



ACM Journal on Computing and Cultural Heritage

Special Issue on Computational Techniques for Games Heritage

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In recent decades, computational methods have transformed how we engage with cultural heritage, opening new avenues for the study and reconstruction of past practices. Board games were a significant part of historical societies, providing insight into social structures, cognitive processes, and cultural interactions. However, the application of Artificial Intelligence (AI)-driven methodologies to understanding these games remains in its early stages, with only a handful of studies addressing their potential (Crist et al. 2024; Browne 2023; Donkers et al. 2000). This special issue seeks to explore how computational methods, including AI game-playing algorithms and computational modeling, can enhance our knowledge of historical and traditional games. This includes researching aspects reaching from their rules and mechanics to their role in past societies through a case study-based approach centered on specific games for which we have partial or complete rule sets (as proposed by Soemers et al. 2025). Computational methods can also provide new avenues for documentation and interpretation of archaeological and historical evidence.

The unifying question of this Special Issue is: “How can computational methods help us explore the playability, strategies, and social functions of historical board games?” The COST Action GameTable: Computational Techniques for Tabletop Games Heritage (henceforth GameTable), is fostering collaborations between archaeologists, historians, and AI researchers to address this question (Piette et al. 2024). AI-driven approaches, including reinforcement learning and statistical forward planning algorithms, procedural content generation, computer vision, offer new perspectives on how games were played and what they reveal about the cultures that created and played them. This interdisciplinary research also raises broader questions about methodology, authenticity, and the limits of AI to use incomplete archaeological data to model player actions in interpretable ways.

This Special Issue will appeal to scholars and practitioners across multiple disciplines, including archaeology, history, computer science, and game studies. It will be of interest to researchers exploring digital heritage, computational modeling, and AI applications in the humanities. Submissions may include theoretical discussions, methodological innovations, and case studies demonstrating how AI techniques can shed light on historical games. We particularly encourage contributions from the members of the GameTable COST Action network, as well as participants in upcoming GameTable-sponsored sessions at the Computer Applications and Quantitative Methods in Archaeology meeting in May 2025 and the European Association of Archaeologists conference in September 2025.

We welcome submissions from both experienced researchers and early-career scholars, including interdisciplinary collaborations that push the boundaries of AI-driven and computational heritage research. Furthermore, we are particularly excited to receive papers which are jointly authored by interdisciplinary teams which combine the expertise of computer science and heritage specialists.

Selected Bibliography

Browne, Cameron. 2023. "Which Rules for Mu Torere?" In C. Browne et al. (eds.): *CG 2022*, LNCS 13865, pp. 111–120. doi: 10.1007/978-3-031-34017-8_10.

Crist, Walter, Éric Piette, Dennis J. N. J. Soemers, Matthew Stephenson, and Cameron Browne. 2024. "Computational Approaches for Recognising and Reconstructing Ancient Games: The Case of Ludus Latrunculorum." In *Games in the Ancient World: Places, Spaces, Accessories*, edited by A. Pace, T. Penn and U. Schädler, 63-79. Montagnac, France: Éditions Monique Mergoil.

Donkers, Jeroen, Alex de Voogt, and Jos Uiterwijk. 2000. "Human versus Machine Problem Solving: Winning Openings in Dakon." *Board Game Studies* 3: 79–88.

Piette, Éric, Walter Crist, Dennis J. N. J. Soemers, Lisa Rougetet, Summer Courts, Tim Penn, and Achille Morenville. 2024. "GameTable COST Action: kickoff report." *International Computer Games Association Journal* 46: 1–17. doi: 10.3233/ICG-240245.

Soemers, Dennis J. N. J., Jakub Kowalski, Walter Crist, Summer Courts, Tim Penn, and Éric Piette. 2025. "Bridging AI and Cultural Heritage: Outcomes from the GameTable Working Group 1 (WG1) London Meeting." *International Computer Games Association Journal* 47: 41–47. doi: 10.1177/13896911251329543.

Topics

Topics and issues to be addressed include, but are not limited to:

- Computational reconstruction of traditional games, e.g. via procedural content generation, Human-in-the-loop AI techniques or Human-like AI
- Machine learning for game identification, e.g. via text mining or calculating gameplay metrics
- Facilitating simulation of traditional games, e.g. by providing digital implementations and/or tailored (explainable) AI agents
- Analysis of digitized traditional games, e.g. via gameplay metrics or strategy detection
- Mathematical modeling of traditional games and players
- Computer vision tasks in traditional games
- 3D model generation of gaming objects
- Educational and heritage preservation applications
- Digital methods for archaeological documentation of gaming materials

Important Dates

- Submissions deadline: 30 September, 2026
- First-round review decisions: 31 December, 2026
- Deadline for revision submissions: 31 March, 2027
- Notification of final decisions: 31 May, 2027
- Tentative publication: 1 July, 2027

Submission Information

Please follow the [style guidelines](#) while formatting your manuscript, and complete your submission through the ACM JOCCH [submission portal](#). For questions and further information, please contact **Walter Crist**, wcrist@asu.edu.

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