

Markus Eger

CONTACT	University of Costa Rica San Pedro, Montes de Oca, San Jose	markus.eger@ucr.ac.cr http://slothlab.info
RESEARCH INTERESTS	AI in games, epistemic logic and belief modeling, human-AI communication and interaction	
EDUCATION	North Carolina State University , Raleigh, NC Ph.D., Computer Science, December 2018 <ul style="list-style-type: none">• Thesis Topic: <i>Intentional AIs for Doxastic Games</i>• Advisor: Chris Martens, PhD Graz University of Technology , Graz, Austria M.Sc., Computer Science, July 2013 <ul style="list-style-type: none">• Thesis Topic: <i>Locally Context-sensitive Shape Grammars</i>• Advisor: Sven Havemann, PhD B.Sc., Computer Science, July 2011 <ul style="list-style-type: none">• Thesis Topic: <i>Behavior Trees for Autonomous Soccer Robots</i>• Advisor: Franz Wotawa, PhD Lund University , Lund, Sweden Erasmus exchange student, Computer Science, August 2008 – June 2009	
RESEARCH EXPERIENCE	Director of SLOTHLab Research group for Symbolic Logic and Operations for Transactions with Humans Department of Computer Science and Informatics University of Costa Rica	since January 2019
	Research assistant Department of Computer Science North Carolina State University Supervisors: Michael Young, PhD (November 2013 – December 2016) Alyson Wilson, PhD (January 2017 – December 2017) Chris Martens, PhD (January 2018 – December 2018)	November 2013 – December 2018
	RoboCup Team Member Mostly Harmless RoboCup Middle Size League Team Graz University of Technology Supervisors: Franz Wotawa, PhD (faculty advisor) Daniel Muschick, MSc (software team leader)	July 2009 – December 2011
AWARDS	Outstanding Graduate Research Awarded by the Computer Science Department of NC State to 1 or 2 students each year to recognize outstanding research contributions.	2018

PUBLICATIONS

Peer-reviewed conference publications

1. **Eger, M**, Martens, C. “A Study of AI Agent Commitment in One Night Ultimate Werewolf with Human Players”. *Proceedings of the 15th AAAI International Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE)*, Atlanta, USA, 2019.
2. **Eger, M**, Gruss, D. “Wait a Second: Playing Hanabi without Giving Hints”. *Proceedings of the Conference on Foundations of Digital Games (FDG)*, San Luis Obispo, USA, 2019.
3. Sauma Chacón, P., **Eger, M** “Ex-Tarot: An extended Tarot-based narrative generation”. *Proceedings of the IV Costa Rican Conference on Research in Computer Science and Informatics (JoCICI)*, San José, Costa Rica, 2019.
4. **Eger, M**, Martens, C. “Keeping the Story Straight: A Comparison of Commitment Strategies for a Social Deduction Game”. *Proceedings of the 14th AAAI International Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE)*, Edmonton, Canada, 2018.
5. **Eger, M**, Martens, C. “Practical Specification of Belief Manipulation in Games”. *Proceedings of the 13th AAAI International Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE)*, Snowbird, Utah, 2017.
6. **Eger, M**, Martens, C, Alfaro Córdoba, M. “An Intentional AI for Hanabi”. *Proceedings of the IEEE Conference on Computational Intelligence and Games (CIG)*, New York City, New York, 2017.

Peer-reviewed workshop publications

1. Sauma Chacón, P., **Eger, M** “Pandemic as a Challenge for Human-AI Cooperation”. *Working Notes of the AIIDE 2019 Workshop on Experimental AI in Games (EXAG)*, Atlanta, USA, 2019.
2. Gottwald, E.T., **Eger, M.**, Martens, C. “I see what you see: Integrating eye tracking into Hanabi playing agents”. *Working Notes of the AIIDE 2018 Workshop on Experimental AI in Games (EXAG)*, Edmonton, Canada, 2018.
3. Mohr, H., **Eger, M.**, Martens, C. “Eliminating the Impossible: A Procedurally Generated Murder Mystery”. *Working Notes of the AIIDE 2018 Workshop on Experimental AI in Games (EXAG)*, Edmonton, Canada, 2018.
4. **Eger, M**, Mathewson, K. “dAIrector: Automatic Story Arc Generation through Knowledge Synthesis”. *Working Notes of the AIIDE 2018 Workshop on Intelligent Narrative Technologies (INT)*, Edmonton, Canada, 2018.
5. **Eger, M**, Martens, C. “Character Beliefs in Story Generation”. *Working Notes of the AIIDE 2017 Workshop on Intelligent Narrative Technologies (INT)*, Snowbird, Utah, 2017.
6. Barot, C., Branon, M., Cardona-Rivera, R.E., **Eger, M.**, Glatz, M., Green, N., Mattice, J., Potts, C.M., Robertson, J., Shukonobe, M., Tateosian, L., Thorne, B.R., and Young, R.M., “Bardic: Generating Multimedia Narrative Reports for Game Logs”, *Working Notes of the AIIDE 2017 Workshop on Intelligent Narrative Technologies (INT)*, Snowbird, Utah, 2017.
7. **Eger, M.**, Martens, C. “Programming with Epistemic Logic”. *Off The Beaten Track Workshop (OBT)*, Paris, France, 2017.

