# Stephen G. Ware, Ph.D.

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## Biography

Stephen is an Associate Professor in the Department of Computer Science at the University of Kentucky, where he directs the Narrative Intelligence Lab and teaches courses on artificial intelligence and game development.

He uses AI to model interactive stories in virtual environments like video games and training simulations. Virtual reality experiences are more effective when the simulated characters adapt to accommodate the player's choices. Stephen works on strong story narrative planning systems (contrasted with emergent story systems) which quickly consider millions of hypothetical futures to find optimal stories given the experience designer's aesthetic and pedagogic goals.

His work has earned six best paper awards and been nominated for two more. Since 2014, he has participated in over $3 million in sponsored federal, state, and local research, including a CAREER award from the U.S. National Science Foundation. He has published over 50 peer-reviewed papers. According to Google Scholar, his h-index is 17 and his work receives over 120 citations a year. He referees for the *IEEE Transactions on Games* journal and has served as an organizer or program committee member for top conferences in his field, including AIIDE, CoG, IVA, ICIDS, FDG, AAAI, and IJCAI.

## Employment

Associate Professor with Tenure — Summer 2023 to present
University of Kentucky Department of Computer Science

Consultant — Summer 2022 to Spring 2023
Disney Research | Studios, Zürich

Assistant Professor — Fall 2019 to Summer 2023
University of Kentucky Department of Computer Science

Assistant Professor — Fall 2014 to Summer 2019
University of New Orleans Department of Computer Science

Instructor, Research Assistant, and Teaching Assistant — Fall 2008 to Spring 2014
North Caorlina State University Department of Computer Science

Software Engineer Intern — Summer 2007
DAXCO Inc. Birmingham, AL, USA

## Education

Doctor of Philosophy in Computer Science, North Carolina State University — June 2014
Thesis: *A Plan-Based Model of Conflict for Narrative Reasoning and Generation*

Master of Science in Computer Science, North Carolina State University — May 2011
GPA 4.0 / 4.0

Bachelor of Science in Computer Science and Philosophy, Loyola University New Orleans — May 2008
Summa cum laude with university honors, GPA 4.0 / 4.0

## Awards

Best Paper: *Speeding Up Narrative Planning Using Fog of War Pruning* — November 2025
21st AAAI conference on Artificial Intelligence and Interactive Digital Entertainment

Best Paper: *Language Models as Narrative Planning Heuristics* — April 2025
Foundations of Digital Games conference

Best Student Paper: *A Model for Automating the Abstraction of Planning Problems in a Narrative Context* — November 2024
20th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment

Best Program Committee Member — October 2023
19th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment

Early Career Creativity, Research, and Scholarship Award — January 2019
Univeristy of New Orleans

Best Program Committee Member — October 2017
13th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment

Faculty Distinguished Research Award — April 2017
University of New Orleans Honors Program

Region 1 Postsecondary Teacher of the Year — December 2016
Louisiana Association of Computer Using Educators

Best Student Paper: *Glaive: A State-Space Narrative Planner Supporting Intentionality and Conflict* — October 2014
10th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment

Best Paper: *Achieving the Illusion of Agency* — July 2012
International Conference on Interactive Digital Storytelling

Best Student Paper on a Cognitive Science Topic: *Indexter: A Computational Model of the Event-Indexing Situation Model for Characterizing Narratives* — May 2012
Computational Models of Narrative workshop

Outstanding Teaching Assistant — March 2010
North Carolina State University Graduate Student Association

Dean's Fellowship — August 2009
North Carolina State University College of Engineering

William T. Cotton Service Award — May 2008
Loyola Univeristy New Orleans

Percy A. Roy S.J. Award for Highest Grade Point Average — May 2008
Loyola University New Orleans College of Humanities and Natural Sciences

Outstanding Computer Science Major — May 2008
Loyola University New Orleans Department of Mathematics and Computer Science

Guy Lemieux S.J. Award for Excellence in Philosophy — May 2008
Loyola University New Orleans Department of Philosophy

Ignatian Scholarship — May 2004
Loyola University New Orleans

## Sponsored Research

About $95,000 in internal grants omitted for brevity.

*Large-Scale Evaluation of AI Collaborative Storytelling via the First Interactive Narrative Challenge (INCH)*, Univeristy of Kentucky Lighthouse Beacon Foundation Endowment — July 2026 to June 2027
Principal Investigator / $25,000 total

*Supporting Players of Interactive Narrative Games by Recognizing Beliefs, Intentions, Memory, and Expectations*, U.S. Army Research Lab — August 2024 to August 2027
Principal Investigator / $503,047 total

*Inferring Domain Models to Help Analysts with Belief and Intention Recognition*, Laboratory for Analytic Science, U.S. Department of Defense — January 2023 to May 2024
Co-Principal Investigator / $224,993 total / $101,000 my share

*Incentivization and Gamification Techniques to Promote Bedside Teaching During Patient Rounds and Reduce Neurophobia*, American Board of Psychiatry and Neurology — January 2023 to July 2024
Co-Investigator / $100,000 total / $50,000 my share

*CAREER: Structured High-Agency Interactive Narratives for Virtual Environments*, U.S. National Science Foundation — April 2022 to April 2027
Principal Investigator / $530,369 total

*Visualizing and Assisting the Analytic Process*, Laboratory for Analytic Science, U.S. Department of Defense — January 2022 to December 2023
Co-Principal Investigator / $182,453 total / $91,227 my share

