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DATA STRUCTURE

SUPHAKIT NIWATTANAKUL : INTELLIGENT TUTORING
SYSTEM FOR DATA STRUCTURE LEARNING. THESIS ADVISORS :
THANADOL PRITRANAN, M.S., Assoc.Prof. PRAPAVADEE SUEBSONTHI,
Ph.D., SRITHIDA KHACHONPREEDANON, M.Sc. 217p. ISBN 974-662-987-5

Intelligent Tutoring System, or ITS, applies Artificial Intelligent (AI) methods to develop Computer Assisted Instruction (CAI). The created ITS can define an appropriate teaching strategy for each student. This teaching strategy is comparable to that developed by a teacher. Data structure, which is the subject used for the lesson content in this study, is a subject that demands substantial imagination, so it can be difficult for students to understand. Using illustrations including multimedia will help students to have better and faster understanding and stimulate students to be interested in the lesson.

The purpose of this study is to analyze, design, and develop an application called ITS for learning data structure. Three teaching strategies, i.e. successive refinement, practice, and learning through exploration, are used in this program. Besides the lessons, the ITS includes test-sets for testing the understanding level of students who are first-time users of this program. Lessons, exercises and supplementary details are given for each topic. The combination of object-oriented, structure chart, and flowchart are used for program analysis and design. For program development, tools that support object-oriented programming including visual components are used.

For program testing, 21 volunteers who had learnt data structure were invited to test this ITS. Subjects completed a questionnaire about interface, lesson content, and teaching strategy. The results showed that the majority of respondents concluded that format and color of screen and text should be improved, lesson content should be concise, and illustrations should be emphasized. Almost all respondents agreed with the teaching strategy and felt that they had better understanding about the data structure after studying the lesson.