Algorithm visualization using human movement effect: It's your turn

Pálma-Rozália Osztián

Department of Mathematics and Informatics, Sapientia Hungarian University of Transylvania

palmarozalia.osztian@gmail.com

Computational thinking is one of the most essential skills in every person's life from the XXI. century [1]. Acquiring this is based on many important factors, such as the presentation of the educational material, learning methods and in what form (hearing, vision, human movement) or to what extent the user should be involved in the learning process.

As students are very interested in computer games these days and realistic illustrations are becoming more and more popular nowadays, presenting algorithms with the help of a virtual environment can provide an excellent opportunity for students to be part of a role-playing game as soon as they take the place of one of the dancers.

The aim of the present study is to present my previous research results in the field of computational thinking, interactivity and different algorithm types. Considering this previous work, we have used a novel online learning tool (AlgoRythmics) which includes visualizations of ten basic computer algorithms (searching and sorting strategies) and three interactivity levels: no-interactivity (users are only independent observers), half-interactivity (at specific key moments students need to specify the next correct movement) and full-interactivity (students need to control the animation process). It is also known that the efficiency of this can be influenced by many factors such as the type of the algorithms. We decided to focus on the AlgoRythmics illustration of three sorting algorithms (shell, selection and quick) and, more specifically, on the influence that the degree of interactivity has on students' learning.

Based on these aspects and experiences my aim is to establish and create the structure of a virtual environment in which learners are no longer just external observers of the steps of algorithms, but can space and control the algorithm visualization themselves.

References

[1] Jeannette M Wing, *Computational Thinking*, (2012)