*Hierarchical Abstract Process Modeling for Analyst Workflow*, Laboratory for Analytic Science, U.S. Department of Defense — January 2021 to December 2021
Co-Principal Investigator / $182,453 total / $91,227 my share

*Explainable Interventions for Analyst Workflow*, Laboratory for Analytic Science, U.S. Department of Defense — January 2020 to December 2020
Co-Principal Investigator / $182,438 total / $91,219 my share

*CHS: Small: Strong Story Narrative Planning for Authoring Proactive Intelligent Virtual Environments*, U.S. National Science Foundation — October 2019 to September 2024
Principal Investigator / $493,256 total

*Foreseeing, Recognizing, and Influencing Possible Futures Using Multi-Agent Planning Algorithms*, Laboratory for Analytic Science, U.S. Department of Defense — January 2019 to December 2019
Principal Investigator / $80,543 total

*CC* Network Design: ARCHES (Advanced Research Computing in the Humanities Engineering and Sciences) Network at the University of New Orleans (equipment grant)*, U.S. National Science Foundation — July 2017 to July 2019
Co-Principal Investigator / $335,000 total

*EAGER: Planning Believable Narratives by Modeling Agent Beliefs*, U.S. National Science Foundation — August 2016 to July 2017
Principal Investigator / $156,969 total

*CRII: CHS: Structuring Narratives in Interactive Virtual Environments Using Computational Models of Possible Worlds*, U.S. National Science Foundation — May 2015 to April 2019
Principal Investigator / $138,436 total

*Creating an Interdisciplinary Digital Media Laboratory (equipment grant)*, Louisiana Board of Regents Enhancement Program — May 2015 to May 2016
Principal Investigator / $110,042 total

# Publications

## Refereed Journal Articles

9. R. Farrell and S. G. Ware, "Large language models as narrative planning search guides," *IEEE Transactions on Games*, vol. 17, no. 2, pp. 419–428, 2024

8. A. Shirvani et al., "Personality and emotion in strong-story narrative planning," *IEEE Transactions on Games*, vol. 15, no. 4, pp. 669–682, 2023

7. S. G. Ware et al., "Multi-agent narrative experience management as story graph pruning," *IEEE Transactions on Games*, vol. 15, no. 3, pp. 378–387, 2022

6. M. Siler and S. G. Ware, "Solution density and search strategy in narrative generation," *IEEE Transactions on Games*, vol. 14, no. 4, pp. 715–724, 2022

5. R. Farrell et al., "Manipulating narrative salience in interactive stories using Indexter's Pairwise Event Salience Hypothesis," *IEEE Transactions on Games*, vol. 12, no. 1, pp. 74–85, 2020

4. S. G. Ware and R. M. Young, "Intentionality and conflict in The Best Laid Plans interactive narrative virtual environment," *IEEE Transactions on Computational Intelligence and Artificial Intelligence in Games*, vol. 8, no. 4, pp. 402–411, 2015

3. B. Harrison et al., "A survey and analysis of techniques for player behavior prediction in Massively Multiplayer Online games," *IEEE Transactions on Emerging Topics in Computing Special Issue on MMO Technologies*, vol. 3, no. 2, pp. 260–274, 2014

2. S. G. Ware et al., "A computational model of narrative conflict at the fabula level," *IEEE Transactions on Computational Intelligence and Artificial Intelligence in Games*, vol. 6, no. 3, pp. 271–288, 2014

1. R. M. Young et al., "Plans and planning in narrative generation: A review of plan-based approaches to the generation of story, discourse and interactivity in narratives," *Sprache und Datenverarbeitung, Special Issue on Formal and Computational Models of Narrative*, vol. 37, no. 1-2, pp. 41–64, 2013

## Refereed Conference Papers

34. L. Senanayake et al., "Narrative planning using LLMs as a model of action believability," in *Proceedings of the 22nd AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, (forthcoming), 2026

33. L. Senanayake and S. G. Ware, "Speeding up narrative planning using Fog of War Pruning," in *Proceedings of the 21st AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2025, pp. 121–131, 24% acceptance rate, awarded Best Paper

32. M. Siler and S. G. Ware, "An answer set encoding for narrative planning with theory of mind," in *Proceedings of the 21st AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2025, pp. 132–141, 24% acceptance rate

31. F. N. Khan et al., "Detecting duplicate states is worth it in narrative planning with belief," in *Proceedings of the 21st AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2025, pp. 62–69, 24% acceptance rate

30. M. Siler et al., "Pareto-based narrative planning: Making NPCs more rational," in *Proceedings of the 21st AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, full paper presented as poster, 2025, pp. 337–346, 54% acceptance rate

29. M. Fisher et al., "Structure, agency, and improvisation in human-led digital interactive narrative exercises," in *Proceedings of the 21st AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, full paper presented as poster, 2025, pp. 237–246, 54% acceptance rate

28. G. Birchmeier and S. G. Ware, "Speeding up narrative planning with Causal Width Search and Pruning," in *Proceedings of the 21st AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, full paper presented as poster, 2025, pp. 196–205, 54% acceptance rate

27. L. Senanayake and S. G. Ware, "Language models as narrative planning heuristics," in *Proceedings of the 20th international conference on the Foundations of Digital Games*, 2025, 50% acceptance rate, awarded Best Paper

26. M. Fisher and S. G. Ware, "A model for automating the abstraction of planning problems in a narrative context," in *Proceedings of the 20th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2024, pp. 35–45, 27% acceptance rate, awarded Best Student Paper

