

	Matthew Guzdial	Associate Professor, University of Alberta
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RESEARCH AREAS	My research focuses on creative artificial intelligence and machine learning, primarily in the domain of games. This includes research into transfer learning, explainable AI, and generative AI.	
EDUCATION	Georgia Institute of Technology Ph.D. in Computer Science Dissertation: "Combinational Machine Learning Creativity" Ph.D. Committee: Mark Riedl (chair), Ashok Goel, Charles Isbell, Brian Magerko, Michael Mateas, and Devi Parikh	2019
	B.S. Computational Media with Honors Certificate in Social Psychology	2014
PUBLICATIONS	* indicates a mentored student of mine	

Journal Articles

1. Spiders based on anxiety: How reinforcement learning can deliver desired user experience in virtual reality personalized arachnophobia treatment. Athar Mahmoudi-Nejad*, Matthew Guzdial, and Pierre Boulanger, ACM Transactions on Interactive Intelligent Systems, 2026.
2. Semi-Supervised Tile Embeddings: A General, Multi-Game Level Representation. Venkata Sai Revanth Atmakuri*, Kian Razavi Satvati*, Anurag Sarkar*, Matthew Guzdial, IEEE Transactions on Games, 2025.
3. Human-AI collaboration in real-world complex environment with reinforcement learning. Md Saiful Islam, Srijita Das, Sai Krishna Gottipati, William Duguay, Clodric Mars, Jalal Arabneydi, Antoine Fagette, Matthew Guzdial, and Matthew E. Taylor, Neural Computing and Applications, 2025.
4. A Framework for Predicting the Impact of Game Balance Changes through Meta Discovery. Akash Saravanan* and Matthew Guzdial, IEEE Transactions on Games, 2024.
5. Procedural Content Generation via Knowledge Transformation (PCG-KT). Anurag Sarkar, Matthew Guzdial, Sam Snodgrass, Adam Summerville, Tiago Machado, and Gillian Smith, IEEE Transactions on Games, 2023.
6. Conceptual Game Expansion. Matthew Guzdial and Mark Riedl, IEEE Transactions on Games, 2021.
7. Procedural Content Generation via Machine Learning (PCGML). Adam Summerville, Sam Snodgrass, Matthew Guzdial, Christoffer Holmgård, Amy K. Hoover, Aaron Isaksen, Andy Nealen, and Julian Togelius, IEEE Transactions on Games, 2018.

Conference Papers

8. Finite Automata Extraction: Low-data World Models as Programs from Gameplay Video. Dave Goel*, Matthew Guzdial, and Anurag Sarkar*, Foundations of Digital Games (FDG), Acceptance Rate: Unknown, 2026.

9. Representing and Generating Levels Over Time through Playtrace Reconstructive Partitioning. Emily Halina* and Matthew Guzdial, Foundations of Digital Games (FDG), Acceptance Rate: Unknown, 2026.
10. An Exploration of Collision-based Enemy Morphology Generation. Johor Jara Gonzalez* and Matthew Guzdial, Foundations of Digital Games (FDG), Acceptance Rate: Unknown, 2026.
11. Time-based Chart Partitioning: Improving Local Coherency in Rhythm Game Chart Generation. Jonah Hanzen*, Emily Halina*, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 24.3%, 2025.
12. Label-Free Subjective Player Experience Modelling via Let's Play Videos. Dave Goel*, Athar Mahmoudi-Nejad* and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 20%, 2024.
13. Human-AI Interaction Generation: A Connective Lens for Generative AI and Procedural Content Generation. Matthew Guzdial, International Conference on Artificial Intelligence (IJCAI), Early Career Track, Invited Talk, 2024.
14. Joint Level Generation and Translation Using Gameplay Videos. Negar Mirgati* and Matthew Guzdial, IEEE Conference on Games (COG), Acceptance Rate: Unknown, 2023.
15. path2level: Constraint-Based Level Generation from Paths. Seth Cooper and Matthew Guzdial, IEEE Conference on Games (COG), Acceptance Rate: Unknown, 2023.
16. Game Level Blending using a Learned Level Representation. Venkata Sai Revanth Atmakuri*, Seth Cooper, and Matthew Guzdial, IEEE Conference on Games (COG), Acceptance Rate: Unknown, 2023.
17. Transfer Learning for Underrepresented Music Generation. Anahita Doosti* and Matthew Guzdial, International Conference on Computational Creativity (ICCC), Acceptance Rate: 26%, 2023.
18. Adventures of AI Directors Early in the Development of Nightingale. Kristen K. Yu*, Matthew Guzdial, Nathan R Sturtevant, Morgan Cselinacz, Chris Corfe, Izzy Hubert Lyall, and Chris Smith, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Nominated for Best Student Paper Award, Acceptance Rate: 20%, 2022.
19. Creativity Evaluation Method for Procedural Content Generated Game Items via Machine Learning. Zisen Zhou*, Zhongxi Lu, Matthew Guzdial, and Fabricio Goes, International Conference on Dependable Systems and Their Applications (DSA), Acceptance Rate: Unknown, 2022.
20. SketchBetween: Video-to-Video Synthesis for Sprite Animation via Sketches. Dagmar Lukka Loftsdóttir*, and Matthew Guzdial, Foundations of Digital Games (FDG), Acceptance Rate: Unknown, 2022.
21. Threshold Designer Adaptation: Improved Adaptation for Designers in Co-creative Systems. Emily Halina*, and Matthew Guzdial, International Joint Conference on Artificial Intelligence (IJCAI), Special Track: AI, the Arts, and Creativity, Acceptance Rate: Unknown, 2022.
22. Explaining Deep Reinforcement Learning Agents in the Atari Domain through a Surrogate Model. Alexander Sieusahai*, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Nominated for Best Student Paper Award, Acceptance Rate: 29%, 2021.
23. The Definition-Context-Purpose Paradigm and Other Insights from Industry Professionals about the Definition of a Quest. Kristen K. Yu*, Nathan R. Sturtevant, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Nominated for Best Student Paper Award, Acceptance Rate: 29%, 2021.
24. Tile Embedding: A General Representation for Level Generation. Mrunal Jadhav*, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Nominated for Best Student Paper Award, Acceptance Rate: 29%, 2021.
25. The Impact of Visualizing Design Gradients for Human Designers. Matthew Guzdial, Nathan Sturtevant, and Carolyn Yang, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 29%, 2021.

