Opponent's review of Bachelor Thesis – Vojtěch Kaiser

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The goal of the work was to research and analyze typical requirements for computer-based adaptations of traditional board games. The student was to implement a game engine based on these requirements, use it to implement two simple board games and test both the engine and the games with real users.

Point by point, the student met all the task requirements, but unfortunately they seem to be rather poorly connected, especially in the design phase of the work.

The work correctly identifies the specific characteristics of board games, as opposed to more common computer games, and lists a number of most common game mechanics that are found in board games. It should have naturally followed from this that the student would have chosen a set of mechanics to support and formulated their digital representation to be used in an engine, and created an implementation based on that.

Instead, the work puts the carriage before the horse, describing the selected technologies before the structure of the engine, and the requirements put on it, are ever formulated (indeed, this happens in the introduction). These selections include several rather controversial choices (e.g. combining Java logic with an HTML presentation layer and using a custom flavour of CSS-based styling language), which should have been justified based on the design and requirements rather than presented as a *fait accompli* in the very first chapter.

The lack of clear concept is apparent especially in the *Design* and *Implementation* chapters, which concern themselves with technical details related to the various subsystems. The purpose of a game engine is to isolate the programmer from these details and let them think in terms of mechanics, which the engine maybe does, but this is not at all clear from the text.

Instead of presenting a model of how to implement the game mechanics enumerated in section 7.1 for use by programmers, these chapters discuss details like why the application is „event-driven", or how to alter the scene graph so that transforming a parent node does not transform its children (which seems to run counter to the idea of a transformation graph). Furthermore, there are instances of terminological confusion, the most significant of which being that the engine and the resulting game are repeatedly described as a „state machine", despite it being later revealed that there is in fact no such thing as a unified global state, or defined transitions.

In chapter 5, usability tests are performed. The tests are thoughtfully designed, systematic and well executed, and are possibly the strongest point of the work.

The author demonstrates that test participants are able to use the engine to create a simple board game, and performs a play-test of a different one. These prove that the work was sucessful in creating an engine which can be used for the computerization of board games, and thus satisfies the task requirements.

The bibliography at the end is brief, but this is explained by the fact that online references (such as those to competing products) are instead cited in footnotes.

Overall, the work fulfills the *letter* of the task by completing each individual subtask, but there is little to explain why exactly this engine, and exactly these design decisions, would be better suited for implementing board games than other, perhaps more general engines.

Consequentially, I conclude that the student has fulfilled the task set for the thesis, and propose the grade of **C – dobře**.

I suggest the following topics for discussion:

1. Explain briefly why your engine is better suited for the task of implementing board games than a more general scripted engine like Unity3D

2. Select some representative mechanics from the list in section 7.1 and describe how your engine specifically supports and streamlines their implementation.

3. Explain how house-rules can be implemented in a game created with your engine.

In San Jose, California, 14th June 2015   Ing. Michal Lukáč