

Tomislav Pejsa

Ph.D.

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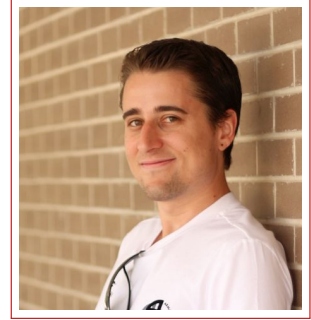
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GitHub: <https://github.com/tpejsa>

<https://github.com/uwgraphics/Leap>



Summary

Researcher in computer graphics and human-computer interaction, specializing in:

1. Human figure animation: animation software engineering, motion analysis, motion synthesis, editing, and retargeting, gaze animation
2. Interaction in augmented and virtual reality: AR and VR telepresence, user intent inference, user capture and display, situating users in virtual and remote physical spaces
3. Embodied conversational agents (ECAs): ECA system implementation, human behavior modeling, behavior synthesis, multiparty dialog systems, multimodal interaction, physically situated interaction

Education

2016 **Ph.D. in Computer Science**, *Department of Computer Sciences, University of Wisconsin-Madison, USA.*

Advisors: Michael Gleicher, Bilge Mutlu

- 7 first-author publications at venues such as SIGGRAPH Asia, Eurographics, CSCW, ICMI, etc.

- Full financial support through graduate school; Scholarship of Excellence recipient from the Department of Computer Sciences, UW-Madison

- Co-authored a computer graphics textbook used at universities in Croatia

2007 **B.Sc. in Computing**, *Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia.*

Employment

2011–Present **Research Assistant**, *Department of Computer Sciences, University of Wisconsin-Madison, USA.*

- Invented several new methods for synthesis of humanlike gaze animation: <https://git.io/viO0z>

- Created new social interaction experiences in virtual reality

- Created ZombieHorse, an animation system driven by human motion data: <https://git.io/viO08>

- Summer 2014 **Research Intern**, *Microsoft Research*, Redmond, WA, USA.
Natural Interaction Research Group (Supervisors: Hrvoje Benko, Eyal Ofek, Andrew Wilson)
• Principal scientist and developer behind Room2Room, an innovative, augmented-reality telepresence system: <http://y2u.be/tRzOqTRxoek>; received a Best Paper Award at CSCW 2016
- Spring 2014 **Research Intern**, *Microsoft Research*, Redmond, WA, USA.
Adaptive Systems and Interaction Group (Supervisors: Michael Cohen, Dan Bohus, Eric Horvitz)
• Contributed to development of Monica, a virtual executive assistant: <https://vimeo.com/107514035>
- 2007–2011 **Research Assistant**, *Department of Telecommunications, Faculty of Electrical Engineering and Computing, University of Zagreb*, Croatia.
• Lead software engineer on visage|SDK (<http://visagetechnologies.com/>), an easy-to-use toolkit for animating virtual agents

Publications

Books

- Pandzic, I.S., **Pejsa, T.**, Matkovic, K., Benko H., Cerekovic, A., and Matijasevic, M. (2011). *Virtualna Okruzenja: Interaktivna 3D Grafika i Njene Primjene*. [Virtual Environments: Interactive 3D Graphics and Its Applications.] Element, Zagreb, Croatia.

Journal Articles

- **Pejsa, T.**, Andrist, S., Gleicher., M., and Mutlu, B. (2015). Gaze and Attention Management for Embodied Conversational Agents. *ACM Transactions on Interactive Intelligent Systems*, 5(1), Article 3, 34 pages.
- **Pejsa, T.**, Mutlu, B., and Gleicher., M. (2013). Stylized and Performative Gaze for Character Animation. *Computer Graphics Forum (Proceedings of EUROGRAPHICS 2013)*, 32(2), 143-152.
- **Pejsa, T.**, and Pandzic, I.S. (2010). State of the Art in Example-Based Motion Synthesis for Virtual Characters in Interactive Applications. *Computer Graphics Forum*, 29(1), 202-226.
- Cerekovic, A., **Pejsa, T.**, and Pandzic, I.S. (2009). A Controller-based Animation System for Synchronizing and Realizing Human-like Conversational Behaviors. *Development of Multimodal Interfaces: Active Listening and Synchrony, Lecture Notes in Computer Science*, 5967, 80-91.
- Brkic, M., Smid, K., **Pejsa, T.**, and Pandzic, I.S. (2008). Towards Natural Head Movement of Autonomous Speaker Agent. *Lecture Notes in Artificial Intelligence*, 5178(2), 73-80.

