Isaac Karth

Curriculum Vitae 2022

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Education

expected 2022	**UC Santa Cruz**, *PhD Candidate, Computational Media.* Santa Cruz, CA
2013	**University of Texas at Dallas**, *MFA Arts and Technology.* Richardson, TX
2006	**Kendall College of Art and Design of Ferris State University**, *BFA Digital Media.* Grand Rapids, MI

Peer-Reviewed Publications

Journal Articles

Karth, Isaac and Adam Marshall Smith (2021). "WaveFunctionCollapse: Content Generation via Constraint Solving and Machine Learning". In: *IEEE Transactions on Games*, pp. 1–1. DOI: `10.1109/TG.2021.3076368`.

Karth, Isaac (2019). "Preliminary poetics of procedural generation in games". In: *Transactions of the Digital Games Research Association* 4.3. DOI: `https://doi.org/10.26503/todigra.v4i3.106`.

Conference Proceedings

Duplantis, Tamara, **Isaac Karth**, Max Kreminski, Adam M Smith, and Michael Mateas (Aug. 2021). "A Genre-Specific Game Description Language for Game Boy RPGs". In: *Proceedings of the 3rd IEEE Conference on Games*. IEEE. URL: `https://ieee-cog.org/2021/assets/papers/paper_186.pdf`.

Mawhorter, Ross, Batu Aytemiz, **Isaac Karth**, and Adam Smith (Oct. 2021). "Content Reinjection for Super Metroid". In: *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*. Vol. 17, pp. 172–178. URL: `https://ojs.aaai.org/index.php/AIIDE/article/view/18905`.

Karth, Isaac (July 2018). "Preliminary Poetics of Procedural Generation in Games". In: *DiGRA '18 - Proceedings of the 2018 DiGRA International Conference: The Game is the Message*. Turin, Italy: DiGRA. URL: `http://www.digra.org/wp-content/uploads/digital-library/DIGRA_2018_paper_166.pdf`.

Karth, Isaac (2014). "Ergodic Agency: How Play Manifests Understanding". In: *Engaging with Videogames: Play, Theory and Practice*. Ed. by Dawn Stobbart and Monica Evans. Inter-Disciplinary Press, pp. 205–216. ISBN: 978-1-84888-295-9.

Workshop Proceedings
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Karth, Isaac and Adam M. Smith (2019). "Addressing the Fundamental Tension of PCGML with Discriminative Learning". In: *Proceedings of the 14th International Conference on the Foundations of Digital Games*. FDG '19. San Luis Obispo, California: ACM, 89:1–89:9. ISBN: 978-1-4503-7217-6. DOI: 10.1145/3337722.3341845. URL: http://doi.acm.org/10.1145/3337722.3341845.

Kreminski, Max, **Isaac Karth**, and Noah Wardrip-Fruin (2019). "Generators that Read". In: *Proceedings of the 14th International Conference on the Foundations of Digital Games*. ACM. DOI: 10.1145/3337722.3341849.

Karth, Isaac and Adam M. Smith (2017). "WaveFunctionCollapse is Constraint Solving in the Wild". In: *Proceedings of the 12th International Conference on the Foundations of Digital Games*. 14-17 August, FDG '17. Hyannis, Massachusetts: ACM, 68:1–68:10. ISBN: 978-1-4503-5319-9. DOI: 10.1145/3102071.3110566. URL: http://doi.acm.org/10.1145/3102071.3110566.

Posters
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Isaac Karth, Batu Aytemiz, Ross Mawhorter, and Adam M. Smith (2021). "Neurosymbolic Map Generation with VQ-VAE and WFC". In: *Proceedings of 16th International Conference on the Foundations of Digital Games*. DOI: 10.1145/3472538.3472584.

Aytemiz, Batu, **Karth, Isaac**, Jesse Harder, Adam M Smith, and Jim Whitehead (2018). "Talin: A Framework for Dynamic Tutorials Based on the Skill Atoms Theory". In: *Fourteenth Artificial Intelligence and Interactive Digital Entertainment Conference*. DOI: 10.5555/3505378.3505398.