26. Towards Disambiguating Quests as a Technical Term. Kristen K. Yu*, Nathan R. Sturtevant, and Matthew Guzdial, Foundations of Digital Games (FDG), Acceptance Rate: 38%, 2021.
27. Adversarial Random Forest Classifier for Automated Game Design. Thomas Maurer*, and Matthew Guzdial Foundations of Digital Games (FDG), Acceptance Rate: 38%, 2021.
28. The Unexpected Consequence of Incremental Design Changes. Nathan R. Sturtevant, Nicolas Decroocq, Aaron Tripodi*, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Nominated for Best Paper Award, Acceptance Rate: 25%, 2020.
29. Making CNNs for Video Parsing Accessible. Zijin Lou*, Matthew Guzdial, and Mark Riedl, Foundations of Digital Games (FDG), Acceptance Rate: 37%, 2019.
30. Combinets: Creativity via Recombination of Neural Networks. Matthew Guzdial, and Mark Riedl, International Conference on Computational Creativity (ICCC), Best Paper Award, Acceptance Rate: 42%, 2019.
31. Friend, Collaborator, Student, Manager: How Design of an AI-Driven Game Level Editor Affects Creators. Matthew Guzdial, Nicholas Liao*, Jonathan Chen*, Shao-Yu Chen*, Shukan Shah*, Vishwa Shah*, Joshua Reno*, Gillian Smith, and Mark Riedl, Conference on Human Factors in Computing Systems (CHI), Acceptance Rate: 23.8%, 2019.
32. Player Experience Extraction from Gameplay Video. Zijin Lou*, Matthew Guzdial, and Mark Riedl, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 25%, 2018.
33. Automated Game Design via Conceptual Expansion. Matthew Guzdial, and Mark Riedl, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 25%, 2018.
34. Creative Invention Benchmark. Matthew Guzdial, Nicholas Liao*, Vishwa Shah*, and Mark Riedl, International Conference on Computational Creativity (ICCC), Acceptance Rate: 39%, 2018.
35. Game Engine Learning from Video. Matthew Guzdial, Boyang Li, and Mark Riedl, International Joint Conference on Artificial Intelligence (IJCAI), Acceptance Rate: 26%, 2017.
36. Evaluating Singleplayer and Multiplayer in Human Computation Games. Kristin Siu, Matthew Guzdial, and Mark Riedl, International Conference on the Foundations of Digital Games (FDG), Acceptance Rate: 40%, 2017.
37. Game Level Generation from Gameplay Video. Matthew Guzdial, and Mark Riedl, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 25%, 2016.
38. Learning to Blend Computer Game Levels. Matthew Guzdial, and Mark Riedl, International Conference on Computational Creativity (ICCC), Best Paper Award, Acceptance Rate: 39%, 2016.
39. Crowdsourcing Open Interactive Narrative. Matthew Guzdial, Brent Harrison, Boyang Li, and Mark Riedl, International Conference on the Foundations of Digital Games (FDG), Acceptance Rate: 40%, 2015.

Books

40. Procedural Content Generation via Machine Learning: An Overview (Second Edition). Matthew Guzdial, Sam Snodgrass, and Adam Summerville, Springer, 2025.
41. Procedural Content Generation via Machine Learning: An Overview. Matthew Guzdial, Sam Snodgrass, and Adam Summerville, Springer, 2022.

Book Chapters: Refereed

42. Modeling Individual Humans via a Secondary Task Transfer Learning Method. Anmol Mahajan* and Matthew Guzdial, Federated and Transfer Learning, 259-281, Springer, 2022.

Conference Posters

43. Mechanic Maker: Accessible Game Development via Symbolic Learning Program Synthesis. Megan Sumner*, Vardan Saini* and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 50%, 2024.
44. Evaluating the Effects of AI Directors for Quest Selection. Kristen K. Yu*, Nathan R. Sturtevant and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 50%, 2024.
45. Reconstructing Existing Levels through Level Inpainting. Johor Jara Gonzalez* and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 59%, 2023.
46. Mechanic Maker 2.0: Reinforcement Learning for Evaluating Generated Rules. Johor Jara Gonzalez*, Seth Cooper, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 59%, 2023.
47. Tree-based Reconstructive Partitioning: A Novel Low-Data Level Generation Approach. Emily Halina* and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 59%, 2023.
48. World Models with an Entity-Based Representation. Nazanin Yousefzadeh Khameneh*, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 50%, 2022.
49. Arachnophobia Exposure Therapy using Experience-driven Procedural Content Generation via Reinforcement Learning (EDPCGRL). Athar Mahmoudi-Nejad*, Matthew Guzdial, and Pierre Boulanger, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 50%, 2021.
50. Conceptual Expansion Neural Architecture Search (CENAS). Mohan Sai Singamsetti*, Anmol Mahajan*, and Matthew Guzdial, International Conference on Computational Creativity (ICCC), Acceptance Rate: Unknown, 2021.
51. Image-to-Level: Generation and Repair. Eugene Chen, Christoph Sydora, Brad Burega, Anmol Mahajan*, Abdullah Abdullah, Matthew Gallivan, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 50%, 2020.
52. Deep Convolutional Player Modeling on Log and Level Data. Nicholas Liao*, Matthew Guzdial, and Mark Riedl, International Conference on the Foundations of Digital Games (FDG), Acceptance Rate: Unknown, 2017.