25. S. G. Ware et al., "Causal necessity as a narrative planning step cost function," in *Proceedings of the 19th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2023, pp. 155–164, 29% acceptance rate

24. S. G. Ware and R. Farrell, "Salience as a narrative planning step cost function," in *Proceedings of the IEEE Conference on Games*, 2022, pp. 433–440, 44% acceptance rate

23. R. Farrell et al., "Salience vectors for measuring distance between stories," in *Proceedings of the 18th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, full paper presented as poster, 2022, pp. 95–104, 62% acceptance rate

22. S. G. Ware and M. Siler, "Sabre: A narrative planner supporting intention and deep theory of mind," in *Proceedings of the 17th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2021, pp. 99–106, 29% acceptance rate, nomination for Best Paper

21. M. Siler and S. G. Ware, "A good story is one in a million: Solution density in narrative generation problems," in *Proceedings of the 16th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2020, pp. 123–129, 25% acceptance rate, nominated for Best Student Paper

20. R. Farrell and S. G. Ware, "Narrative planning for belief and intention recognition," in *Proceedings of the 16th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2020, pp. 52–58, 25% acceptance rate

19. A. Shirvani and S. G. Ware, "A formalization of emotional planning for strong-story systems," in *Proceedings of the 16th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2020, pp. 116–122, 25% acceptance rate

18. S. G. Ware et al., "Multi-agent narrative experience management as story graph pruning," in *Proceedings of the 15th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2019, pp. 87–93, 25% acceptance rate

17. A. Shirvani and S. G. Ware, "A plan-based personality model for story characters," in *Proceedings of the 15th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, full paper presented as poster, 2019, pp. 188–194, 49% acceptance rate

16. E. T. Garcia et al., "Measuring presence and performance in an intelligent virtual reality police use of force training simulation prototype," in *Proceedings of the 32nd AAAI International Florida Artificial Intelligence Research Society conference*, 2019, pp. 276–281, 52% acceptance rate

15. A. Shirvani et al., "Combining intentionality and belief: Revisiting believable character plans," in *Proceedings of the 14th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, full paper presented as poster, 2018, pp. 222–228, 50% acceptance rate

14. A. Shirvani et al., "A possible worlds model of belief for state-space narrative planning," in *Proceedings of the 13th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2017, pp. 101–107, 25% acceptance rate

13. R. Farrell and S. G. Ware, "Influencing user choices in interactive narratives using Indexter's Pairwise Event Salience Hypothesis," in *Proceedings of the 13th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2017, pp. 37–42, 25% acceptance rate

12. R. Farrell and S. G. Ware, "Causal link semantics for narrative planning using numeric fluents," in *Proceedings of the 13th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, full paper presented as poster, 2017, pp. 193–199, 50% acceptance rate

11. R. Farrell and S. G. Ware, "Fast and diverse narrative planning through novelty pruning," in *Proceedings of the 12th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2016, pp. 37–43, 28% acceptance rate

10. R. Farrell and S. G. Ware, "Predicting user choices in interactive narratives using Indexter's Pairwise Event Salience Hypothesis," in *Proceedings of the 9th International Conference on Interactive Digital Storytelling*, 2016, pp. 147–155, 36% acceptance rate

9. R. Farrell et al., "Asking hypothetical questions about stories using QUEST," in *Proceedings of the 9th International Conference on Interactive Digital Storytelling*, 2016, pp. 136–146, 36% acceptance rate

8. C. Kives et al., "Evaluating the Pairwise Event Salience Hypothesis in Indexter," in *Proceedings of the 11th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2015, pp. 30–36, 28% acceptance rate

7. S. G. Ware and R. M. Young, "Glaive: A state-space narrative planner supporting intentionality and conflict," in *Proceedings of the 10th AAAI international conference on Artificial Intelligence and Interactive Digital Entertainment*, 2014, pp. 80–86, 26% acceptance rate, awarded Best Student Paper

6. R. E. Cardona-Rivera et al., "Foreseeing meaningful choices," in *Proceedings of the 10th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2014, pp. 9–15, 26% acceptance rate

5. M. W. Fendt et al., "Achieving the illusion of agency," in *Proceedings of the 5th International Conference on Interactive Digital Storytelling*, 2012, pp. 114–125, 29% acceptance rate, awarded Best Paper

4. S. G. Ware et al., "Four quantitative metrics describing narrative conflict," in *Proceedings of the 5th International Conference on Interactive Digital Storytelling*, 2012, pp. 18–29, 29% acceptance rate

3. S. G. Ware and R. M. Young, "Validating a plan-based model of narrative conflict," in *Proceedings of the 7th international conference on the Foundations of Digital Games*, 2012, pp. 220–227, 29% acceptance rate

2. S. G. Ware and R. M. Young, "CPOCL: A narrative planner supporting conflict," in *Proceedings of the 7th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2011, pp. 97–102, 35% acceptance rate

1. S. G. Ware and R. M. Young, "Modeling narrative conflict to generate interesting stories," in *Proceedings of the 6th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, full paper presented as poster, 2010, pp. 210–215, 33% acceptance rate

## Refereed Workshop and Consortium Papers

13. S. G. Ware et al., "Tandem Tales: A paired storytelling research platform," in *Proceedings of the Experimental AI in Games workshop at the 22nd AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2026

