demo.
	• Vísindavaka 2009, The Icelandic Centre for Research, Reykjavík, Iceland
11/2008	• CADIA Projects – Demo.
	• ICT 2008, The European Commission, Lyon, France
11/2008	• CADIA Projects – Demos.
- /	• AI Festival 2008, School of Computer Science, Reykjavik University
9/2008	• BML Realizer Video
00/0000	• Gathering of Animated Lifelike Agents (GALA), at IVA 2008, Tokyo, Japan
09/2008	• CADIA Populus – Demo.
00/000=	• Vísindavaka 2008, The Icelandic Centre for Research, Reykjavík, Iceland
09/2007	• Humanoid Agents in Social Game Environments – Demo.
9/000=	• Vísindavaka 2007, The Icelandic Centre for Research, Reykjavík, Iceland
3/2007	• Interactive Virtual Environments
00/0000	• Tækni og Vit 2007, The Industry Association with the Ministry of Industry and Commerce
09/2006	• Leikur að læra pastúnsku! – Demo.
	• Vísindavaka 2006, The Icelandic Centre for Research, Reykjavík, Iceland

### **STUDENTS**

### PhD Supervision

• Angelo Cafaro (2014)

### $PhD\ Committee/Examination/Evaluation$

- $\bullet$  Branislav Bédi (at University of Iceland) (2015)
- Kirsten Bergmann (at University of Bielefeld) (2011)
- Cathy Ennis (at Trinity College Dublin) (2010)

### MS Thesis Supervision

- Karl Valdimar Kristinsson (2015)
- Ásgeir Jónasson (2015)
- Stefán Ólafsson (2015)
- Elías Ingi Ögmundsson (2015)
- Alfredo Conte (2012)
- Andrea Monacchi (2012)
- Francesco Lilli (2012)
- David Sorrentino (2012)
- Lorenzo Scagnetti (2012)
- Sigrún María Ammendrup (2011)
- Carmine Oliva (2011)

### STUDENTS (continued)

- Páll Rúnar Þráinsson (2011)
- Raffaele Gaito (at University of Salerno, Italy) (2010)
- Claudio Pedica (2009)
- Angelo Cafaro (at University of Salerno, Italy) (2009)

#### MS Thesis Examination

- Karin Christiansen (2014)
- Eydís Huld Magnúsdóttir (2013)
- Fabrizio Fornari (2013)
- Björn Jónsson (2012)
- Kristján Rúnarsson (2011)
- Hlynur Sigurþórsson (2011)
- Grímur Tómasson (2011)
- Martha Dís Brandt (2010)
- Ida Kramarczyk (2009)
- Jónas Tryggvi Jóhannsson (2007)
- María Arinbjarnar (2007)

### BS Theses Supervision

- Anna Dominiak (at Lodz University of Technology, Poland) (2014)
- Elín Carstensdóttir (2013)
- Giuseppe Esposito (2010)
- $\bullet$  Hildur Sif Thorarensen (2010)
- Elvar Örn Unnþórsson (2009)
- Eiríkur Ari Pétursson (2009)
- Guðleifur Kristjánsson (2009)
- Árni Hermann Reynisson (2009)
- Bjarni Þór Árnason (2008)
- Ægir Þorsteinsson (2008)
- Óskar Vatnsdal Guðjónsson (2008)

### COURSES TAUGHT

2014 Fall • Independent Study: "Intuitive User Interfaces for Virtual Reality"

• Independent Study: "Introduction of Multi-User Interaction into a Single-User Virtual Space"

2014 Spring • Game Engine Architecture

• Virtual Environments

• Electro-Mechanical Interactive Art

• Independent Study: "Character Animation"

2013 Fall • Natural Language Processing

• Learning in the Digital Age

2012 Spring • Electro Mechanical Interactive Art

• Game Engine Architecture

• Virtual Environments

2011 Fall • Independent Study: "Interactive Narrative and Emergence"

2011 Summer • Virtual Environments (at University of Camerino)

2011 Spring • Introduction to Artificial Intelligence

• Independent Study: "The Modeling and Interactive Rendering of The Reykjavik University Building"

• Independent Study: "Game Engine Development"

2010 Fall • Natural Language Processing

• Virtual Environments

### COURSES TAUGHT (continued)

• Independent Study: "Procedural Animation for Human Behavior"

2010 Spring • Independent Study: "Design and Implementation of a Navigation Mesh Based Path Finding Sys-

 $\rm tem\,{}^{\prime\prime}$ 

2009 Fall • Computer Graphics

• Natural Language Processing

• Independent Study: "Open Source Technology for Massively-Multiplayer Games"

