

COLTER WEHMEIER

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EDUCATION

PhD Candidate, Informatics, University of Illinois Urbana Champaign, 2025 (anticipated)

PhD Candidate, Science and Technology in Cultural Heritage, The Cyprus Institute, 2025 (anticipated)

M. Architecture, University of Illinois at Urbana-Champaign, 2019

B.Sc, Architectural Studies, University of Illinois at Urbana-Champaign, 2016

RESEARCH POSITIONS

The Science and Technology in Archaeology and Culture Research Center,

The Cyprus Institute

2018 - Present

Graduate Research Assistant, Virtual Environments Laboratory (VELab)

Aglantzia, CY

- Research Lead: Dr. Georgios Artopoulos
- Developed interactive software for public engagement and education with cultural heritage and the arts across the EU.
- Operated Dariah codesign and cultural heritage workshops to survey populations, design architectural interventions, and publish statistical, spatial, and qualitative results .
- Leading development of immersive virtual environment reconstructions for preservation of modern architectural heritage, currently featured in major cultural exhibition at Bank of Cyprus Cultural Foundation.

National Center for Supercomputing Applications,

The University of Illinois at Urbana-Champaign

2016 - Present

Fiddler Innovation Fellow, Advanced Visualization Lab (AVL)

Urbana, IL

- Research Lead: Dr. Donna Cox (2016-2020), Kalina Borkiewicz (2020-2023), Matthew Turk (2023-Present)
- Developed software for accessing and storing digital cultural heritage assets in AR/VR.

National Center for Supercomputing Applications (NCSA),

The University of Illinois at Urbana-Champaign

2013 - 2016

SPIN Fellow (Students Pushing Innovation), Advanced Visualization Lab (AVL)

Urbana, IL

- Advisor: Dr. Donna Cox
- Developed VR interfaces and experiences for scientific data, architecture, and heritage.

FELLOWSHIPS/GRANTS

Received:

- **Fiddler Innovation Graduate Student Fellowship**, 2017-2024
Awarded to students addressing cultural/global challenges that incorporate art and technology
- **Conference Presentation Award: Culture and Computing (KUI)**, 2023
Awarded to students traveling to an academic conference to present research.
- **Student Led Initiative Grant**, Student Sustainability Committee (SSC),
University of Illinois at Urbana-Champaign, 2019
Wrote the award grant proposal for recycling 3D printed plastic/sawdust into new filament for student projects,
and sourcing local recycled materials for digital fabrication projects

AWARDS AND HONORS

- **Chicago Studio Award (First)**, 2019
Awarded to top project across department
Project: Recovering Urban Memory in Baitasi District, Beijing
- **Archon Studio Prize (2nd)**, 2018
Awarded to top project in Archon Prize Studio
Project: 12 Miles, A Year and Staked Bench
- **CRITICAL MASS Student Choice Award**, 2018
Awarded to top student-voted project across department
Project: The Austere: Subsistence Farming and Micro-Housing in the Instaserf Era
- **Chicago Studio Award (HM)**, 2017
Awarded to top project across department
Project: Fractal City: A Vertical Art Museum for Fulton Market, Chicago
Collaboration with Melika Hajishafieiha

TEACHING

Classes as Instructor of Record:

- ARTD 218 Interaction Design Foundation, School of Art + Design, Spring 2023
 - Studio course introducing graphic design students to web technologies and interactive design
 - Core topics: Web development fundamentals (HTML, CSS, JavaScript), responsive design, typography for web
 - Emphasized historical context: Evolution of typesetting, web publishing technologies, and design systems
 - Project-based curriculum covering: Design patterns, modular development, cross-platform compatibility
 - Technical focus on maintainable code practices, modern web standards, and animation principles
 - Students developed portfolio-ready projects integrating design theory with practical web development

Classes as Co-Instructor:

- DCH 421 Community Engagement and Heritage Education in a Digital World, Dr. Georgios Artopoulos, Spring 2022

Classes as Teaching Assistant:

- ARCH 577 Theories of Architecture, Dr. John Stallmeyer, Fall 2024

Invited Reviewer

- DTX 499 Human-Centered Design & Design Thinking - Multidisciplinary Innovation Studio, Prof. Beth Ladd, Fall 2023, Spring 2024
- LA 5XX Future Natures, Dr. David Lyle Hays, Spring 2023
- Experimental Computational Architecture, Artificial Intelligence Research Seminar, University of Stuttgart, Dr. Thomas Wortmann, Spring 2022

INVITED LECTURES

- "Parametricism and Computational Design Strategies - 1960-2025"
ARCH 577 Theories of Architecture, University of Illinois at Urbana-Champaign, Fall 2024
- "Human Centered Design Research Methods in Spatial Computing and HCI"
DTX 499 Human-Centered Design & Design Thinking - Multidisciplinary Innovation Studio, Prof. Beth Ladd, Spring 2024

PUBLICATIONS

Peer-Reviewed Articles:

- Wehmeier, Colter, and Georgios Artopoulos. 2023. "MetaFraming: A Methodology for Democratizing Heritage Interpretation through Wiki Surveys." In KUI: Culture and Computer Science XX.
- "Scan-To-Ar: from Reality-Capture to Participatory Design Supported by AR". In Giordano A., Russo, M., Spallone, R. (eds), Representation Challenges: New Frontiers of AR and AI Research for Cultural Heritage and Innovative Design (IT: FrancoAngeli) DOI: 10.3280/oa-845-c238
- "Immersive Computing and Crowd Simulation Techniques in Modelling Urban Commons.", International Journal of E-Planning Research, vol. 8, no. 1, pp. 35–49, 2019

Book Chapters:

- Wehmeier, Colter. 2025. "Are Surveys Necessary?" In *Clever Design in Critical Times: Conceptualizing the Callidocene*, edited by Milena Radzikowska, Stan Ruecker, Guilherme Meyer, and Teresa Dobson. Lexington Books.
- Smaniotto Costa, Carlos, Juan A. García-Esparza, Georgios Artopoulos, Colter Wehmeier, and Mohammed Rafat-Saleh. 2024. "Heritage-Based Storytelling and Narratives. The Added Value of Engagement in Placemaking and Heritage Communication." BRILL: Placemaking in Practice 1.

Not Peer-Reviewed or Abstracts in Conference Proceedings:

- "Memory in Uncertainty, Web Preservation in the Polycrisis: A New Design Congress Report", New Design Congress, 2022, Editor
- "#The-New-Aesthetic: Objects in Mirror are Much Closer than They Appear.", New Models Codex Y2K20, 2021, New Models, Article Author

PRESENTATIONS

At Conferences:

- "Virtual Time Capsules: Unlocking Living Memory Through Meaningful Play in Immersive Heritage Environments" presented at 3rd International Playful by Design Conference, University of Illinois at Urbana-Champaign, November 7-9, 2024
- "MetaFraming: A Methodology for Democratizing Heritage Interpretation through Wiki Surveys" presented at XX. International Culture and Computer Science Conference, 28-29 September 2023, Lisbon, Portugal, <https://kui.htw-berlin.de/kui-2023-final-program-and-abstracts/>
- "REAACH-ID Symposium 2021: AI/AR For Space Recognition, Valorization, Design, Monitoring, And Management", Sicily/Webinar, October 12-13, 2021, <https://reaachid.wixsite.com/2021>
- "Developing Wikar: A Mixed Reality Platform for Art and Humanities Researchers", DARIAH Open Working Group Meeting: Digital Practices For The Study Of Urban Heritage, 2021, <https://doi.org/10.5281/zenodo.5769870>
- "Developing Infrastructure for Collective Data Management, Enabling Social Computation Research in the Digital Humanities (Wikar + ClowderBridge)", Clowder All Paws, Urbana/Webinar, September 20, 2020

Academic Workshops:

- "Embracing Modern Heritage: Wiki-Surveys and Gamified Informatics for Participatory Research", Game Studies and Design Spring Showcase, University of Illinois at Urbana-Champaign, April 28, 2023
- "The Patio Walk: "Patio Walk: sharing Tangible and Intangible Heritage in Córdoba"", Dariah ERIC UDigiSH WG, 2022, Presenter, Coordinator

- "Use of ICT for community building actions towards the reactivation of urban heritagescapes in South European cities, Palermo, Italy", Dariah ERIC UDigiSH WG, 2021, Presenter, Coordinator

ORGANIZATIONS

New Design Congress

2021-present

Independent Research Group

- A research organisation that recognises all infrastructure as expressions of power, and sees interfaces and technologies as social, economic, political and ecological accelerants. <https://newdesigncongress.org/en/>
- Academic research-collaborator with a specialization in games culture, design, and technology.