Full Conference Papers

- **Pejsa, T.**, Rakita, D., Mutlu, B., and Gleicher, M. (2016). Authoring Directed Gaze for Full-Body Motion Capture. In *Proceedings of the 9th ACM SIGGRAPH Conference and Exhibition on Computer Graphics and Interactive Techniques in Asia (SIGGRAPH Asia 2016)*. To appear.

- **Pejsa, T.**, Kantor, J., Benko, H., Ofek, E., and Wilson, A.D. (2016). Room2Room: Enabling Life-size Telepresence in a Projected Augmented Reality Environment. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW 2016)*, San Francisco, CA. **Best Paper Award**.
- **Pejsa, T.**, Bohus, D., Cohen, M.F., Saw, C., Mahoney, J.M., and Horvitz, E. (2014). Natural Communication about Uncertainties in Situated Interaction. In *Proceedings of the 16th ACM International Conference on Multimodal Interaction (ICMI 2014)*, Istanbul, Turkey.
- Andrist, S., **Pejsa, T.**, Mutlu, B., and Gleicher, M. (2012). Designing Effective Gaze Mechanisms for Virtual Agents. In *Proceedings of the 30th ACM/SIGCHI Conference on Human Factors in Computing (CHI 2012)*, Austin, TX.
- **Pejsa, T.**, Pandzic, I.S. (2009). Architecture of an Animation System for Human Characters. In *Proceedings of the 10th International Conference on Telecommunications (ConTEL 2009)*, Zagreb, Croatia.

Short Conference Papers & Posters

- Rakita, D., **Pejsa, T.**, Mutlu, B., and Gleicher, M. (2015). Inferring gaze shifts from captured body motion. In *ACM SIGGRAPH 2015 Posters*, Los Angeles, CA.
- **Pejsa, T.** (2014). Authoring Communicative Behaviors for Situated, Embodied Characters. In *Proceedings of the 16th International Conference on Multimodal Interaction (ICMI 2014) Doctoral Consortium*, Istanbul, Turkey.
- Cerekovic, A., **Pejsa, T.**, and Pandzic, I.S. (2009). RealActor: Character Animation and Multimodal Behavior Realization System. In *Proceedings of the 9th International Conference on Intelligent Virtual Agents (IVA 2009)*, Amsterdam, The Netherlands.

Workshop Papers

- Andrist, S., **Pejsa, T.**, Mutlu, B., and Gleicher, M. (2012). A Head-Eye Coordination Model for Animating Gaze Shifts of Virtual Characters. In *Proceedings of the 4th Workshop on Eye Gaze in Intelligent Human-Machine Interaction held at the International Conference on Multimodal Interfaces*, Santa Monica, CA.

Skills

- C++, C, C#, Unity, HLSL, Cg, OGRE, Direct3D, OpenGL, PHP, MySQL, HTML/CSS, Javascript, Arduino
- Computer graphics, animation, geometry, linear algebra, full-body motion capture and tracking, eye tracking, motion analysis, synthesis, and editing
- Numerical analysis, statistical data analysis, machine learning
- Autodesk MotionBuilder, 3ds Max, FBX SDK

Languages

English Fluent, TOEFL iBT 119/120

German Intermediate, Deutsches Sprachdiplom (DSD) Stufe II

Croatian Native

Media Coverage

- MIT Technology Review: Augmented Reality Study Projects Life-Sized People into Other Rooms
- ZDNet: Microsoft's Skype Killer? Augmented Reality For Your Video Calls
- University of Wisconsin-Madison Science Narratives: Birth of the Bots

Teaching

University of Zagreb

| <i>Term</i> | <i>Year</i> | <i>Course</i> | <i>Course Lead</i> |
|-------------|-------------|--------------------------------------|--------------------|
| Fall | 2010 | Virtual Environments | Igor S. Pandzic |
| Fall | 2009 | Virtual Environments | Igor S. Pandzic |
| Spring | 2009 | Fundamentals of Virtual Environments | Igor S. Pandzic |
| Fall | 2008 | Virtual Environments | Igor S. Pandzic |
| Spring | 2008 | Fundamentals of Virtual Environments | Igor S. Pandzic |
| Fall | 2007 | Virtual Environments | Igor S. Pandzic |

Professional Service

Program Committee Service

- AAMAS Conference, 2016: program committee member

Referee Service

- ACM Transactions on Graphics (TOG)
- AAMAS Conference
- ACM SIGGRAPH Conference
- Computer Animation & Virtual Worlds
- Eurographics Conference
- IEEE Transactions on Affective Computing
- Computer Graphics International (CGI) Conference
- International Conference on Intelligent Virtual Agents (IVA)
- Conference on Computer Animation and Social Agents (CASA)