2009 Spring • Virtual Environments

• Introduction to Artificial Intelligence

• Independent Study: "Simulating Group Behavior in Avatar-based Virtual Environments"

• Independent Study: "Behavior Modelling in Virtual Creatures"

2008 Fall • Natural Language Processing

2008 Spring • Virtual Environments

• Introduction to Artificial Intelligence

• Independent Study: "Building and Performance Tuning a Real-time Nature Rendering Framework

with Shaders"

2007 Fall • Natural Language Processing

• Operating Systems

• Independent Study: "Procedural Content Creation"

2007 Spring • Virtual Environments

• Introduction to Artificial Intelligence

• Independent Study: "Leitaraðferðir á leiðum í tölvuleikjum"

• Independent Study: "Coupling Autonomy and User Control in Avatar Based Online Interaction"

#### **SERVICES**

### Coordination Work

- General Steering Comittee Member International Conference on Intelligent Virtual Agents, Since 2009
- Senior PC Member for International Conference on Intelligent Virtual Agents, 2010, 2012, 2013, 2014
- Senior PC Member for International Conference on Autonomous Agents and Multiagent Systems, 2010, 2011, 2014
- Co-Producer for the *Icelandic AI Festival*, Reykjavik University, Reykjavik, October 2014
- Chair 11th International Conference on Intelligent Virtual Agents, Reykjavik, Iceland, September 2011
- Co-chair for 6th Nordic Conference on Human-Computer Interaction, Reykjavik, Iceland, October 2010
- Senior PC Member for 9th International Conference on Autonomous Agents and Multiagent Systems, Toronto, Canada, May 10-14, 2010, 2014
- Co-chair for The 9th International Conference on Intelligent Virtual Agents, Amsterdam, The Netherlands, September 2009
- Co-organizer The 4th International Workshop on the Behavior Markup Language, Amsterdam, The Netherlands, September 2009
- Co-organizer of the Annual Conference on Software Development, The Icelandic Society for Information Processing (Ský), Reykjavik, November 2008
- Producer for the Icelandic AI Festival, Reykjavik University, Reykjavik, November 2008
- Co-organizer of The 3rd International Workshop on the Behavior Markup Language, MITRE Corporation, Boston, MA, June 2-3, 2008
- Co-organizer of *The 1st Functional Markup Language Workshop* at AAMAS 2008, Estoril, Portugal, May 12-13, 2008
- Interactive Demonstrations Chair for the 13th International Conference on Artificial Intelligence in Education, Marina del Rey, CA, July 2007
- Co-organizer of *The 2nd International Workshop on the Behavior Markup Language*, Paris, France, June 7-8, 2007
- Co-organizer of an International Workshop on Multimodal Behavior Description, Vienna, Austria, November 6-8, 2006
- Co-organizer of a AAAI Workshop on *Modular Construction of Human-Like Intelligence*, Pittsburgh, Pennsylvania, July 10, 2005.

### SERVICES (continued)

- Co-organizer of an International Workshop on Representations for Multimodal Generation, Reykjavík, Iceland, April 23-25, 2005.
- Co-organizer of a Workshop on Embodied conversational agents at ACM AAMAS, 2002

### Most Recent Referee Work

- 2014 IEEE's Transactions on Visualization and Computer Graphics International Conference on Computer Graphics Theory and Applications (GRAPP 2014), Intelligent Virtual Agents (IVA 2014) (Senior PC), Language Resources and Evaluation Conference (LREC 2014), Annual Conference of the European Association for Computer Graphics (EUROGRAPHICS 2014), Autonomous Agents and Multi-Agent Systems (AAMAS 2014) (Senior PC)
- 2013 International Journal of Human-Computer Studies, Journal on Multimodal User Interfaces, Intelligent Virtual Agents
- 2012 Artificial Intelligence in Interactive Digital Entertainment, Intelligent Virtual Agents (Senior PC), Autonomous Agents and Multi-Agent Systems
- 2011 MIT Press (manuscript reviewer), Journal of Presence: Teleoperators and Virtual Environments Journal of Entertainment Computing, IJCAI, Socially Intelligent Surveillance and Monitoring, Artificial Intelligence in Interactive Digital Entertainment, IEEE SocialCom
- 2010 Journal of Cognitive Computation, Journal on Multimodal User Interfaces, Autonomous Agents and Multi-Agent Systems (Senior PC), Intelligent Virtual Agents (Senior PC), Artificial Intelligence in Interactive Digital Entertainment, AAAI SIGGRAPH, CHI, Intelligent User Interfaces, IceTAL, Socially Intelligent Surveillance and Monitoring
- 2009 Autonomous Agents and Multi-Agent Systems, SIGGRAPH, CHI, International Gesture Workshop, Intelligent User Interfaces
- 2008 Multimodal Signals: Cognitive and Algorithmic Issues (LNAI), Computer Animation and Virtual Worlds, Autonomous Agents and Multi-Agent Systems
- 2007 Virtual Reality, Speech Communication, Persistent Conversation (HICSS), Intelligent Virtual Agents, Pragmatics of Computer-Mediated Communication, Artificial Intelligence Journal, SIGGRAPH, NODALIDA
- 2006 Human Computer Interface International, Computer Supported Cooperative Work, Persistent Conversation (HICSS), Intelligent Virtual Agents, AAAI, International Journal of Human-Computer Studies, Autonomous Agents and Multi-Agent Systems, CHI