Workshop Papers

53. WIP: Human-AI interactions in real-world complex environments using a comprehensive reinforcement learning framework. Md. Saiful Islam, Srijita Das, Sai Krishna Gottipati, William Duguay, Cloderic Mars, Jalal Arabneydi, Antoine Fagette, Matthew Guzdial and Matthew E. Taylor, Adaptive and Learning Agents Workshop (ALA 2023), 2023.
54. Re-trainable Procedural Level Generation via Machine Learning (RT-PLGML) as Game Mechanic. Seth Cooper, Emily Halina*, Jichen Zhu and Matthew Guzdial, FDG Workshop on Procedural Content Generation (PCG), 2023.
55. Generating Real-Time Strategy Game Units Using Search-Based Procedural Content Generation and Monte Carlo Tree Search. Kynan Sorochan*, and Matthew Guzdial, AIIDE Workshop on Experimental AI in Games (EXAG), 2022.
56. Improving Deep Localized Level Analysis: How Game Logs Can Help. Natalie Bombardieri*, and Matthew Guzdial, AIIDE Workshop on Experimental AI in Games (EXAG), 2022.
57. Diversity-based Deep Reinforcement Learning Towards Multidimensional Difficulty for Fighting Game AI. Emily Halina*, and Matthew Guzdial, AIIDE Workshop on Experimental AI in Games (EXAG), 2022.

58. Clustering-based Tile Embedding (CTE): A General Representation for Level Design with Skewed Tile Distributions. Mrunal Jadhav*, and Matthew Guzdial, AIIDE Workshop on Experimental AI in Games (EXAG), 2022.
59. Pixel VQ-VAEs for Improved Pixel Art Representation. Akash Saravanan*, and Matthew Guzdial, AIIDE Workshop on Experimental AI in Games (EXAG), 2022.
60. TaikoNation: Patterning-focused Chart Generation for Rhythm Action Games. Emily Halina*, and Matthew Guzdial, FDG Workshop on Procedural Content Generation (PCG), 2021.
61. Toward Co-creative Dungeon Generation via Transfer Learning. Zisen Zhou*, and Matthew Guzdial, FDG Workshop on Procedural Content Generation (PCG), 2021.
62. Generating Lode Runner Levels by Learning Player Paths with LSTMs. Kynan Sorochan*, Jerry Chen, Yakun Yu, and Matthew Guzdial, FDG Workshop on Procedural Content Generation (PCG), 2021.
63. Generating Gameplay-Relevant Art Assets with Transfer Learning. Adrian Gonzalez*, Matthew Guzdial, and Felix Ramos, AIIDE Workshop on Experimental AI in Games (EXAG), 2020.
64. Explainability via Responsibility. Faraz Khadivpour*, and Matthew Guzdial, AIIDE Workshop on Experimental AI in Games (EXAG), 2020.
65. Entity Embedding as Game Representation. Nazanin Yousefzadeh Khameneh*, and Matthew Guzdial, AIIDE Workshop on Experimental AI in Games (EXAG), 2020.
66. Tabletop Roleplaying Games as Procedural Content Generators. Matthew Guzdial, Devi Acharya, Max Kreminski, Michael Cook, Antonios Liapis, and Anne Sullivan, FDG Workshop on Procedural Content Generation (PCG), 2020.
67. Automated Let's Play Commentary. Shukan Shah*, Matthew Guzdial, and Mark Riedl, AIIDE Workshop on Experimental AI in Games (EXAG), 2019.
68. An Interaction Framework for Studying Co-Creative AI. Matthew Guzdial, Nicholas Liao*, and Mark Riedl, CHI Human-Centered Machine Learning Perspectives (HCMLP) Workshop, 2019.
69. Co-Creative Level Design via Machine Learning. Matthew Guzdial, Nicholas Liao*, and Mark Riedl, AIIDE Workshop on Experimental AI in Games (EXAG), 2018.
70. Towards Automated Let's Play Commentary. Matthew Guzdial, Shukan Shah*, and Mark Riedl, AIIDE Workshop on Experimental AI in Games (EXAG), 2018.
71. Explainable PCGML via Game Design Patterns. Matthew Guzdial, Joshua Reno*, Jonathan Chen*, Gillian Smith, and Mark Riedl, AIIDE Workshop on Experimental AI in Games (EXAG), 2018.
72. Combinatorial Creativity for Procedural Content Generation via Machine Learning. Matthew Guzdial, and Mark Riedl, AAAI Workshop on Knowledge Extraction from Games (KEG), 2018.
73. Combinatorial Meta Search. Matthew Guzdial, and Mark Riedl, NIPS Workshop on Machine Learning Creativity and Design (MLCD), 2017.
74. Visual Procedural Content Generation with an Artificial Abstract Artist. Matthew Guzdial, Duri Long, Christopher Cassion, and Abhishek Das, ICCG Workshop on Computational Creativity in Games (CCG), 2017.
75. Learning Player Tailored Content from Observation: Platformer Level Generation from Video Traces using LSTMs. Adam Summerville, Matthew Guzdial, Michael Mateas, and Mark Riedl, AIIDE Workshop on Experimental AI in Games (EXAG), 2017.
76. Deep Static and Dynamic Level Analysis: A Study on Infinite Mario. Matthew Guzdial, Nathan Sturtevant and Boyang Li, AIIDE Workshop on Experimental AI in Games (EXAG), 2016.
77. Toward Game Level Generation from Gameplay Videos. Matthew Guzdial, and Mark Riedl, FDG Workshop on Procedural Content Generation in Games (PCG), 2015.

