

3D Printing Facilities to Support Dissemination of Game Knowledge

SWOL Grant Application - Research/Education Project

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Detailed Description of the Activity and Motivation

Thanks to the Digital Ludeme Project (DLP: <http://ludeme.eu/>) run at the Department of Data Science and Knowledge and Engineering (DKE), a significant amount of evidence for traditional games have been collected on the DLP database accessible at <https://ludii.games/>. During this project, an innovative General Game System called Ludii was implemented to model, analyse and reconstruct traditional board games some of which have lost or incomplete rules.

Game AI and Game studies are a central research topic at DKE. In the Games research group, we are actively working with traditional games through the Digital Ludeme Project. Communicating our results is an important part of this work which would be strongly helped by producing physical representations of the games studied.

The purpose of this proposal is to acquire a 3D printer and the necessary materials to print boards and pieces of traditional games not existing in physical forms.

The use of virtual models of games, as proposed through the Ludii system, has been useful for automated generation, reconstruction and testing, but the act of playing with physical objects helps to connect people with the past, as they perform the same actions ancient peoples did and engage in the tactile and kinetic aspects of the game which are absent in digital versions. Playing on physical boards helps us to discover particular sensations that only come out through human-to-human play, for example, experimenting with strategies or possible rules to gauge how they would feel to play.

Printed game sets will be used for public outreach. For example, to attract and engage the public at events and trade shows such as the Essen SPIEL that attracts hundreds of thousands of attendees per year, and at European and international workshops on different fields such as Historical Game Studies, Game Design, Mathematics in Games and Game AI.

The international profile of UM will benefit from the dissemination of the knowledge accumulated at DKE through the Digital Ludeme Project. The 3D printer will contribute to the teaching ambitions of DKE by assisting with courses involving games, such as AI classes, projects and competitions between students. Early-career academics that are approaching research or advanced topics for the first time often consider games a fun and engaging topic, and they will likely be more invested if they can directly play the physical version of their projects or teaching topics.

Proof of Concept

As a proof of concept, two prototypes of traditional games were printed (Royal Game of Ur and Mehen) with a basic 3D printer after ordering the 3D models of these games from a service provider.

The buying of a 3D printer and the necessary filaments for the department with the possibility to print boards of the required size (> 30x30) and multiple colours will allow this project to take place and to use them for research and teaching in DKE.