12. M. Siler et al., "Designing a modular, scalable benchmark for narrative experience management," in *Proceedings of the joint workshop on Experimental AI in Games and Intelligent Narrative Technologies at the 21st AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2025

11. M. Siler and S. G. Ware, "Structure, agency, and intent: Preliminary data collection," in *Proceedings of the Interactive Narrative Technologies workshop at the 20th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2024

10. M. Fisher et al., "Intelligent de-escalation training via emotion-inspired narrative planning," in *Proceedings of the 13th Intelligent Narrative Technologies workshop at the 18th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2022

9. S. G. Ware and M. Fisher, "Exploring regression-based narrative planning," in *Proceedings of the 12th Intelligent Narrative Technologies workshop at the 16th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2020

8. A. Shirvani and S. G. Ware, "Camelot: A modular customizable sandbox for visualizing interactive narratives," in *Proceedings of the 12th Intelligent Narrative Technologies workshop at the 16th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2020

7. A. Shirvani and S. G. Ware, "On automatically motivating story characters," in *Proceedings of the Experimental AI in Games workshop at the 15th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2019

6. S. G. Ware, "Mutual Implicit Question Answering for shared authorship: A pilot study on player expectations," in *Proceedings of the 10th Intelligent Narrative Technologies workshop at the 13th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2017, pp. 259–265

5. S. G. Ware, "The Intentional Fast-Forward narrative planner," in *Proceedings of the 5th Intelligent Narrative Technologies workshop at the 8th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2012, pp. 57–62

4. R. E. Cardona-Rivera et al., "Indexter: A computational model of the Event-Indexing Situation Model for characterizing narratives," in *Proceedings of the 3rd workshop on Computational Models of Narrative*, 2012, pp. 34–43, awarded Best Student Paper on a Cognitive Science Topic

3. S. G. Ware et al., "Initial results for measuring four dimensions of narrative conflict," in *Proceedings of the 4th Intelligent Narrative Technologies workshop at the 7th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2011, pp. 115–122

2. S. G. Ware, "A computational model of narrative conflict," in *Doctoral Consortium at the 6th international conference on the Foundations of Digital Games*, 2011, pp. 247–249

1. S. G. Ware and R. M. Young, "Rethinking traditional planning assumptions to facilitate narrative generation," in *Proceedings of the AAAI Fall Symposium on Computational Models of Narrative*, 2010, pp. 71–72

## Refereed Posters and Extended Abstracts

1. S. G. Ware and M. Siler, "The Sabre narrative planner: Multi-agent coordination with intentions and beliefs," in *Proceedings of the 20th International Conference on Autonomous Agents and Multiagent Systems*, 2021, pp. 1698–1700

## Refereed Book Chapters

2. S. G. Ware, "An introduction to Graph Theory," in *Practical Graph Mining with R*, N. F. Samatova et al., Eds., CRC Press, 2013, pp. 9–26. [Online]. Available: `http://www.crcpress.com/product/isbn/9781439860847`

1. B. Harrison et al., "Frequent Subgraph Mining," in *Practical Graph Mining with R*, N. F. Samatova et al., Eds., CRC Press, 2013, pp. 181–221. [Online]. Available: `http://www.crcpress.com/product/isbn/9781439860847`

### Refereed Demonstrations

2. B. Samuel et al., "Playable experiences at AIIDE 2018," in *Proceedings of the 14th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2018, pp. 275–280

1. N. R. Sturtevant et al., "Playable experiences at AIIDE 2014," in *Proceedings of the 10th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment*, 2014, pp. 203–209

### Non-Refereed Publications

4. S. G. Ware and R. Sanghrajka, "Workshop report: Intelligent Narrative Technologies: The 16th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment," in *Interactive AI Magazine*, 2021

3. S. G. Ware et al., "Interactive narrative planning in The Best Laid Plans," in *Proceedings of the 25th AAAI conference on Artificial Intelligence, Virtual Agent Demonstrations*, 2015, pp. 4313–4314

2. O. Gown et al., "Reports on the 2012 AIIDE workshops," *AI Magazine*, vol. 34, no. 1, pp. 90–92, 2012

1. S. G. Ware, *Crossed swords and broken hearts: A computational model of narrative conflict*, North Carolina State University Graduate Research Symposium, 2012

## Keynotes and Invited Talks

*Learning from Mis-Spun Tales* — September 2026
Vector Narrative Games Festival

*Innovations in Procedural Narrative* — March 2022
AI Summit, Game Developers Conference

*Learning from Mis-Spun Tales* — March 2021
Immersive Stories Workshop, Virginia Tech Center for Human-Computer Interaction, Blacksburg, VA, USA

*Learning from Mis-Spun Tales* — April 2021
Disney Research | Studios, Zürich, Switzerland

## Panels

*Benchmarking Interactive Narrative Systems*, Panelist — November 2019
12th International Conference on Interactive Digital Storytelling, Snowbird, UT, USA

*Narrative Intelligence in Interactive Storytelling*, Panelist — June 2019
1st NarraScope Conference, Massachusetts Institute of Technology, Boston, MA, USA

*Expert Panel*, Panelist — November 2012
5th International Conference on Interactive Digital Storytelling, Technological Park, San Sebastián, Spain

*The Near Future of Intelligent Narrative Technologies*, Moderator — October 2012
5th workshop on Intelligent Narrative Technologies, Stanford University, Palo Alto, CA, USA