8. **Eger, M.**, Potts, C.M., Barot, C., Young, R.M. “Plotter: Plotter: Operationalizing the Master Book of All Plots”. *Proceedings of the 8th Workshop on Intelligent Narrative Technologies (INT8)*, Santa Cruz, California, 2015.
9. **Eger, M.**, Barot, C., Young, R.M. “On the Merits of a Temporal Modal Logic for Narrative Discourse Generation”. *Proceedings of the 8th Workshop on Intelligent Narrative Technologies (INT8)*, Santa Cruz, California, 2015.
10. **Eger, M.**, Young, R.M. “Impulse: a formal characterization of story”. *Proceedings of the 2015 Workshop on Computational Models of Narrative (CMN)*, pp. 45–53, Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, Dagstuhl, Germany, 2015.
11. **Eger, M.** “Kick it like Beckham - Learning Kicker Parameters Using Reward-Weighted Regression”. *1st Austrian Robotics Workshop*, 2011
12. **Eger, M.**, Joham, T., Korl, L., “Behavior Engine for Autonomous Soccer Robots”. *5th Austrian RoboCup Workshop*, 2010

Invited Talks

1. **Eger, M.** “Human-AI Communication in Games”, Keynote at the *IV Costa Rican Conference on Research in Computer Science and Informatics (JoCICI)*, San José, Costa Rica, 2019
2. **Eger, M.** “A Generated Murder Most Foul”, Invited talk at the *CamJam Tutorial, held at 15th AAAI International Conference on Artificial Intelligence and Interactive Digital Entertainment*, Atlanta, Georgia, 2019.

Other publications

1. **Eger, M.**, Sauma Chacón, P., Hidalgo-Cespedes, J. “Waiting for You: Interpreting Action Timing in Hanabi”, To appear
2. **Eger, M.** “Intentional Agents for Epistemic Games”. *Doctoral Consortium at the 13th AAAI International Conference on Artificial Intelligence and Interactive Digital Entertainment*, Snowbird, Utah, 2017.
3. **Eger, M.** “Intentional Agents for Epistemic Games”. *Doctoral Consortium at Foundations of Digital Games*, Cape Cod, Massachusetts, 2017.
4. **Eger, M.**, Martens, C. “A Browser-based Interface for the Exploration and Evaluation of Hanabi AIs”. *Tech demo at Foundations of Digital Games*, Cape Cod, Massachusetts, 2017.

GRANTS

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| CITIC Research Grant | 2019 |
| PI “Non-Verbal Communication in Video Games”, support for 13h/week faculty time for the PI, 2h/week for Co-PI Jeisson Hidalgo-Cespedes, and 10h/week for a graduate research assistant for ten months, valued \$10000 | |
| Laboratory of Analytic Science Research Grant | 2017 |
| Co-PI “Automated Textual Report Generation from Email Data” (with PI Alyson Wilson, PhD and Co-PI Colin M. Potts), support for 2 PhD students for one year, valued \$80000 | |

MENTORING

Master’s Students

Pablo Sauma Chacón: Thesis title: *Improving Cooperation Between Human and Computer Players through Plan Recognition in the Game Pandemic*, expected graduation: Spring 2020

Jonathan Esquivel: Thesis working title: *Guided Procedural Content Generation using Facial Expression Analysis*, expected graduation: Fall 2020

Research Experience for Undergraduates

Summer 2018

Eve Gottwald: Undergraduate researcher implementing a version of the card game Hanabi that uses eye tracking to determine what the human player focuses on

Henry Mohr: Undergraduate researcher developing a detective game using belief modeling

TEACHING
EXPERIENCE

Visiting Professor

January 2019 – present

Universidad de Costa Rica

Classes:

Video game development

AI in Digital Entertainment

AI - Planning

Performance Testing and Experimentation

Teaching Assistant

2007-2013

Graz University of Technology

Classes:

Computer Organization (2007)

Software Paradigms (2009-2012)

Operating Systems (2010-2012)

Fundamentals of Operating Systems (2011-2013)

Design and Analysis of Algorithms (2011-2013)

Computational Intelligence (2012)

Teaching Assistant

fall 2013

NC State University

Classes:

Discrete Mathematics

Evaluation of Game Design Techniques

SERVICE

Academic Service

Program Committee member for the AAAI conference on Artificial Intelligence and Interactive Digital Entertainment, 2019 (research track and playable experiences track)

Program Committee member for the IV Costa Rican Conference on Research in Computer Science and Informatics, 2019 (research track)

Program Committee member for the AAAI conference on Artificial Intelligence and Interactive Digital Entertainment, 2018 (artifact evaluation track)

Program Committee member for the conference on Foundations of Digital Games, 2018 (player modeling and visualization track)

Reviewer for IEEE Transaction on Games, 2018 (research paper)

Subreviewer for the International Conference on Interactive Storytelling, 2016 (research track)

Other Service

Graduate Student Recruitment Weekend Volunteer,

Department of Computer Science, NC State University. March 2016 – March 2018

Invited Speaker, teaching at-risk children aged 12-15 about Game AI June 2017
Volunteer, NC State University's Digital Games Research Center Booth, April 2016
East Coast Games Conference
PR Officer of the Linux Users Group, NC State University Jan 2014 – Dec 2014
International Student Mentor, Graz University of Technology Sep 2009 – Jun 2010
Volunteer at the RoboCup 2009 World Championship, June and July 2009
Graz University of Technology

LANGUAGES

- Native German
- Full proficiency in English
- Fluent in Spanish
- Conversational Swedish

NON-ACADEMIC
EXPERIENCE

Part-time Software Developer

2005-2008,2009-2013

AVL Advanced Simulation Technologies
Hans-List-Platz 1
Graz, Austria
Responsibilities:

Implementation of automated validation scripts for engine simulation software,
Implementation of scripts for automated software deployment
Maintenance of the setup process for new releases
Design and implementation of simulation job submission and monitoring
Design and implementation of a database prototype for the integration and sharing
of simulation results