

# Karen M. Royer, PhD

Binghamton, NY 13903 | (512) 751-4232 | arundeldesign@gmail.com | www.arundeldesign.com

## PROFESSIONAL PROFILE

Interdisciplinary computational media scholar, educator, and project leader specializing in game development, project management, AI ethics, critical design, and creative technology pedagogy. Extensive experience leading interdisciplinary development teams and managing complex creative-technical projects across AR/VR, game design, fabrication, and generative systems. Experience includes graduate level curriculum development and remote instructional support in computational media and game design related environments.

---

## EDUCATION

### **Doctor of Philosophy (PhD), Computational Media**

Worcester Polytechnic Institute (WPI), Worcester, MA — 2025

Dissertation: *Facing AI: A Critical Design Inquiry*

- Applied Research through Design methodologies to create and critically analyze hybrid craft, generative AI, and augmented reality systems.

### **Master of Science, Interactive Media and Game Development**

Worcester Polytechnic Institute (WPI), Worcester, MA — 2019

Thesis: *All Through the Night*

- Designed tangible and AR-based game environments examining social and design constraints in hybrid play systems.

### **Bachelor of Science, Related Art**

University of Vermont, Burlington, VT — 1987

### ***Relevant Graduate Coursework***

- Online Pedagogy Workshop for Faculty and Staff
  - Design of Interactive Experiences
  - Immersive Human Computer Interaction
  - Webware: Computational Technology for Network Information Systems
  - System Dynamics Foundation: Managing Complexity
  - Multidisciplinary Research Methods in Computational Media
  - Robot Futures: Design, Ethics, Communication
-

## TEACHING EXPERIENCE

### ***Adjunct Professor / Course Instructor, Critical Media Studies*** — Spring 2022

Worcester Polytechnic Institute

- Delivered critical media studies and computational design instruction.
- Provided frameworks for student production pipelines including milestone development.
- Encouraged iterative project development within teams.
- Supported interdisciplinary production and collaborative development environments within teams.

### ***Teaching Assistant, Storytelling in Interactive Media and Games*** — Spring 2020

Worcester Polytechnic Institute

- Supported approximately 40 students through transition to synchronous online instruction
- Reviewed and graded virtual collaborative assignments.
- Provided remote team coordination and Zoom-based mentorship

### ***Teaching Assistant, Visual Rhetoric*** — Spring 2020

Worcester Polytechnic Institute

- Developed and delivered instructional material while supporting undergraduate assessment.

## PROJECT MANAGEMENT & RESEARCH LEADERSHIP EXPERIENCE

### ***FORW-RD NRT Fellow (NSF Research Traineeship)*** — 2021–2024

Worcester Polytechnic Institute

- Conducted interdisciplinary research on AI, robotics, and future of work.
- Applied systems thinking and professional practice to complex technological ecosystems.

### ***Fellow, IDeaS Studio / Intentional Design Studio*** — 2020–2024

Worcester Polytechnic Institute

- Led software developers and 3D artists in AR educational project production.
- Managed HoloLens development pipelines, workshop instruction, stakeholder communication, and iterative design processes.
- Designed graduate-level curriculum in Designing Interpretive Computational Media.
- Produced Unity, Maya, and HoloLens workshops.
- Developed synchronous virtual certificate curriculum in Serious Games.
- Led independent studies resulting in publicly showcased student game projects.

### ***Research Assistant, Code Crafters Project*** — 2019–2022

Worcester Polytechnic Institute

- Co-developed NSF-funded generative design software.
- Led community workshops and interdisciplinary collaborations.
- Co-authored peer-reviewed publications and conference presentations.

## **Global Lab Manager** — 2018–2019

Worcester Polytechnic Institute

- Managed innovation lab operations, staff supervision, instructional systems, website development, donor relations, and event logistics.
- Supervised and trained 8 undergraduate employees.
- Coordinated advanced media production and outreach initiatives.

## RESEARCH INTERESTS

- Game development and production methodologies
- Project management in creative technology
- Critical AI studies and ethics
- Generative and procedural design
- Research through Design
- Creative collaboration systems
- Curriculum development for computational media
- Hybrid physical/digital storytelling

## PEER-REVIEWED PUBLICATIONS

Royer, K., Smith, G., & Telliell, Y.D. (2024). *The Matrix of Discomfort: Reimagining Critical AI Artwork through a Lens of Organic Creative Spaces*. Proceedings of the 16th Conference on Creativity & Cognition (C&C '24).

Mirecki, V., Spitaels, J., Royer, K., Graves, J., Sullivan, A., & Smith, G. (2022). “My Brain Does Not Function That Way”: Comparing Quilters’ Perceptions and Motivations Towards Computing and Quilting. In Proceedings of the 2022 ACM Designing Interactive Systems Conference (DIS '22). Association for Computing Machinery, New York, NY, USA, 1035–1043.

Graves, J., Royer, K., Smith, G., & Sullivan, A. (2021). *Procedural Patchwork: Community-Focused Generative Design for Quilting*. In Proceedings of the 13th Conference on Creativity and Cognition (C&C '21). Association for Computing Machinery, New York, NY, USA, Article 56, 1–3.

## SELECTED PRESENTATIONS, WORKSHOPS & INVITED TALKS

- *Integrating AI into Your Quilt Practice*, Mothertown Quilters, Bolton MA 2025
- *Procedural Patchwork: Quilt guilds contribute complexity* GRiSTS Roundtable Presentation, Harvard Kennedy School, Boston MA, 2020
- *How the Surface of an Egg Functions as an Area Control Game*, Worcester MA, 2018

## EXHIBITIONS & CREATIVE PROJECTS

- *The Matrix of Discomfort* — Creativity & Cognition Conference Exhibition Bridgeport Art Center, Chicago — AR, AI, and Quilting

- *Facing AI* Dissertation Exhibition — WPI George C. Gordon Library — AR, AI, and Quilting
- *All Through the Night* — Made in MA & WPI 50th Anniversary — Unity, Visual Studio and HoloLens
- *A Mile in My Shoes* — IndieCade, Different Games, BFIG Finalist — Mixed media
- *Inscribe* — Different Games — Egg Area Control Game, Mixed media

## Media Coverage

- [Worcester News Tonight](#) — Worcester, MA
- [The Artist's Corner](#) — Worcester, MA

## CERTIFICATIONS

- CITI Program: Human Subjects Research
- Responsible Conduct of Research

## TECHNICAL SKILLS

Unity 3D | Maya | Adobe Creative Suite | HoloLens / AR/VR Development | Instructional Design | Agile Project Management | Team Leadership | Curriculum Design | Workshop Facilitation | Web Development | Generative Design Systems