*Two Cultures: Crossing the Divide*, Panelist — February 2012
Collaborations: Humanities and Technology Festival, Duke University, Durham, NC, USA

# Teaching

## University of Kentucky

CS 660: Topics in Artificial Intelligence (AI for Interactive Narrative)
- Spring 2023: 6 graduate
- Spring 2021: 5 graduate

CS 665: Planning Algorithms
- Spring 2026: 8 graduate
- Spring 2025: 8 graduate (taught as CS 660: Topics in Artificial Intelligence)
- Spring 2024: 10 graduate (taught as CS 660: Topics in Artificial Intelligence)
- Spring 2022: 8 graduate (taught as CS 660: Topics in Artificial Intelligence)
- Spring 2020: 6 graduate, 1 undergraduate (taught as CS 660/585: Topics in Artificial Intelligence)

CS 463G: Introduction to Artificial Intelligence
- Spring 2026: 6 graduate, 40 undergraduate
- Spring 2024: 60 undergraduate
- Spring 2023: 65 undergraduate
- Spring 2022: 54 undergraduate
- Fall 2021: 55 undergraduate
- Spring 2021: 45 undergraduate

CS 410G: Introduction to Game Development
- Fall 2026: 40 undergraduate
- Fall 2024: 40 undergraduate
- Fall 2023: 40 undergraduate
- Fall 2022: 56 undergraduate
- Fall 2020: 34 undergraduate (taught as CS 485G: Special Topics)
- Fall 2019: 55 undergraduate (taught as CS 485G: Special Topics)

CS 217: Introduction to Data Structures
- Spring 2025: 28 undergraduate

## University of New Orleans

CSCI 6645: Planning Algorithms in Artificial Intelligence
- Fall 2017: 5 graduate
- Fall 2016: 7 graduate
- Fall 2015: 14 graduate (taught as CSCI 6990: Special Topics)

CSCI 4525 / 5525: Introduction to Artificial Intelligence
- Spring 2019: 12 undergraduate, 9 graduate
- Spring 2018: 18 undergraduate, 7 graduate
- Spring 2017: 11 undergraduate, 6 graduate
- Spring 2016: 17 undergraduate, 3 graduate
- Spring 2015: 19 undergraduate, 14 graduate

CSCI 4675 / 5675: Advanced Game Development
- Spring 2018: 5 undergraduate, 4 graduate
- Spring 2017: 9 undergraduate
- Spring 2016: 7 undergraduate, 3 graduate

CSCI 4670 / 5670: Fundamentals of Game Development
- Fall 2018: 17 undergraduate, 2 graduate
- Fall 2017: 20 undergraduate, 7 graduate
- Fall 2016: 13 undergraduate, 2 graduate
- Fall 2015: 10 undergraduate, 10 graduate
- Fall 2014: 11 undergraduate, 2 graduate

CSCI 1583: Software Design and Development I
- Spring 2019: 14 undergraduate

- Fall 2018: 32 undergraduate

### North Carolina State University

CSC 316: Data Structures for Computer Scientists
- Summer 2013: 21 undergraduate

CSC 216: Programming Concepts – Java
- Summer 2009: 12 undergraduate

## Service

### Funding Panels and Reviews

Dutch Research Council — December 2020
The Hague, The Netherlands

University of Costa Rica — October 2019
San José, Costa Rica

National Sciences and Engineering Research Council of Canada — January 2019
Ottawa, Canada

U.S. National Science Foundation, CISE Directorate — May 2015
Arlington, VA, USA

### Journal Referee

*IEEE Transactions on Games* — Since October 2013
(previously *IEEE Transactions on Computational Intelligence and AI in Games*)

*Autonomous Agents and Multi-Agent Systems* — Since December 2019

### Conference and Workshop Organization

Local Arrangements Chair — 2024
20th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment
University of Kentucky, Lexington KY, USA

General Chair — 2022
18th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment
California State Polytechnic University, Pomona CA, USA

Program Chair — 2021
17th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment
Online due to COVID-19 pandemic

Organizer — 2020
12th workshop on Intelligent Narrative Technologies at 16th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment
Online due to COVID-19 pandemic

Organizer 2019
CamJam: Using the Camelot Virtual Environment workshop at the 15th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment
Georgia Institute of Technology, Atlanta GA, USA

Doctoral Consortium Chair 2018
14th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment
University of Alberta, Edmonton, Canada

Organizer 2016
7th workshop on Computational Models of Narrative at the Digital Humanities conference
Kraków, Poland

Organizer 2012
5th workshop on Intelligent Narrative Technologies at the 8th AAAI conference on Artificial Intelligence and Interactive Digital Entertainment
Stanford University, Palo Alto, CA, USA

## Program Committees

AAAI conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE)
- 22nd conference, Federal University of Minas Gerais, Belo Horizonte, Brazil, November 2026
- 21st conference, University of Alberta, Edmonton, Canada, November 2025
- 20th conference, University of Kentucky, Lexington, KY, USA, November 2024
- 19th conference, University of Utah, Salk Lake City, UT, USA, October 2023
- 18th conference, California State Polytechnic Univ., Pomona, CA, USA, October 2022
- 17th conference, online due to COVID-19 pandemic, October 2021
- 16th conference, online due to COVID-19 pandemic, October 2020
- 15th conference, Georgia Institute of Technology, Atlanta, GA, USA, October 2019
- 14th conference, University of Alberta, Edmonton, Canada 2018
- 13th conference, Snowbird, UT, USA, October 2017
- 12th conference, Burlingame, CA, USA, October 2016
- 11th conference, Univ. of California Santa Cruz, Santa Cruz, CA, USA, November 2015
- 10th conference, North Carolina State University, Raleigh, NC, USA, October 2014

