

#### The Hong Kong University of Science and Technology

#### **Department of Mathematics**

# **PhD THESIS EXAMINATION**

### **Recommendation System for Adaptive Learning**

By

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#### <u>ABSTRACT</u>

Personalized recommendation system has been widely adopted in E-learning field that is adaptive to each learner's own learning pace. With full utilization of learning behavior data, psychometric assessment models keep track of the learner's proficiency on knowledge points, and then a well-designed recommendation strategy selects a sequence of actions to meet the unique learning objective of individual. In this dissertation, we develop two adaptive recommendation strategies under the framework of reinforcement learning. The first strategy involved with early stopping enjoys a time-related learning mode with the aim of maximizing the learning efficiency. Secondly, we consider the element of curiosity as a critical motivate for information-seeking to propose a curiosity-driven recommendation policy, allowing for a both rewarding and enjoyable personalized learning path. Numeric analyses with the large continuous knowledge state space and concrete learning scenarios are used to further demonstrate the power of the proposed methods.

## Date: 24 July 2020, Friday Time: 1:30 p.m. ZOOM Meeting: https://hkust.zoom.us/j/2996476473

#### **Thesis Examination Committee:**

Chairman	:	Prof. Guang ZHU, LIFS/HKUST
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