# Abstract

The work presented contributes to the field of serious and educational games. Specifically, the use of video games as a medium for visualising and teaching computer programming is investigated. This research contextualises video games within existing taxonomies of software visualisation techniques. The factors of educational game design that should be prioritised are elicited from perspectives of both students and educators. As part of the investigation, an educational game that teaches basic computer programming concepts has been iteratively designed and developed. It was tested on 130 university-level students. An analytics system collects data about how players engage with the game; a survey was used to collect qualitative user experience data; and a multiple-choice software skills test was administered before and after students played the game. It is shown that novice computer programmers increased their marks by 8% in the skills test after playing the game for under 45 minutes.

**Keywords:** Educational Games, Games, Gamification, Serious Games, Software education, Software pedagogy, Software visualisation, Visual programming