IEEE Conference on Games (CoG)
- 1st conference, London, United Kingdom, August, 2019

ACM conference on Intelligent Virtual Agents (IVA)
- 15th conference, Delft University of Technology, Delft, The Netherlands, August 2015

International Conference on Interactive Digital Storytelling (ICIDS)
- 13th conference, Bournemouth University, Bournemouth, United Kingdom, November 2020
- 12th conference, Snowbird, UT, USA, November 2019
- 10th conference, Funchal, Madeira, Portugal, November 2017
- 9th conference, Institute for Creative Technologies, Los Angeles, CA, USA, November 2016
- 5th conference, Technological Park, San Sebastián, Spain, November 2012

International conference on the Foundations of Digital Games (FDG)
- 9th conference, Royal Caribbean Liberty of the Seas, April 2014
- 7th conference, Raleigh, North Carolina, USA, May 2012

AAAI conference on Artificial Intelligence (AAAI)
- 36th conference, Vancouver, Canada, February 2022
- 35th conference, online due to COVID-19 pandemic, February 2021
- 32nd conference, New Orleans, LA, USA, February 2018

International Joint Conference on Artificial Intelligence (IJCAI)
- 34th conference, Special Track on AI, Arts and Creativity, Montreal, CA, August, 2025

- 33rd conference, Special Track on AI, Arts, and Creativity, Jeju, S. Korea, August, 2024
- 29th conference, Yokohama, Japan, July 2020
- 26th conference, Melbourne, Australia, August 2017

Experimental AI in Games workshop (EXAG)

- 13th workshop, Federal University of Minas Gerais, Belo Horizonte, Brazil, November 2026
- 12th workshop, University of Alberta, Edmonton, Alberta, Canada, November 2025
- 11th workshop, University of Kentucky, Lexington, Kentucky, USA, November 2024
- 9th workshop, California State Polytechnic University, Pomona, CA, USA, October 2022
- 6th workshop, Georgia Institute of Technology, Atlanta, GA, USA, October 2019

Intelligent Narrative Technologies workshop (INT)

- 14th workshop, University of Kentucky, Lexington, KY, USA, November 2024
- 13th workshop, California State Polytechnic Univ., Pomona, CA, USA, October 2022
- 12th workshop, online due to COVID-19 pandemic, October 2020
- 11th workshop, held jointly with Workshop on Intelligent Cinematography and Editing, University of Alberta, Edmonton, Alberta, Canada, November 2018
- 10th workshop, Snowbird, UT, USA, October 2017
- 9th workshop, special track of the 9th International Conference on Interactive Digital Storytelling, Los Angeles, CA, USA, November 2016
- 8th workshop, University of California Santa Cruz, Santa Cruz, CA, USA, November 2015
- 7th workshop, University of Wisconsin-Milwaukee, Milwaukee WI, USA, June 2014
- 6th workshop, Northeastern University, Boston MA, USA, October 2013
- 5th workshop, Stanford University, Palo Alto CA, USA, October 2012

Computational Models of Narrative workshop (CMN)

- 9th workshop, Universidad Complutense de Madrid, Spain, June 2026
- 8th workshop, University of Geneva, Geneva, Switzerland, May 2025
- 7th workshop, Kraków, Poland, July 2016
- 4th workshop, University of Hamburg, Berlin, Germany, August 2013

## University of Kentucky

Chair, Media and Outreach Committee — Fall 2024 to Present
Department of Computer Science

Faculty Advisor, Wildcat Games Studio — Spring 2024 to Present
Office of Student Organizations and Activities

Member, Committee on Higher Degrees — Fall 2021 to Present
Department of Computer Science

Member, Hiring Committee — Fall 2021 to Spring 2025
Department of Computer Science

Member, Media and Outreach Committee — Summer 2019 to Fall 2024
Department of Computer Science

## University of New Orleans

Faculty Advisor, International Game Developers Association, Student Chapter — Fall 2015 to Spring 2019
Office of Student Organizations

Member, Undergraduate Studies Committee — Fall 2015 to Spring 2019
Department of Computer Science

# Research Supervision

## Doctor of Philosophy, as Advisor

5. Lasantha Senanayake, University of Kentucky (degree in progress) — Spring 2023 to Present
4. Mira Fisher, University of Kentucky (degree in progress) — Summer 2020 to Present
3. Molly Siler, University of Kentucky (degree in progress) — Spring 2020 to Present
2. Alireza Shirvani, University of Kentucky — Spring 2017 to Summer 2021
   Thesis: *Personality and Emotion for Virtual Characters in Strong-Story Narrative Planning*
1. Rachelyn Farrell, University of Kentucky — Spring 2015 to Fall 2022
   Thesis: *Don't Give Me That Story! Human-Centered Narrative Generation and Summarization of Possible Stories*