### Other Recent Service Work

- On the Board of Advisors of Aldin Dynamics, Reykjavik, Iceland
- On the Board of Advisors of Radiant Games, Reykjavik, Iceland
- On the Board of Directors of MindGames, Reykjavik, Iceland
- On the Board of Directors of Alelo UK, London, UK
- On the Board of Advisors of Icelandic Institute for Intelligent Machines, Reykjavik, Iceland
- On the Board and Co-Founder of Hugsýn, the Icelandic Cognitive Studies Society
- On the Board of Advisors of CLARA, Reykjavík, Iceland
- Local Chair of the 98th Esperanto World Congress, Reykjavik, 2013
- Member of the "Empowering Women" European Leonardo Project, 2010-2012
- President of the Icelandic Eperanto Association, Reykjavik, Iceland
- Guest lecturer (on programming) at Myndlistaskólinn í Reykjavik, Spring 2012
- Guest lecturer (on natural interfaces) at the Icelandic Academy for the Arts, Spring 2012
- External Referee, European Research Council, 2011
- Co-chair of LornaLAB, an Icelandic grass-roots forum for mixing art and technology
- Organizer, producer and designer of the "Eitt mál fyrir allan heiminn" museum exhibit, on the 100th anniversary of the first Icelandic textbook for esperanto, The National Library of Iceland, 2009
- Jury member on the Icelandic high school innovation competition, NKG, 2009
- Contributor to the founding and running of the Icelandic Gaming Industry, 2009
- Co-organizer of the student game development compentition at RU, 2009
- Co-hosted a meeting of the Ministry of Ideas grassroots innovation and social change organization, 2009

### SERVICES (continued)

- In Björk's "Neisti"/"Nattura.info" organization team, responsible for a series of workshops, meetings and talks within the government and in the wider community regarding a "Green Future" for Iceland and alternatives to heavy industry, 2008
- Reviewer on the Icelandic high school innovation competition, NKG, 2008
- Tutor in the Icelandic high school innovation competition, NKG, 2007
- Member of a Ministry of Education / EU advisory group on Improving IT use in education, 2006
- Reviewer on grant proposals for Rannis The Icelandic Research Council
- Founding member of *Mindmakers.org*, an online forum for open development of communicative humanoids and related AI middleware.

