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SIMULATION OF PERSONALISED ELEARNING

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Abstract

Classic form of eLearning is being steadily replaced by the form of adaptive eLearning that adjusts to the student's characteristics. The creation of adaptive e-learning environment is a complex and complicated problem that must go through modelling and simulation before being pilot tested in real education. For the created adaptive LMS the University of Ostrava (Czech Republic) has created a modelling tool that enables the visualisation of the student's progress through the adaptive study material. This article covers the systematic approach to modelling of personalised education.

Theory of Adaptive Education

The complex model of adaptive education was divided into several partial components. The part of identifying student's characteristics, i.e. learning style of the student, was solved, after substantial study of information sources that deal with learning styles, by creating a questionnaire. The questionnaire is tailored to a number of selected student's characteristics that can be utilised in e-learning.

Modelling of Optimal Education Process

For testing purposes, the modelling tool itself uses the expert rules and the mentioned algorithms to determine the personal education style (PES = determining the optimal sequence of layers of the teaching aid) and actual education style (AES = determining the actual sequence of layers using those that are available; had been created by the author). The tool can visualise the progress of different types of students through the study material, which allows examining their learning styles
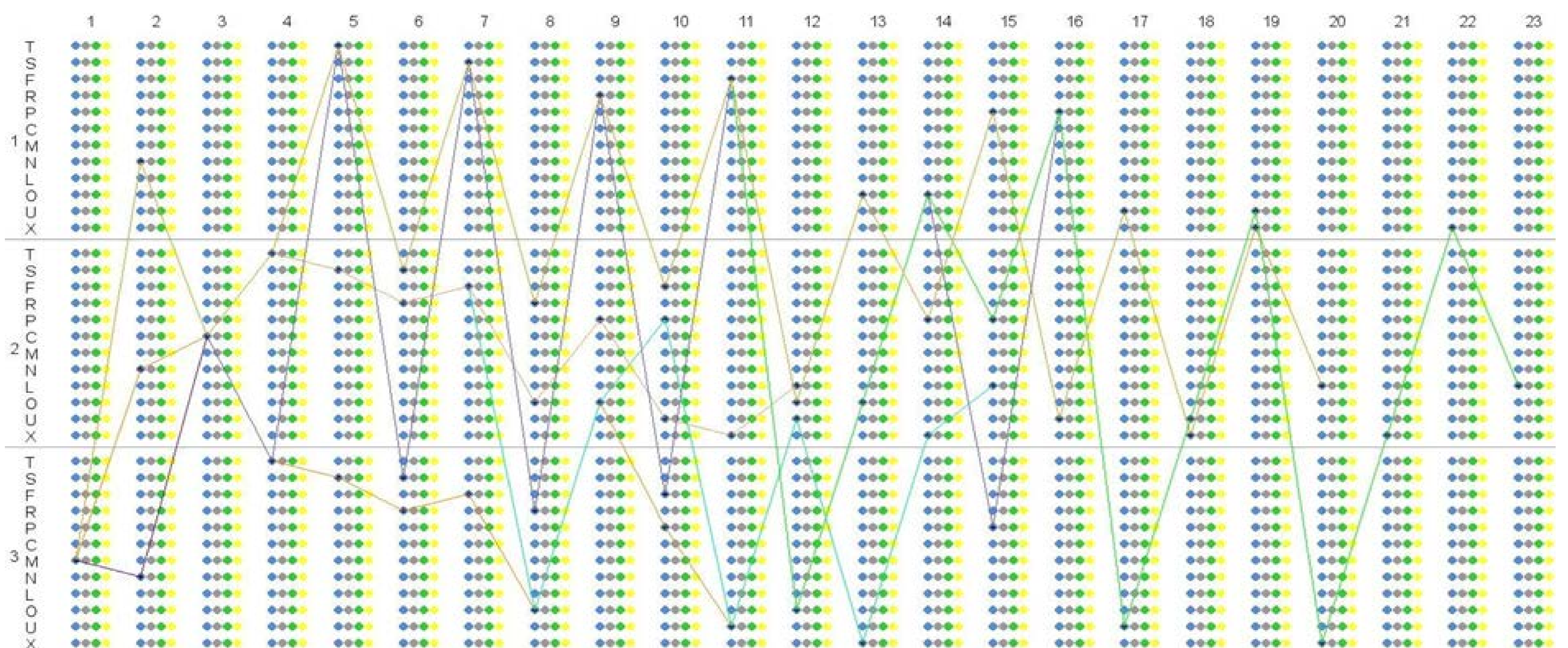
Conclusion

We can conclude by saying that the chosen systematic approach used for modelling virtual students and virtual teaching aids, the simulation of the teaching process using it and finally the visualisation of the resulting personalised study material was successful and helped uncover some errors.

Without these simulations, the process of fine-tuning the expert rules, algorithms and functions of the virtual teacher would take several years. Doing this with real students and real adaptive aids would need the participation of all types of students (in terms of their learning styles) and existence of all types of study aids. The creation of adaptive aids requires a high amount of effort and time, their authors can hardly be expected to create these aids only for the purpose of testing of the adaptive education. Thus without the simulation, some errors may have remained undiscovered for a long time.

The original modelling tool designed and implemented to simulate the education process without the need of creating real teaching aids and of participation of real students for pilot testing worked perfectly and fulfilled all its functions. It allowed the simulated creation of adaptive personalised teaching aids for all basic types of virtual students and had their correctness expertly verified – agreement with pedagogical principles, formulated by experts in the theory of adaptive learning.