Analysis of Methods of Interactive Problem Solving

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Interactive problem solving or playing interactive games is as old as computers themselves. In past few decades, computer games rooted themselves into the modern culture so deep, that it is hard to imagine world without them.

For years, games were considered to be only means to waste our time that do not enrich our lives, not unlike a lot of 'reality' shows nowadays in television. But research shows us now, that computer games can be more than that. Desire to play games we all know from our childhood were evolved as means to improve our skills, gain experiences and prepare us for life in fun and harmless way. Computer games can do the same. In 2007, a study demonstrated that surgeons who play video games at least 3 hours per week do fewer mistakes during laparoscopic surgery.

In our work, we aim to get better understanding of game-play and strategies player can develop during playing a video game. For this purpose we chose puzzle game called 2048. This game was created in 2014 by Gabriele Cirulli and became very popular almost instantly.

2048 is played on a 4×4 grid (Figure 1), with numbered tiles that slide to four sides when a player moves them. When player makes a move in a direction, every tile on the grid slides as far as possible in the chosen direction until they are stopped by either another tile or the edge of the grid. If two tiles of the same number collide while moving, they will merge into a tile with a new value that is the sum of the two tiles that collided. The resulting tile cannot merge with another tile again in the same move. Every turn, a new tile will randomly appear in an empty spot on the board with a value of either 2 or 4.

For this study, we created version of this game that captures every players' move and grid layout at every moment during game-play. This data allow us to analyze game-play itself and discover patterns player developed during multiple sessions.

The latest version of the game is now available for general public at http://2048.stibila.eu.

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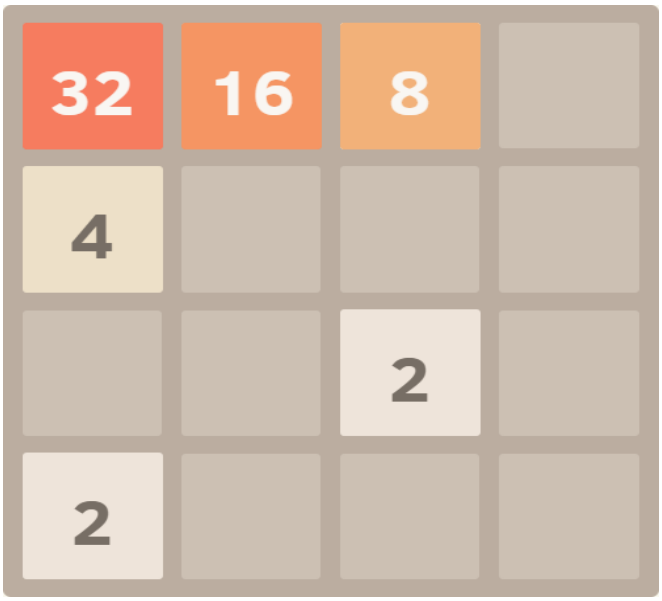

Figure 1. 2048 example game.

Our next step is to include eye-tracking system into our game, so we can capture not only the game state at any given time, but also coordinates of player's gaze focus on the game board. This can help us better understand what is going on in players' minds when they play the game.

We will also examine correlations between player behavior and personal characteristic, such as age, gender and preferred video game genres.

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References

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