Demos
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Isaac Karth, Tamara Duplantis, Max Kreminski, Sachita Kashyap, Vijaya Kukutla, Anika Mittal, Harvin Park, and Adam M. Smith (2021). "Generating Playable RPG ROMs for the Game Boy". In: *Games and Demonstrations at Foundations of Digital Games 2021 (Best Game/Demo award, top 16%)*. URL: https://escholarship.org/uc/item/5c4068hq.

Max Kreminski, **Isaac Karth** (2021). "A Demonstration of Blabrecs, an AI-Based Wordgame". In: *Artificial Intelligence and Interactive Digital Entertainment (AIIDE) 2021*. URL: https://dl.acm.org/doi/abs/10.5555/3505520.3505554.

▬▬▬▬ Awards, Honors, Grants, Fellowships

2021 **Best Game or Demo, Foundations of Digital Games (FDG)**.

2020 **CITL Graduate Pedagogy Fellow in Computational Media**, UCSC.

2019 **Hitchcock Modern Poetry Fund**, *Grant*, UCSC.

▬▬▬▬ Invited Talks

Karth, Isaac (2017). *Worldbuilding and Procedural Generation*. Invited Talk. Dakota State University.

Professional Service

2020	**Workshop Co-Organizer**, *PCG2020 (11th Workshop on Procedural Content Generation)*.
2019	**Symposium Organizer**, *Computational Poetry Workshop*.
2021	**Program Committee (Research Track)**, *AIIDE-21 (17th AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment)*.
2021	**Program Committee**, *EXAG 2021 (Experimental AI in Games 2021)*.
2021	**Program Committee**, *PCG2021 (12th Workshop on Procedural Content Generation)*.
2021	**Program Committee**, *IEEE COG 2021 (2021 IEEE Conference on Games)*.
2020	**Program Committee**, *EXAG 2020 (Experimental AI in Games Workshop 2020)*.
2020	**Program Committee**, *ICCC'20 (International Conference on Computational Creativity)*.
2019	**Program Committee**, *EXAG 2019 (Experimental AI in Games 2019)*.
2018	**Program Committee**, *PCG2018 (9th Workshop on Procedural Content Generation)*.

Teaching

Summer 2021	**Instructor**, *Teaching Fellow*, Game Development Experience.
Summer 2019	**Instructor**, *Associate In Computational Media*, Game Development Experience.
Summer 2021	**Mentor**, UCSC Science Internship Program.
Summer 2020	**Mentor**, UCSC Science Internship Program.
Fall 2021	**Teaching Assistant**, Data Structures for Interactive Media.
Spring 2021	**Teaching Assistant**, Game Design Studio III.
Winter 2021	**Teaching Assistant**, Game Design Studio II.
Fall 2020	**Teaching Assistant**, Game Design Studio I.
Summer 2020	**Teaching Assistant**, Game Technologies.
Spring 2020	**Teaching Assistant**, Interactive Storytelling.
Winter 2020	**Teaching Assistant**, Data Structures for Interactive Media.
Fall 2019	**Teaching Assistant**, Generative Design.
Fall 2018	**Teaching Assistant**, Visual Communication and Interaction Design.
Fall 2017	**Teaching Assistant**, Procedural Content Generation (Game Design Practicum).

Institutional Service

2021-2022	**Chair**, Graduate Student Association.
2021-2022	**Graduate Representative**, Academic Senate Graduate Council.
2019-2021	**Treasurer**, Graduate Student Association.
2019-2021	**Committee Member**, Student Fee Advisory Council.

Nonacademic Work

2013–2021	**Freelance Technical Artist and Consultant**, ISAAC KARTH INTERACTIVE. Raleigh, NC / Santa Cruz, CA
2007–2010	**Media Specialist**, PANACORE CORPORATION. Odessa, TX