Peer Reviewed Demos

78. Learning Finite State Machines from Gameplay Video. Dave Goel* and Matthew Guzdial. Artificial Intelligence and Interactive Digital Entertainment (AIIDE), Acceptance Rate: 63.6%, 2025.
79. The FarmQuest Player Telemetry Dataset: Playthrough Data of a Cozy Farming Game. Kristen K. Yu*, Nathan R Sturtevant and Matthew Guzdial. Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2022.
80. FarmQuest: A Demonstration of an AI Director Video Game Test Bed. Kristen K. Yu*, Matthew Guzdial, and Nathan R Sturtevant, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2022.
81. A Demonstration of KiaiTime: A Mixed-Initiative PCGML Rhythm Game Editor. Emily Halina*, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2021.
82. A Tool for Generating Monster Silhouettes with a Word-Conditioned Variational Autoencoder. Adrian Gonzalez*, Matthew Guzdial, Felix Ramos, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2021.
83. A Demonstration of Mechanic Maker: An AI for Mechanics Co-Creation. Vardan Saini*, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2020.
84. A Demonstration of Anhinga: A Mixed-Initiative EPCG Tool for Snakebird. Nathan Sturtevant, Nicolas Decroocq, Aaron Tripodi*, Carolyn Yang, and Matthew Guzdial, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2020.
85. Integrating Automated Play in Level Co-Creation. Andrew Hoyt*, Matthew Guzdial, Yalini Senthil Kumar*, Gillian Smith, and Mark Riedl, Experimental AI in Games Workshop (EXAG), 2019.
86. A General Level Design Editor for Co-creative Level Design. Matthew Guzdial, Jonathan Chen*, Shao-Yu Chen*, and Mark Riedl, Experimental AI in Games Workshop (EXAG), 2017.
87. Conceptually Blended Levels in a Unity Engine. Matthew Guzdial, and Mark Riedl, Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2015.
88. An Intelligent Game Level Design Editor Informed by Gameplay Videos. Matthew Guzdial, and Mark Riedl, Experimental AI in Games Workshop (EXAG), 2015.

Other

89. Explainable AI for Designers. Jichen Zhu, Rafael Bidarra, Alex J. Champandard, Simon Colton, Reynald Francois, Matthew Guzdial, Amy K. Hoover, Antonios Liapis, Sebastian Risi, Gillian Smith, Anne Sullivan, and G Michael Youngblood, Dagstuhl Seminar 1747: Artificial and Computational Intelligence in Games: AI-Driven Game Design, 2018.
90. AI As Reflective Practice. Gillian Smith, Mirjam P. Eladhari, Matthew Guzdial, Emily Short, Adam M. Smith, Anne Sullivan, Tommy Thompson, and R Michael Young, Dagstuhl Seminar 1747: Artificial and Computational Intelligence in Games: AI-Driven Game Design, 2018.
91. AI-assisted Board Game Play. Antonios Liapis, Michael Cook, Steve Dahlskog, Mirjam P. Eladhari, Matthew Guzdial, Emily Short, Gillian Smith, Anne Sullivan, and Tommy Thompson, Dagstuhl Seminar 1747: Artificial and Computational Intelligence in Games: AI-Driven Game Design, 2018.
92. What is Machine Learning/Deep Learning. Matthew Guzdial, Joshua A. McCoy, and Jichen Zhu, Dagstuhl Seminar 1747: Artificial and Computational Intelligence in Games: AI-Driven Game Design, 2018.

FUNDING/GRANTS	Amii RAP: Interactive Program Synthesis for Computer Science Education PI: Guzdial, 41,960 awarded	5/25-4/26
	Amii RAP: Co-creative, User-centered Generative AI PI: Guzdial, 25,940 awarded	5/25-4/26

Amii RAP: Meeting Designer Needs in Generative and Co-creative AI PI: Guzdial, 66,000 CAD awarded	5/25-4/26
MITACS: Hyper Hippo Vector Art Asset Tool PI: Guzdial, 30,000 CAD awarded	1/25-12/25
CIFAR AI Chair PI: Guzdial, 750,000 CAD awarded	4/24-3/29
Amii RAP: Co-creative, User-centered Generative AI PI: Guzdial, 90,036 CAD awarded	5/24-4/25
Alberta Innovates: Machine Learning and Creativity (Supplement) PI: Guzdial, 38,667 CAD awarded	11/23-3/25
WCHRI Innovation Grant: Predicting when a birth at term will occur within one week to benefit mothers, families, and care providers Collaborator: Guzdial, 60,000 awarded	8/23-8/25
Amii RAP: Co-creative, User-centered Generative AI PI: Guzdial, 33,798 CAD awarded	5/23-4/24
Amii RAP: Machine Learning for Improving Human Computation Games PI: Guzdial, 24,260 CAD awarded	5/23-4/24
Alberta Provincial Government: Game Design MicroCredential Co-PI: Guzdial, 500,000 awarded, for development of a game design microcredential	1/23-5/24
UofA-Huawei JIC: Improved Placement & Route through Deep RL and Transfer Learning Co-PI: Guzdial, 149,500 awarded, 72,000 CAD for Guzdial lab	5/22-4/24
Amii RAP: Machine Learning for Improving Human Computation Games PI: Guzdial, 53,966 CAD awarded	5/22-4/23
BNS Number RMA-23: Interpreting Deep Neural Networks (Scotiabank) Co-PI: Guzdial, 160,000 awarded, 30,000 for Guzdial lab	1/22-12/23
NSERC Discovery Grant: Machine Learning and Creativity PI: Guzdial, 145,000 CAD awarded	4/20-3/25
NSERC Early Career Researcher Discovery Launch Supplement	4/20-3/25

