

THE APPLICATION OF FUZZY THEORY AND UNCERTAINTY REASONING IN A TUTORING SYSTEM

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ABSTRACT

GENERALLY SPEAKING, WE ALL USE "KNOW" OR "DON'T KNOW" TO EVALUATE STUDENTS' LEARNING EFFECT IN A TRADITIONAL TUTORING SYSTEM. HOWEVER, A LEARNING UNIT CONTAINS MORE THAN ONE LEARNING CONCEPTS AND EACH LEARNING CONCEPT HAS ITS INDIVIDUAL INFLUENCE ON THE UNDERSTANDING OF THE WHOLE UNIT. THEREFORE, A TUTORING SYSTEM SHOULD CONSIDER A STUDENT'S INDIVIDUAL DIFFERENCE IN EACH LEARNING CONCEPT AND SUPPLY THE PROPER CONTENT ACCORDINGLY. IN THIS RESEARCH STUDY, WE INVESTIGATED HOW TO APPLY THE TECHNIQUES OF BOTH FUZZY THEORY AND ARTIFICIAL INTELLIGENCE IN THE DOMAIN OF PYTHAGOREAN THEOREM, WHICH IS TAUGHT IN THE MATHEMATICAL CLASS OF JUNIOR HIGH SCHOOL. A TUTORING SYSTEM HAS BEEN THUS BUILT. THE SYSTEM CAN ANALYZE A STUDENT'S LEARNING PROCESS AND RESPONSE TO THE CONTENT AND CONSEQUENTLY PROVIDE AN INDIVIDUALIZED TUTORING FOR THE STUDENT. BASED ON THE ANALYSIS OF A STUDENT'S LEARNING RECORDS, THE SYSTEM DOES PROVIDE A MORE USEFUL GUIDE TO DIRECT THE STUDENT TO GET OUT SOME LEARNING MISCONCEPTS AND FOCUS ON SOME CRITICAL LEARNING CONCEPTS FOR HIS OWN. THIS RESEARCH STUDY HAS DEMONSTRATED THAT AN INTELLIGENT TUTORING SYSTEM CAN MAKE BREAKTHROUGH IN PROMOTING A STUDENT'S LEARNING EFFECT.

Keywords : FUZZY THEORY, ARTIFICIAL INTELLIGENCE, INTELLIGENT TUTORING SYSTEM, PYTHAGOREAN THEOREM

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