## Doctor of Philosophy, as Committee Member

12. Jonathan Sekela, University of Kentucky (degree in progress) — Spring 2025 to Present
11. Nicholas Fluty, University of Kentucky (degree in progress) — Spring 2025 to Present
10. Muhammad Haider, University of Kentucky (degree in progress) — Fall 2024 to Present
9. Motasem Obeidat, University of Kentucky (degree in progress) — Summer 2024 to Present
8. Luke Elmore, University of Kentucky (degree in progress) — Spring 2023 to Present
7. Adib Mosharrof, University of Kentucky — Spring 2023 to Spring 2026
   Thesis: *Advancing Task-Oriented Dialog Systems: Scalability, Generalization, and Evaluation*
6. Elinor Rubin-McGregor, University of Kentucky (degree in progress) — Fall 2022 to Present
5. Nathan Arnold, University of Kentucky — Fall 2021 to Fall 2024
   Thesis: *Tiered Coalition Formation Game Variants, Stability, and Simulation*
4. Anton Vinogradov, University of Kentucky — Spring 2021 to Summer 2024
   Thesis: *Recovering From And Accommodating For Player Preference Shifts In A Player Modeled Experience Management Environment*
3. Giulio Mori, University of Reykjavík — Spring 2020 to Summer 2023
   Thesis: *Platform for Decoupling Experience Managers and Environments*
2. Tasmia Tasrin, University of Kentucky — Spring 2020 to Present
   Thesis: *Augmenting Machine Learning Technique Through Natural Language*
1. Md. Sultan Al Nahian, University of Kentucky — Fall 2019 to Fall 2023
   Thesis: *Practical AI Value Alignment Using Stories*

## Master of Science, as Advisor

6. Gage Birchmeier, University of Kentucky — Fall 2024 to Spring 2026
   Thesis: *Speeding Up Narrative Planning with Causal Width Search and Pruning*
5. Jacob Finerty, University of Kentucky — Fall 2022
   Project: *Implementing Iterated Width Search into the Sabre Narrative Planner*
4. Dustin Peabody, University of New Orleans — Spring 2016 to Spring 2018
   Thesis: *Detecting Metagame Shifts in League of Legends Using Unsupervised Learning*
3. Edward T. Garcia, University of New Orleans — Fall 2015 to Summer 2019
   Thesis: *Multi-Agent Narrative Experience Management as Story Graph Pruning*
2. Dharmesh Desai, University of New Orleans — Fall 2015 to Spring 2017
   Thesis: *Measuring Presence in a Police Use of Force Simulation*
1. Rachelyn Farrell, University of New Orleans — Summer 2015 to Spring 2017
   Thesis: *Predicting User Choices in Interactive Narratives using Indexter's Pairwise Event Salience Hypothesis*

## Master of Science, as Committee Member

13. Jeffrey Nance, University of Kentucky — Spring 2026
    Project: *Automated Team Generation Using Multi-Agent Reinforcement Learning*
12. Riley Sheridan, University of Kentucky — Spring 2026
    Project: *One-Shot Prompted Extraction of Initial Game State Information from Super Smash Bros. Melee Using*

*ChatGPT-5.4*

11. Sandesh Lamichhane, University of Kentucky — Spring 2024
    Project: *ABC to TAB*
10. Ethan Coots, University of Kentucky — Spring 2024
    Project: *Tractor Front-End Loader Image Classification using CNNs*
9. David Bosomworth, University of Kentucky — Fall 2023
    Project: *Code Generation Using Interpretable Machine Learning Policies*
8. Vincent Liu, University of Kentucky — Spring 2023
    Thesis: *Language Controlled Interfaces for Game Environments*
7. Jonathan Moore, Air Force Institute of Technology — Spring 2023
    Thesis: *Designing an Adaptable Game Framework to Teach Joint All-Domain Concepts in a Variety of Training Environments*
6. Ryan Lindsey, University of Kentucky — Fall 2022
    Project: *Novel 3D Environment for Reinforcement Learning*
5. Michael Probst, University of Kentucky — Fall 2021
    Thesis: *Maintaining Game Event Sequences in Procedurally Generated Levels*
4. Ryan Bowles, University of Kentucky — Spring 2021
    Project: *Penumbral Passage: A Single Player Digital Board Game*
3. Devi Kavya Sri Regati, University of Kentucky — Spring 2020
    Project: *Implementing Preference Reasoning over Answer Set Optimization Problems*
2. Dheeraj Betha, University of Kentucky — Fall 2019
    Project: *Using Omiotis for Software Tracing*
1. Shyla Clark, University of New Orleans — Spring 2019
    Thesis: *Remote Monitoring of Cherry Wetness Using a Leaf Wetness Sensor and Wireless Sensor Network*

## Bachelor of Science, as Thesis Advisor or Independent Study Supervisor, etc.

42. Ethan Binkley, University of Kentucky — Fall 2026
41. Calvin Higdon, University of Kentucky — Fall 2024
40. Aaron Hall, University of Kentucky — Spring 2024
39. Sydney Chapman, University of Kentucky — Spring 2024
38. Jackson Cotthoff, University of Kentucky — Spring 2024
37. Matthew Melton, University of Kentucky — Spring 2023
36. Travis Nilest, University of Kentucky — Spring 2023
35. Joseph Alverson, University of Kentucky — Spring 2023
    Thesis: *Desktop Drummer: Creating a Rhythm-Based Video Game with a Custom Controller*
34. Zachary Coleman, University of Kentucky — Spring 2022
33. Alexa Griffin, University of Kentucky — Spring 2022
32. Matthew Mitchell, University of Kentucky — Fall 2021
31. Gareth Walker, University of Kentucky — Fall 2021
30. Ethan Hall, University of Kentucky — Fall 2021 to Spring 2022
29. Alexander Dingus, University of Kentucky — Spring 2021
28. Evan Shepherd, University of Kentucky — Spring 2021
27. John Colfer, University of Kentucky — Spring 2020
26. Zachary Foster, University of Kentucky — Spring 2020
25. Jacob Hayden, University of Kentucky — Spring 2020
24. Mac McNerney, University of Kentucky — Spring 2020
23. Jean-Paul Jeunesse, University of New Orleans — Fall 2018 to String 2019
    Thesis: *Measuring Interactive Narrative Quality with Experience Management as Story Graph Pruning*
22. Rishav Rajendra, University of New Orleans — Spring 2018 to Fall 2018
21. Lee Lagarde, University of New Orleans — Spring 2018 to Fall 2018
20. Ted Mader, University of New Orleans — Fall 2016 to Spring 2017
    Thesis: *Integrating Virtual Reality with Use-of-Force Training Simulations*
19. Nicholas Martin, University of New Orleans — Spring 2017