	PI: Guzdial, 12,500 CAD awarded	
	CIFAR AI Chair PI: Guzdial, 350,000 CAD awarded	9/19-6/23
	MITACS Accelerate: AI Aide for Financial Goal Setting PI: Guzdial, 35,000 CAD awarded	5/20-7/21
KEYNOTES, INVITED TALKS, AND PANELS	The Second Workshop on: Computer Vision For Videogames (CV2) Keynote: "Computer Vision for Game Creation"	2025
	Upper Bound Invited Talk: "Game Generation"	2025
	Edmonton Public Schools Student AI Conference Keynote: "Creativity, AI, & You"	2025
	Government of Alberta AI Days Invited Talk: "Generative AI Models and How to Use Them"	2025
	Upper Bound Invited Talk: "AI as a Creative Partner"	2024
	Upper Bound Panel: "Exploring Partnerships in Research and Innovation with the University of Alberta"	2024
	Upper Bound Invited Talk: "A Future where anyone can be a game developer (thanks to AI)"	2024
	2024 Festival of Teaching and Learning Invited Talk: "Spark Talk—ChatGPT-proofing assessments"	2024
	Jasper Dark Sky Festival Invited Talk: "Procedural Worlds Through AI"	2023
	TechAide 2023 Invited Talk: "How to Adapt AI to Humans"	2023
	Game Developers Expo (GDX) Invited Workshop: "Using AI/ML for Game Development"	2023
	6th International Workshop on Games and Software Engineering Jeremy Bradbury, Matthew Guzdial, Adam Smith, and Alf Inge Wang Panel: "Top 5 Lessons Learned in Entertainment Games, Serious Games, and Gamification R&D... Is There a Ray of Sunshine?"	2022
	Toronto Machine Learning Society (TMLS) Invited Talk: "Modeling Individuals Without Data via a Secondary Task Transfer Learning Method"	2021
	Game Developers Conference (GDC): AI Summit Tobias Moller, Vanessa Volz, Nick Walton, Prithviraj Ammanabrolu, Matthew Guzdial, Rehaf Jammaz,	2021

	and Elisabeth Oliver Panel: "Experimental AI Workshop"	
	Royal Canadian Institute for Science and the Institute for Science, Society and Policy Panel David Crolee, Matthew Guzdial, and Val Walker Panel: "Bridging Human Creativity and Machine Learning"	2021
	Foundations of Digital Games Mirjam P. Eladhari, Matthew Guzdial, Antonios Liapis, and Anne Sullivan Panel: "Games as Story Generators"	2020
	Faculty of Arts, Celebration of Research, University of Alberta Astrid Ensslin, Matthew Guzdial, Chelsea Miya, Kyle Stooshnov, and Morgan Cselinacz Invited Talk: "Digital Synergies and the Quest to Decode Human Bias in Computation"	2020
	DragonCon Anne Sullivan, Henrik Warpefelt, and Matthew Guzdial Panel: "Love and Hate for Games AI"	2019
	University of Southern California Invited Talk: "Automated Game Generation via Machine Learning"	2018
	Unite Los Angeles: Unity Developer Conference (Unite) Invited Talk: "Using Machine Learning to Enhance Content Production Workflows"	2018
	Blizzard Invited talk: "Procedural Content Generation via Machine Learning"	2017
	Foundations of Digital Games Amy Hoover, Matthew Guzdial, Adam Summerville, and Alexander Zook Panel: "Machine Learning for Procedural Content Generation"	2017
SCIENTIFIC ORGANIZATION	AAAI Conference on Artificial Intelligence in Digital Entertainment (AIIDE) Program Chair	2025
	Computer Vision and Games Workshop (CVG) Co-organizer	2024
	AAAI Senior Meta-Reviewer	2023
	IEEE Transactions on Games (TOG) Associate Editor	2023-
	Computer Vision and Games Workshop (CVG) Co-organizer	2023
	ACM Conference on Foundations of Digital Games (FDG) Game AI Track Chair	2020
	AAAI Conference on Artificial Intelligence in Digital Entertainment (AIIDE) Doctoral Consortium Chair	2020
	AAAI Conference on Artificial Intelligence in Digital Entertainment (AIIDE) Publicity Chair	2019
	AAAI Workshop on Knowledge Extraction from Games Chair	2019
	AAAI Workshop on Knowledge Extraction from Games Chair	2018
	FDG Workshop on Procedural Content Generation Local Coordinator	2017
	International Conference on Computational Creativity (ICCC) Media Chair	2017
	ICCC Workshop on Computational Creativity Chair	2017
	AIIDE Workshop on Experimental AI in Games Local Coordinator	2016
HONOURS AND AWARDS	Edmonton Space & Science Foundation (ESSF) Science Fellowship, Telus World of Science - Edmonton	2025
	Associate Editor Recognized for Outstanding Service, IEEE Transactions on Games	2024
	Best Program Committee Member Award, AIIDE Conference	2024

Early Career Track Invitation, International Joint Conference on Artificial Intelligence (IJCAI)	2024
Associate Dean Learning and Innovation Bestie (ADLIB) Award, Faculty of Science, University of Alberta	2024
Best use of Social Media, "Artificial Intelligence campaign: Fact or Cap", Canadian Council for the Advancement of Education (CCAIE)	2024
Nominee for Best Program Committee Member Award, AIIDE Conference	2023
Nominee for Best Student Paper Award, AIIDE	2022
COVID-19 Remote Teaching Award, University of Alberta	2022
Nominee for Best Reviewer Award, AIIDE	2021
Nominee for Best Student Paper Award, AIIDE	2021
Nominee for Best Student Paper Award, AIIDE	2021
Nominee for Best Student Paper Award, AIIDE	2021
Nominee for Best Student Paper Award, AIIDE	2021
Nominee for Best Paper Award, AIIDE	2020
Early Career Researcher Discovery Launch Supplement, NSERC	2020
Best Paper Award, ICCS Conference	2019
Influential Work of the Past Ten Years Paper Award, PCG Workshop	2019
Best Program Committee Member Award, AIIDE Conference	2018
Foley Scholar Finalist	2018
Heidelberg Laureate Forum Young Researcher	2018
Unity Graduate Fellowship	2018
Dagstuhl Seminar 1747 Participant	2017
Foley Scholar Finalist	2017
Best Paper Award, ICCS Conference	2016
National Science Foundation Graduate Student Fellowship Honorable Mention	2015
Georgia Tech College of Computing Best Undergraduate Research Award	2013
Georgia Tech President's Undergraduate Research Award	2013

