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# Adaptivity in Games

BA & MA Thesis Topic Areas

## Adaptivity Triggers in Games

This topic area investigates the fusion and weighing of adaptivity triggers in games. The choice of adaptivity triggers lies with the student, but includes game events and biophysical signals, such as the player's heart rate.

A thesis in this area consists of the implementation of a prototype game that analyses how incoming triggers can be merged and weighed in regard to player experience modeling. Finally, the interpretation of the player state can be integrated into the game's adaptive mechanisms.

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## Rule-Based Game Adaptivity

The focus of this area lies in the implementation of game adaptivity. In particular, a thesis in this area will investigate the design and implementation of goal-based rule engine architectures.

The thesis focuses on the implementation of a goal-based rule engine underlying a prototype game. The game uses the rules to react to incoming triggers in order to progress towards a specific goal (e.g. a particular sequence of game events, or player states). For this purpose, the game requires a simple unit-testing system to simulate triggers. The thesis can be concluded by a technical evaluation or user study.

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## Evolutionary Adaptation of Game Elements

Evolutionary algorithms are well-suited to the generation and adaptation of game content, by evolving digital representations of the game elements and applying fitness functions to choose among the potential offspring elements.

For a thesis in this area, the student can choose a specific game element and then use evolutionary algorithms for adaptation towards a specific goal (e.g. high player satisfaction or immersion).

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## Specific (Serious) Games

Many games (both serious and not-so-serious) use adaptive mechanisms, for example to provide a high degree of customisation to the player.

We offer several thesis topics involving the design and implementation of (serious) games, such as an extension of the UniRallye scavenger hunt game, a game to teach MIPS assembler programming, or a game to investigate the effects of cutscenes on immersion. If you have a game concept in mind, feel free to come by and discuss it.

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