#### INVITED TALKS AND PANELS

- Building a Social Engine: Automating Social Cues for Avatars and Agents in Virtual Worlds
   HCII Seminar Series, Carnegie Mellon University, USA
- Seeing Ourselves in Simulation International Workshop on Multimodal Corpora, Tools and Resources at LREC, Reykjavik, Iceland
- The Mind-Body Problem for Social Encounters in Virtual Environments 4th IEEE International Conference on Cognitive Infocommunications, Budapest, Hungary
- 9/2013 Autonomous Extras for Games and Movies The Icelandic Science Fair (Vísindavaka), Reykjavík, Iceland
- Building a Social Engine: Automating Human Territoriality for Avatars and Agents, Department of Philosophy, Linguistics and Theory of Science, Gothenburg University, Sweden
- The Social Engine: Automating Social Behavior in Virtual Environments The Rotary Club of Reykjavik, Reykjavik, Iceland
- Breaking the Ice: Making both Player Avatars and Agents Socially Aware Keynote at The Eighth Annual AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment, Stanford, Palo Alto, California
- Building a Social Engine: Automating Human Territoriality for Avatars and Agents Alignment in Communication Colloquium Series, Bielefeld University, Germany
- Gervigreindar vitverur (Artificially Intelligent Agents) Lecture Series of Lorna Lab: The Reykjavik Medialab, Reykjavik
- Samskipti í sýndarrými (Communication in Cyberspace) The Humanities Anniversary Seminar Series, University of Iceland
- Stafrænir holdgervingar og gervigreind (Avatars and AI) The Icelandic Theosophical Society, Reykjavik
- Building a Social Engine: Automating Human Territoriality for Avatars and Agents Interactive Worlds Applied Research Group Lecture Series, Coventry University, Coventry, UK
- Virtual Language and Culture Immersion Icelandic Online: Nordic Seminar on CALL and Corpora, University of Iceland
- 12/2009 Framtíð gagnvirkrar miðlunar Ný sköpun á skjánum, jólaráðstefna 2009, Ský
- Automating Social Behavior, Faculty of Science and Technology, University of Camerino, Camerino, Italy
- 1/2009 Interdisciplinary Innovation, Pecha Kucha Night Reykjavik 1, The Ministry, Reykjavik
- 12/2008 Stafrænir holdgervingar í félagslegum sýndarheimi Fræðafundur, Fræðafélagið Kvasir, Reykjavik
- Svona hagar fólk sér: Félagsleg hegðun fyrir leiki AI Festival, School of Computer Science, Reykjavik University
- 9/2008 Notkun sýndarumhverfa í tungumálakennslu Evrópski tungumáladagurinn, Stofnun Vigdísar Finnbogadóttur í erlendum málum og Samtök íslenskra tungumálakennara
- Representing Function and Behavior in Multimodal Communication International School on Multimodal Signals: Cognitive and Algorithmic Issues, EU COST Action 2102
- 4/2008 Representing Function and Behavior in Multimodal Communication Árleg ráðstefna um tungutækni, Tungutæknisetur
- 11/2007 Próun og notkun alvarlegra leikja við kennslu IT in Education, The IT and Education Society
- 7/2007 Fræðakvöld: Stafrænir holdgervingar í félagslegum sýndarheimi Res Extensa Lecture Series, Res Extensa: The Mind, Health and Behavior Society

## INVITED TALKS AND PANELS (continued)

$\frac{3}{2007}$	• Garage AI: The Panda 3D Engine Public Garage AI Series, Reykjavik University
$\frac{3}{2007} \ \frac{3}{2007}$	<ul> <li>Félagsleg tölvutækni sem kennir mál og sið Breakfast Lecture Series, Association of Women in IT</li> <li>Gervigreind fyrir grafískar sögupersónur Tækni og Vit 2007, The Industry Association with the</li> </ul>
	Ministry of Industry and Commerce
11/2006	• Lifandi mál og menning: Notkun tölvuleiks við tungumálakennslu.
	• Tungumál og atvinnulífið: Margmiðlun, Stofnun Vigdísar Finnbogadóttur í erlendum málum
10/2006	• Using games to scaffold learning
	• Trends in the use of learning objects, NordFlex Virtual Conference
9/2006	• Notkun félagslegra vitvera í tungumálakennslu
	• Tæknidagar 2006, Verkfræðingafélag Íslands og Tæknifræðingafélag Íslands
2/2006	• Role of gesture in game-based language and culture training
	• American Association for the Advancement of Science Annual Meeting, St. Louis, MO
10/2005	• Using Games for Education and Training
	• The Summit on Educational Games, Federation of American Scientists, Washington, DC
10/2004	• Non Combat Military Game Efforts
	• Serious Games Summit D.C., CMP Media, Washington, DC
2003	• Personal Conversational Agents: Communicative agency through automated graphical
	avatars
	• Information Sciences Institute, U. of Southern California, Marina del Rey, CA
	• Computer and Information Science Colloquia, U. of Pennsylvania, Philadelphia, PA
	• College of Computing Colloquia, Georgia Institute of Technology, Atlanta, GA
2001	• IBM Watson Research Center, Cambridge, MA
2001	• Interdisciplinary Innovation
	• Annual Symposium of the Engineer Society and University of Iceland, Reykjavik, Iceland
2000	• Using 3D Graphics in Online Communities: Opportunities and Challenges
	• MediaMOO Annual Symposia, Georgia Institute of Technology, in Cyberspace
2000	• I, Avatar
1000	• Internet Research 1.0 Conference, Lawrence, KA
1998	• Embodied Conversation
100=	• Avatars '98 Conference, Contact Consortium, in Cyberspace
1997	• Life-like Avatars
1007	• Avatars'97 Conference, Contact Consortium, San Francisco, CA
1997	• Avatars: State-of-the-art
1002	• User Interface'97, Cambridge, MA
1993	Digital Magic: Virtual Reality     The Living Arts Museum, Psykinvik, Isoland
	• The Living Arts Museum, Reykjavik, Iceland