CODE AND DATA
USAGE

My code and data, available via github and my personal website, has been applied to research at Stockholm University, University of Witwatersrand, University of North Carolina Charlotte, University of Malta, Kings College London, Cornell University, University of Washington, Drexel University, Northeastern University, Worcester Polytechnic University, the University of California, Davis, and the University of California, Santa Cruz.

Selected papers based on my code and/or data:

- Ingram, Branden, et al. "Generating Interpretable Play-style Descriptions through Deep Unsupervised Clustering of Trajectories." IEEE Transactions on Games (2023).
- Rezwana, Jeba, and Mary Lou Maher. "Designing creative AI partners with COFI: A framework for modeling interaction in human-AI co-creative systems." ACM Transactions on Computer-Human Interaction (2022).
- Paranthaman, Pratheep Kumar, Anurag Sarkar, and Seth Cooper. "Applying Rapid Crowdsourced Playtesting to a Human Computation Game." Proceedings of the 16th International Conference on the Foundations of Digital Games. 2021.

SELECT REVIEWING
AND PROGRAM
COMMITTEE
MEMBERSHIP

International Conference on Machine Learning (ICML) 2021-
International Conference on Learning Representations (ICLR) 2021-
Neural Information Processing Systems (NeurIPS) 2020-
AAAI Conference on Artificial Intelligence (AAAI) 2020-
IEEE Conference on Games (COG), 2018-
International Joint Conference on Artificial Intelligence (IJCAI), 2018-
International Conference on Computational Creativity (ICCC), 2017-

IEEE Transactions on Games (TOG), 2017-.
 ACM CHI Conference on Human Factors in Computing Systems (CHI), 2017-.
 International Conference on the Foundations of Digital Games (FDG), 2017-.
 AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment (AIIDE), 2016-.
 AIIDE Experimental AI in Games Workshop (EXAG), 2016-.
 FDG Workshop on Procedural Content Generation (PCG), 2016-.

TEACHING

University of Alberta		2020-
Term	Course	Overall Evaluation
Winter 2026	Game AI	??/ 5.0
Winter 2026	ML for Business II	??/ 5.0
Fall 2025	Computers and Games	4.6/ 5.0
Winter 2025	Game AI	4.4/ 5.0
Fall 2024	PCG via Machine Learning	4.9 / 5.0
Winter 2024	Game AI	4.5/ 5.0
Winter 2024	Computers and Games	4.6/ 5.0
Fall 2023	Computers and Games	4.9 / 5.0
Winter 2023	Computers and Games	4.9 / 5.0
Winter 2023	Game AI	4.9 / 5.0
Fall 2022	PCG via Machine Learning	4.8 / 5.0
Winter 2022	Game AI	4.9 / 5.0
Winter 2022	Computers and Games Capstone	5.0 / 5.0
Fall 2021	Game AI	4.9 / 5.0
Winter 2021	PCG via Machine Learning	
Fall 2020	Game AI	4.9 / 5.0
Winter 2020	Game AI	4.8 / 5.0
Winter 2020	PCG via Machine Learning	4.9 / 5.0

Georgia Institute of Technology		2014-2019
Term	Course	Instructor Effectiveness
Spring 2018	Machine Learning	4.82 / 5.0
Summer 2017	Game AI	4.95 / 5.0

University of Alberta **2019-**
 Designed new Game AI undergraduate course, new PCG via ML graduate course, and re-designed the Computer and Games Certificate Introduction and Capstone courses. Twelve time instructor of record. In 2020 I co-founded the Equity, Diversity, and Inclusion (EDI) Committee in the Computing Science department with professor Sarah Nadi, which I have chaired since 2022. I also became the co-directory of the University-wide Computers and Games certificate in 2022.

Georgia Institute of Technology **2014-2019**
 Co-designed new Game AI course, two time instructor of record (Machine Learning and Game AI), and Teaching Assistant

Georgia Institute of Technology **2010-2014**
 Teaching Assistant: Game AI

STUDENTS

Current Students		
Dave Goel (CS PhD), University of Alberta		2024-
Arghasree Banerjee (CS PhD), University of Alberta		2024-

Dagmar Lofts (CS PhD), University of Alberta	2023-
Emily Halina* (CS PhD), University of Alberta	2023-
Johor Jara Gonzalez (CS PhD), University of Alberta	2021-
Mashfiq Shahriar Zaman (CS Masters), University of Alberta	2023-
Jawdat Toume* (CS Masters), University of Alberta	2023-
Corey Polo (CS Undergrad), University of Alberta	2025-
Selena Chainani (CS Undergrad), University of Alberta	2025-
Max Zang (CS Undergrad), University of Alberta	2024-
Maggie Lacson (CS Undergrad), University of Alberta	2024-
Faiaz Bin Nesar (CS Undergrad), University of Alberta	2024-