New Models

2019-2021

New Media Theory/Criticism

- Participated in discussion panels about emerging technologies and attendant risks for social organization
- Wrote for and helped organize first publication (New Models Codex 2020)

The Haunted PSr

2020-present

Indie Game Collective, Founding Member

- Organized multiple shipped collaborative game projects with millions of plays
- Built tools/plugins for data management, dynamic linking of software
- Technical/Creative lead role and support for projects in the community

QUIPIT: Critical Architecture Student Group

2014-2019

Student Organization for Discussions, Workshops, Exhibitions

- Lead student discussions about issues in architecture, representation, and society
- Organized multiple exhibitions and public events in coordination with the architecture dept and local businesses
- Designed and built interior installations, furniture for popups, interactive technologies for dissemination (VR+AR)

MENTORING AND RESEARCH SUPERVISION

Undergraduate Research Supervision

2018-2019

SPIN Fellowship Program, NCSA

- **Kajetan Haas** (Computer Science)
 - Supervised development of high-performance graphics pipeline for mobile AR visualization
 - Project outcomes:
 - Developed AR visualization system for Stephen Cartwright's data-driven sculptures
 - Created custom shader framework for real-time data visualization on mobile devices
 - Implemented optimized rendering techniques: texture-baking, GPU particle systems
 - Designed Python toolchain for converting scientific data to mobile-optimized 3D textures
 - Exhibition: Art & Design Fall Faculty Showcase, UIUC
 - Technical focus: Mobile GPU optimization, HLSL/GLSL, Unity3D, Python
 - Career outcome: Technical Artist @ Bungie Studios

CREATIVE WORKS: EVENTS

- "Genesis 2k24" @ BitBash Xtreme, iO Theater Chicago: VR Game Exhibition and Live Demo, August 31, 2024
- "Cyprus Insula: History-Memory-Reality" @ Bank of Cyprus Cultural Foundation: Interactive Virtual Environment Installation for Nicosia International Airport, July 2024 - June 2025
- "Mixed Reality" by Peter Kogler @ Otto Wagner Areal, Penzing: Wikar Mixed Reality Sculpture Public Installation, Production Lead, 2023
- OTHER MATTER @ Heft/Hüttenberg via Günther Domenig: DIMENSIONAL, Wikar Mixed Reality Sculpture Public Installation, Production Direction, University of Applied Arts in Vienna, 2022
- Eva Schlegel May Installation (+ DARIAH conference), Wikar Mixed Reality Sculpture Public Installation, Dornbirn, 2022
- Munich Academy of Fine Arts Sculpture Studio with Peter Kogler, Wikar Mixed Reality Sculpture Public Installation, Graz, Austria, 2022
- Calvary Club Energy Utilization Visualization, Wikar Mixed Reality Architecture + Scientific Visualization, Development, February 2022
Allowed users to visualize the simulated per-month energy usage of each room in a 3D Revit file for a historic building. Created a fully dynamic 3D clipping tool to inspect the interior and a GUI slide to determine the month. Features: Dynamic User-Operated Section Cut Tool in Mobile, Section Cut Shader for arbitrary meshes using 3D Signed Distance Fields, Optimized CSV parsing, Mesh Generation, Dynamic Coloring (at runtime)
[YouTube Video] [YouTube Video 2] [Project Link]
- Eli Joteva Magnetic Field, Mixed Reality in Gallery, Technical Production (Visualization, Programming), September 2021
- The Pavilion 2 with Eva Schlegel, Wikar Mixed Reality Installation, Lead Programmer, App Developer, September 2021
[Eva Schlegel's Website]
- Mixed Reality Development for Erwin Wurm's "Millisecond Sculpture Series" using Wikar, "The Pavilion", Scuola Nazionale di Cinema, Palermo, Italy, July 15-December 30, 2021
[Event Details]
- Mixed Reality Development for Stephen Cartwright's "Timeline Atlas Project" (Wikar), Art + Design Faculty Exhibition, Krannert Art Museum, UIUC, October 31-December 7, 2019
- "GucciBytes: Architectural Fictions and Forgeries," exhibition and zine, UIUC, September 26-31, 2019
- "Recovering Urban Memory" exhibition for Dong Gong's Plym Studio Fellowship, UIUC, April 29, 2019
- "Digital Picnic / Bezeliness Intensifies" exhibition, UIUC, November 4, 2018 - January 20, 2019
- "Historic Nicosia. Climate Change Hot Spot: Future's Extremes" interactive installation, exhibited at the Cities exhibition of the Seoul Biennale of Architecture and Urbanism, September 1-November 5, 2017