### **PRESS**

9/2012	• RUV Radio Channel 1/2: Interview on the morning show "Morgunútgáfan" on the "Cities that Sustain
	Us" project
02/2012	• RUV Radio Channel 1: Interview on three episodes of "Fyrr og nú" about future of computing, social
	AI, virtual environments, smart rooms and imagination
01/2012	$\bullet$ ÍNN TV: Interview on the innovation show "Frumkvöðlar" (Innovators) about MindGames
03/2011	• The Reykjavík Grapevine: Telekinesis For Dummies (Mentioned in article about MindGames)
11/2010	• RUV Radio Channel 1: Interview on "2+2=5 og Eftirmyndir raunveruleikans" about Cyberspace
01/2010	• RUV Radio Channel 2: Interview on "Morgunvaktin" about RU moving day
01/2010	• RUV Radio Channel 1: Interview on "Samfélagið í nærmynd" about RU new campus
10/2009	• Fréttablaðið: Esperanto opnar dyr (Interview on exhibit opening at the National Library)
11/2008	• HáVarp Opna Háskólans: Interview called "Hvernig eru verur í sýndarumhverfi gerðar mannlegri?"
11/2008	• Fréttablaðið: "Hátækni á Íslandi: Sproti sem gæti orðið að styrkri stoð", niðurstöður hátæknihóps Neista
10/2008	• RUV Radio Channel 1: Björk's Neisti Workgroup Summary on "Í heyranda hljóði"
09/2008	• RUV Radio Channel 1: Interview on "Víðsjá"
09/2008	• Fréttablaðið: Verðlaunaðir fyrir sýndarmenni (regarding student project)

### PRESS (continued)

- Entrepreneur Magazine: Take the Lead (As co-founder of Alelo Inc.)
- 05/2007 Fréttablaðið: Tölvuleikir stuðla að framþróun vísinda (Interview/Profile)
- 03/2007 RUV Radio Channel 1: Interview on "Samfélagið í nærmynd"
- 02/2007 Morgunblaδiδ: Tilfinningatölvuverur (Interview)
- 09/2006 Morgunblaδið (front page): Lifandi mál og menning
- 08/2006 RUV Radio Channel 1: Interview on "Víðsjá"
- Los Angeles Business Journal: War of words: video game teaches combat troops to communicate
- 03/2006 DV: Dr. Hannes Vilhjálmsson hjá háskóla Suður-Kaliforníu Kennir Könum að umgangast Íraka
- 02/2006 BBC News: US troops taught Iraqi gestures
- 02/2006 National Geographic News: Video Game Helps U.S. Soldiers Learn Arab Language, Culture
- 01/2006 Fréttablaðið: Vopnin víkja fyrir vináttu (Interview)
- 04/2005 Vírus: Vitrænar verur (Interview)
- 02/2005 Morgunblaδið (front page): Þróar tölvuleik fyrir herinn
- COX News Service: Researchers tame violent video game to keep troops safe in Iraq (Appears in: Infowars, The Pulse Journal, Rocky Mount Telegram,...)
- 01/2005 Computer Gaming World: Uncle Sam Gets Serious Games are graduating and military simulations are just the start
- 12/2004 Giornale Tecnologico: Viodeogiochi frontiera nel training (Italian)
- 12/2004 Training and Simulation Journal Online: Deadly Serious
- 11/2004 Virgilio: Videogame: non solo per divertirsi (Italian)
- Canalgame: Videojuegos para entrenar a profesionales (Spanish)
- Reuters: Video games teach more than hand-eye coordination (Appears in: The New Zealand Herald, Yahoo! News, USATODAY.COM, Video Game, Entertainment Software Association, LivingWith-Style.com, Entertainment Industry, AndySullivan.com...)
- GameDev.Net: Serious Games Summit 2004 Report
- 09/2004 IEEE Intelligent Systems: Gaming Technology Helps Troops Learn Language
- 08/2004 Dagblaðið Vísir: Íslendingur í New York Times (Icelandic)
- Asharq Al-Awsat (Arabic)
- The New York Times: Virtual Camp Trains Soldiers in Arabic, and More (Reprinted in: The Language Feed, Free Republic)
- USC Engineer: Mission to Arabic: It's Not Your Father's Language Lab (Also: USC Viterbi News Online)
- Various appearances, most notably television appearances on PBS Scientific American Frontiers, ABC News and Stöð 2

### PERSONAL INFORMATION

Born: September 3rd, 1972 Citizenship: Icelandic