Graduated Students

Athar Mahmoudi-Nejad (CS PhD), University of Alberta (co-supervised)	2025
PhD Thesis: "Automated Personalized Exposure Therapy Based on Physiological Measures Using Experience-driven Procedural Content Generation via Reinforcement Learning"	
Kristen K. Yu (CS PhD), University of Alberta (co-supervised)	2024
PhD Thesis: "The Theory and Application of Quest Based AI Directors"	
Adrian Gonzalez (CS PhD), Cinvestav IPN, Unidad Guadalajara (co-supervised)	2022
PhD Thesis: "AI as an Art Director: Generating Silhouettes with a Word-Conditioned Variational Autoencoder"	
Jawdat Toume (CS Masters), University of Alberta	2025
Masters Thesis: "Investigating using Reinforcement Learning Agents to Encourage Player Behaviour Change"	
Mashfiq Shahriar Zaman (CS Masters), University of Alberta	2025
Masters Thesis: "Parameter Monte Carlo Tree Search"	
Kian Razavi Satvati (CS Masters), University of Alberta	2025
Masters Thesis: "Semi-Supervised Tile Embeddings for Scalable Game Representation and Level Generation"	
Faraz Khadivpour (CS Masters), University of Alberta	2025
Masters Thesis: "An Investigation of Responsibility in Diffusion Models"	
Arghasree Banerjee (CS Masters), University of Alberta	2024
Masters Thesis: "Budgeted Gradient Descent: Selective Gradient Optimization for Addressing Misclassifications in DNNs"	
Megan Sumner (CS Masters), University of Alberta	2024
Masters Thesis: "Accessible Game Development Via Symbolic Learning Program Synthesis"	
Moemen Gaafar (CS Masters), University of Alberta	2024
Masters Thesis: "Few-shot, Interpolation-based Style-conditioned Text Generation using LLMs"	
Dagmar Lofts (CS Masters), University of Alberta	2023
Masters Thesis: "Sketch-conditioned Image Generation centered on Existing Artist Workflows"	
Negar Mirgati (CS Masters), University of Alberta	2023
Masters Thesis: "Joint Level Generation and Translation Using Gameplay Videos"	
Mohan Sai Singamsetti (CS Masters), University of Alberta	2023
Masters Thesis: "Parameter Search Transfer Learning"	
Samridhi Vaid (CS Masters), University of Alberta	2023
Masters Thesis: "Medical Predictive Modelling using Transfer Learning"	

Anahita Doosti Sanjani (CS Masters), University of Alberta	2023
Masters Thesis: "Transfer Learning for Underrepresented Music Generation"	
Akash Saravanan (CS Masters), University of Alberta	2022
Masters Thesis: "Visualizing Characters and Evaluating their Balance in Competitive Video Games"	
Mrunal Sunil Jadhav (CS Masters), University of Alberta	2022
Masters Thesis: "Tile Embeddings: A General Representation for Procedural Level Generation via Machine Learning"	
Nazanin Yousefzadeh Khameneh (CS Masters), University of Alberta	2021
Masters Thesis: "Forward Model Learning with an Entity-Based Representation for Games"	
Anmol Mahajan (CS Masters), University of Alberta	2021
Masters Thesis: "Modelling Individual Humans via a Secondary Task Transfer Learning Method"	
Shao-Yu Chen (HCI Masters), Georgia Institute of Technology	2016
Zoe Snyder (CS Undergrad), University of Alberta	2025
Danic Crispin* (CS Undergrad), University of Alberta	2025
Revanth Atmakuri (CS Undergrad), University of Alberta	2024
Dave Goel (CS Undergrad), University of Alberta	2024
Vardan Saini (CS Undergrad), University of Alberta	2024
Yalmaz Abdullah (CS Undergrad), University of Alberta	2024
Shashank Bhat (CS Undergrad), University of Alberta	2023
Kynan Sorochan (CS Undergrad), University of Alberta	2023
Natalie Bombardieri (CS Undergrad), University of Alberta	2022
Kynan Sorochan (CS Undergrad), University of Alberta	2022
Alexander Sieusahai (CS Undergrad), University of Alberta	2021
Faisal Abutarab* (CS Undergrad), University of Alberta	2020
Gaganpreet Jhaji (CS Undergrad), University of Alberta	2020
Yalini Kumar (CS Undergrad), Georgia Institute of Technology	2020
Andrew Hoyt (CS Undergrad), Georgia Institute of Technology	2020
Joshua Reno (CS Undergrad), Georgia Institute of Technology	2020
Zijin Lou† (CS Undergrad), Georgia Institute of Technology	2020
Shukan Shah† (CS Undergrad), Georgia Institute of Technology	2020
Vishwa Shah† (CS Undergrad), Georgia Institute of Technology	2020
Jonathan Chen (CS Undergrad), Georgia Institute of Technology	2018
Maxwell Bronstein (CS Undergrad), Georgia Institute of Technology	2018
Kenny Scharm (CS Undergrad), Georgia Institute of Technology	2018
Nicholas Liao† (CS Undergrad), Georgia Institute of Technology	2017
Undergraduate Thesis: "Deep Convolutional Player Modeling on Log and Level Data"	

* indicates awardees of Undergraduate Student Research Award, a prestigious award through the Natural Sciences and Engineering Research Council

† indicates winners of Presidents Undergraduate Research Award, a prestigious award at the Georgia Institute of Technology

PROFESSIONAL EXPERIENCE	University of Alberta, Edmonton, AB — Associate Professor	July 2025 -
	University of Alberta, Edmonton, AB — Assistant Professor	September 2019 - June 2025
SUMMER INTERNSHIPS	Disney Research, Pittsburgh, PA — Research Assistant Intern	May 2016- August 2016
	Applied deep learning to player experience prediction and simulation.	
	Zynga Inc., Orlando FL - Design Intern	May 2014 - August 2014
	Led weekly bug-fix count across entire team of twenty-six developers.	

Zynga Inc., San Francisco, CA - Production Intern

May 2013 - August 2013

Developed mobile game prototype single-handedly then lead small team in further development.

