BULGARIAN ACADEMY OF SCIENCES

INSTITUTE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

Valentina Todorova Terzieva-Bogoycheva

TECHNOLOGICAL APPROACHES FOR PERSONALIZED LEARNING USING EDUCATIONAL COMPUTER GAMES

PhD THESIS

Code of professional field: 4.6. Informatics and computer sciences

Supervisors:

Prof. Dr. Boyan Bontchev, FMI, SU

Assoc. Prof. Dr. Rumen Andreev, IICT - BAS

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Annotation:

The Ph.D. thesis analyzes technology-based teaching approaches and teaching through educational computer games. The subject of scientific research is the approaches to the development of various types of educational computer games customized to the characteristics and preferences of learners, taking into account surveys of the opinions and preferences of teachers and students. The research aims to analyze existing approaches to designing educational games and develop a model and methodology for creating customized educational video games that are to be validated through practical experiments. The following results are achieved within the dissertation research: A qualitative and quantitative assessment of the use of ICT and educational computer games in Bulgarian schools is presented. A conceptual combined model of a student that includes characteristics such as user, learner, and player is created. It is the basis of the proposed methodology for personalizing educational video games. This methodology is extended for educational video games of type maze enriched with built-in didactic mini-games. In addition, the Ph.D. thesis provides an approach to researching, validating, and evaluating the suitability for learning, game impact, effectiveness, and attitudes to using educational video games. Two educational video games of type maze enriched with built-in didactic mini-games (universal and personalized) dedicated to Bulgarian medieval history are created.