DIGITAL WORKS AND SOFTWARE

- Haunted PS1 Demo Disk: Flipside Frights (PC) [Video game], Launcher Assistant Developer, Fall 2024, [Link]
- Genesis 2k24 (VR PC) [Video game], Exhibited at BitBash Xtreme Chicago, Fall 2024, [Link]
- Nicosia International Airport VE (Interactive Installation) [Virtual Environment], 2024, [Link], [DOI]
- The People's Sky (Web) [Video game], 2023, [Link]
- Madvent 4: End of the Line (PC) [Video game], 2023, [Link]
- C.H.A.I.N.G.E.D (PC) [Video game], 2023, [Link]
- The Haunted PS1 Starter Kit [Automations Suite and Unity Framework], 2023
- Cordoba Patio Walk Interactive Survey Publication [Web Application], Lead Developer, 2023, [Link]
- Madvent 3: Necrosis (PC) [Video game], Launcher Lead Developer, 2022, [Link]
- Dariah Cloud Web Data Collection/Visualization Tool [Web Application], Lead Developer 2022, [Link]
- Cordoba Court (Web) [Video game / Survey Software], 2022, [Link]
- Haunted PS1 Demo Disk: Spectral Mall (PC) [Video game], Launcher Lead Developer, September 2022, [Link]
- The People's Tree 2 (Web) [Video game], Lead Developer, November 2021, [Link]
- Haunted PS1: 2Madvent2Calendar (PC) [Video game], Launcher Lead Developer, November 2021, [Link]
- Haunted PS1: Demo Disk 2021 [Video game], Lead Programmer, March 2021, [Link]
- The People's Tree (Web) [Video game], Lead Developer, November 2020, [Link]
- Haunted PS1: Madvent 2020 (PC) [Video game], Launcher Lead Developer, November 2020, [Link]
- Rococo (WebGL) [Video game], Lead Developer, June 2020, [Link]
- C.H.A.I.N (PC) [Video game], Lead Developer, October 2020, [Link]
- Minotaur (WebGL + PC) [Video game], Lead Developer, April 2020, [Link]
- Wikar [Mobile Application and Platform], Lead Developer, 2019, [Link]

TECHNICAL STRENGTHS

Development:	10+ years in architecture, art, design, software, fabrication, project management
Programming Languages:	C, C#, Python, JavaScript, R
Computation:	Algorithm design, complexity analysis, network & statistical analysis
Parallelization & Optimization:	OMP, MPI, CUDA, Compute Shaders (GPU), Supercomputer operation
Artificial Intelligence	OpenAI GPT-4 API, Tensorflow, Midjourney API, Whisper
Interaction Design:	Unity 3D, Godot, Full-Stack Web (HTML, CSS, JS, PostgreSQL), Max/MSP, HLSL
Data Science:	Data mining, analytics, NLP, visualization, Python implementations and frameworks
Fabrication:	CNC, 3D printing, woodworking, light electrical engineering, prototyping, and assembly
Design:	Adobe Suite, Blender, Rhinoceros 3D, Grasshopper