18. Nishan Rayamajhee, University of New Orleans — Spring 2017
17. Ashim Sitoula, University of New Orleans — Spring 2016
16. Pujan Pokhrel, University of New Orleans — Spring 2016
15. Scott Robertson, University of New Orleans — Spring 2016
14. Hung Le, University of New Orleans — Spring 2016
13. Abhishek Sapkota, University of New Orleans — Fall 2015 to Spring 2016
12. Rodrigo Rodrigues do Carmo, University of New Orleans — Spring 2015 to Summer 2015
11. Maurice Robert III, University of New Orleans — Summer 2015
10. Thiago Vieira, University of New Orleans — Summer 2015
9. Gabriel Miranda, University of New Orleans — Summer 2015
8. Gabriel Queiroz, University of New Orleans — Spring 2015
7. Christopher Toups, University of New Orleans — Spring 2015
6. Christian Stith, North Carolina State University — Fall 2013
5. Phillip Wright, North Carolina State University — Fall 2013
4. Eric Lang, North Carolina State University — Fall 2012
3. Zack Litzsinger, North Carolina State University — Fall 2012
2. Evan Kochuk, North Carolina State University — Spring 2011
1. Courtney Harrison, North Carolina State University — Spring 2011

## Professional Organizations

- AAAI: Association for the Advancement of Artificial Intelligence (member #53757)
- ACM: Association for Computing Machinery (member #2211285)
- IEEE: Institute of Electrical and Electronics Engineers (member #92209981)
- IGDA: International Game Developers Association (member #22066812)
- ARDIN: Association for Research on Digital Interactive Narratives

## Publicity

*UK Researcher Enhances Police De-Escalation Training with Immersive AI, VR Simulations* — 6 March 2025
UKNow: University of Kentucky News
https://uknow.uky.edu/research/uk-researcher-enhances-police-de-escalation-training-immersive-ai-vr-simulations

*Stephen Ware's NSF-funded Research Trains Police in De-escalation* — 12 July 2022
UKNow: University of Kentucky News
https://uknow.uky.edu/research/stephen-ware-s-nsf-funded-research-trains-police-de-escalation

*Stephen Ware Receives NSF CAREER Award* — 28 April 2022
University of Kentucky College of Engineering News
https://engr.uky.edu/news/stephen-ware-receives-nsf-career-award

*UNO's Stephen Ware Recognized as Post-Secondary Teacher of the Year by Louisiana Association of Computer Using Educators* — 16 November 2016
University of New Orleans Campus News
https://www.uno.edu/campus-news/2016/UNOs_Stephen_Ware_Recognized_as_Post_Secondary_Teacher_of_the_Year_by_Louisiana_Association_of_Computer_Using_Educators.aspx

*Computer Science Professor Wins $157,000 NSF Grant to Study Narrative Intelligence* — 26 July 2016
University of New Orleans Campus News
https://www.uno.edu/campus-news/2016/Computer_Science_Professor_Wins_157k_NSF_Grant_to_Study_Narrative_Intelligence.aspx

*Game On: UNO's Video Game Development Concentration Simulates Real World Experience* 31 May 2016
University of New Orleans Campus News
https://www.uno.edu/campus-news/2016/Game-On-UNO-Video-Game-Development-Concentration-Simulates-Real-World-Experience.aspx

*University of New Orleans to Get New Digital Media Lab* 13 May 2015
NOLA.com
https://www.nola.com/news/education/university-of-new-orleans-to-get-new-digital-media-lab/article_4ff31368-9a7c-5cd3-8417-3b1e5adef7de.html

*UNO Professor Teaches Computers The Human Art Of Storytelling* 26 February 2015
*All Things Considered*, WWNO National Public Radio, New Orleans, LA, USA
http://wwno.org/post/uno-professor-teaches-computers-human-art-storytelling

*Guest* 12 February 2015
*Think Tank with Garland Robinette*, WWL Radio, New Orleans, LA, USA
http://media.wwl.com/a/101898840/2-12-12pm-garland-uno-artificial-intelligence.htm

*UNO Professor Wins National Science Foundation Grant for Artificial Intelligence Research* 9 February 2015
NOLA.com
https://www.nola.com/news/education/uno-professor-wins-national-science-foundation-grant-for-artificial-intelligence-research/article_05a1aec2-1657-551e-9ebb-0edccf14231c.html

## Miscelaneous

- Erdős Number: 3 (via Judy Goldsmith)
- Eagle Scout, Troop 71, Birmingham, Alabama, USA