PRESS

“Artificial intelligence blame for video-game industry layoffs may be misguided” MIT Technology Review, January 19, 2026. Commentator. [link](#)

“Google DeepMind is using Gemini to train agents inside Goat Simulator 3” MIT Technology Review, November 13, 2025. Commentator. [link](#)

“Does anyone still clip coupons? Consumers want deals, but how they find them is shifting” CBC, July 6, 2025. Commentator. [link](#)

“Duolingo’s CEO says AI will soon replace teachers. But ... should it?” CBC Radio, May 27, 2025. Commentator. [link](#)

“‘Am I a good mom?’ We put ChatGPT’s parenting advice to the test” CBC, May 16, 2025. Commentator. [link](#)

“Why Did Grok Start Talking About ‘White Genocide’?” 404 media, May 15, 2025. Commentator. [link](#)

“Why is everyone suddenly a doll? Newest AI trend is more than harmless fun” CBC, April 15, 2025. Commentator. [link](#)

“Researchers say they’ve discovered a new method of ‘scaling up’ AI, but there’s reason to be skeptical” Techcrunch, March 19, 2025. Commentator. [link](#)

“Anthropic bans AI job applications: should other employers follow suit?” HRD, February 10, 2025. Commentator. [link](#)

“OpenAI’s o1 AI Model Unexpectedly “Thinks” in Chinese and Other Languages During Reasoning Process” Techcrunch, January 14, 2025. Commentator. [link](#)

“Can Pictionary and Minecraft test AI models’ ingenuity?” Techcrunch, November 5, 2024. Commentator. [link](#)

“Why AI can’t spell ‘strawberry’” Techcrunch, August 27, 2024. Commentator. [link](#)

“Why is AI so bad at spelling? Because image generators aren’t actually reading text” Techcrunch, March 21, 2024. Commentator. [link](#)

“Google DeepMind’s new generative model makes Super Mario–like games from scratch” MIT Technology Review, February 29, 2024. Interviewed on research and commentator. [link](#)

“The AI Safety Summit” CBC Calgary Eyeopener, November 2, 2023. Commentator. [link](#)

“AI Regulations” CBC Calgary Eyeopener, July 27, 2023. Commentator. [link](#)

“The menagerie of ways AI is transforming video game creation” L’Atelier, January 12, 2023. Interviewed on research. [link](#)

“A bot that watched 70,000 hours of Minecraft could unlock AI’s next big thing” MIT Technology Review, November 25, 2022. Commentator. [link](#)

“Edmonton AM with Mark Connolly, Tara McCarthy” CBC, October 20, 2022. Interviewed on research.

link

“Google answers Meta’s video-generating AI with its own, dubbed Imagen Video” TechCrunch, October 5, 2022. Commentator. [link](#)

“Unified-IO is an AI system that can complete a range of tasks, including generating images” TechCrunch, June 17, 2022. Commentator. [link](#)

“Synthesis AI raises 17M to generate synthetic data for computer vision” TechCrunch, April 28, 2022. Commentator. [link](#)

“Beethoven’s Unfinished 10th Symphony Brought to Life by Artificial Intelligence” Scientific American, October 15, 2021. Commentator. [link](#)

“How Artificial Intelligence Could Help Pro Gamers Create Games They Want To Play” Nerd’s Magazine, June 2, 2021. Interviewed on research. [link](#)

“AI and Creativity” PassWord Radio Program on Resonance FM, July 8, 2020. Interviewed on research. [link](#)

“Nvidia Says Its AI Created a ‘Fully Functional’ Version of Pac-Man” Vice, May 25, 2020. Commentator. [link](#)

“How Artificial Intelligence Could Help Video Gamers Create the Exact Games They Want to Play” Time, February 10, 2020. Interviewed on research. [link](#)

“Inside the Deepfake ‘Arms Race’” Daily Beast, October 7, 2019. Commentator. [link](#)

“Facebook Wants Gamers to Play Minecraft With Its AI-Powered Bot” Daily Beast, September 23, 2019. Commentator. [link](#)

“The Wonderful, Weird World of AI Generated Pokemon” Viewport, December 2018. Research included. [link](#)

“AI makes new video games by watching people play Super Mario and Kirby” New Scientist, October 2018. Interviewed on research. [link](#)

“Video Games Created Using Artificial Intelligence” BBC, September 2018. Interviewed on research. [link](#)

“Forget dumping games designers for AI turns out it takes two to tango” The Register, September 2018. Interviewed on research. [link](#)

“This Video Game Made by AI Looks Fun as Hell” Motherboard, September 2018. Interviewed on research. [link](#)

“An A.I. is designing retro video games and they’re surprisingly good” Digital Trends, September 2018. Research covered. [link](#)

“AI learns to re-create Super Mario Bros by watching someone else play it” The Verge, September 2017. Interviewed on research. [link](#)

“Artificial Intelligence is Learning To Develop Games” Rolling Stone, September 2017. Interviewed on research. [link](#)

“AI System Accurately Replicates Video Games Just by Watching Them” The Seeker, September 2017. Research covered. [link](#)

“New AI can ‘clone’ the basic software that brings a video game to life after watching the original for just TWO MINUTES” Daily Mail, September 2017. Research covered. [link](#)

“Has a Black Mirror episode predicted the future of video games?” The Guardian, October 2016. Commentator. [link](#)

“Underwater Castle? This AI Creates Never-Before-Seen ‘Super Mario Bros.’ Level” Motherboard, March 2016. Research covered. [link](#)

“How Computers Learned to Play Mario” Smithsonian Magazine, November 2015. Interviewed on research. [link](#)

“Algorithm Turns Fiction into Interactive Games” Popular Science, September 2015. Research covered. [link](#)

“This AI Creates Interactive Fiction by Reading Other People’s Stories” Motherboard, September 2015. Research covered. [link](#)

“This AI Builds Super Mario Levels by Watching YouTube” WIRED, June 2015. Research covered. [link](#)