AI-Powered Game Recognition: A Collaborative Dataset for Traditional Games

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The rapid advancement of artificial intelligence in the field of game studies has opened new pathways for analyzing and categorizing traditional games [1]. In this research, we propose the creation of a large, structured dataset of photographs of game boards, which will serve as the foundation for a supervised learning model capable of identifying and ranking potential corresponding games from the extensive Ludii game database [2,3]. The dataset will comprise images contributed by GameTable members and partners, capturing various game boards from a diverse range of cultural and historical contexts. By aggregating this rich visual information into a single dataset, we aim to facilitate comprehensive training for AI models, enabling them to recognize and categorize games with high accuracy.

Each image in the dataset will be annotated by experts, with contributors identifying the games depicted to serve as input data for supervised learning algorithms. This collaborative effort will ensure the dataset encompasses a wide variety of games, board configurations, and stylistic variations, creating a robust training set for model development. The labeled dataset will then be used to train machine learning models, such as convolutional neural networks (CNNs) and other supervised learning techniques, to recognize patterns in game board images and rank potential matches from the Ludii database. Through this process, we seek to build a model that can effectively learn the distinguishing characteristics of game boards, enabling accurate game identification from photographs.

The ultimate goal of this project is to develop a user-friendly application, accessible as a web app or Android app, that can automatically detect and rank the most probable games from images submitted by users. This tool would allow users to upload photos of any board game they encounter, from modern settings to historical artifacts, and receive ranked suggestions on potential matches in the Ludii game database. Its use will be particularly valuable for professional archaeologists working in excavations, offering a quick and reliable way to identify and contextualize gaming artifacts, thus enhancing on-site research and interpretation. Overall, this application has the potential to become an invaluable resource for game researchers, archaeologists, historians, and enthusiasts, providing immediate insights into unknown games and fostering a deeper understanding of the world's gaming heritage.

In conclusion, the integration of AI-driven image recognition within the realm of traditional games represents an exciting interdisciplinary intersection, combining computational power with cultural analysis. By leveraging the collective resources of GameTable members and partners, we can create a powerful tool that democratizes access to game knowledge, supports game preservation, and expands the Ludii game database's accessibility. This research not only aims to achieve practical functionality in game recognition, but also to contribute to the broader field of AI applications in cultural heritage.

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