BALANCING THE ROLE OF MACHINE LEARNING AND TEACHER IN ADAPTIVE LEARNING GUIDANCE SYSTEM (ALGS)

ICELW 2020
June 10th-12th, New York, NY, USA

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AGENDA

- Problem Statement
- The Two Main Pillars That ALGS Rests Upon
- Why Is The Teacher’s Role Crucial in Adaptive Learning Systems?
- Why Is The CSCL Important in Adaptive Learning Systems?
- The Role of ML in ALGS
- The Role of The Teacher in ALGS
Problem Statement

- Adaptive learning environments can have different flavors; some are intelligent tutoring systems, and some others are learning analytics.

- Relying solely on deep learning came along with some concerns including motivation, procrastination, engagement and others.

- AI can perform tasks beyond human capabilities, which may result in complexity as the system would generate adaptation suggestions that the teacher may not be able to interpret.

- The novelty that ALGS is proposing is balancing the machine learning and the human factor in an attempt to reduce this gap.
The Two Main Pillars That ALGS Rests Upon

- ALGS is based on the teacher and the computer-supported collaborative learning (CSCL).

- Human guidance, and computer supported collaborative learning are suggested to work side by side with AI.
Adaptive Learning Guidance System (ALGS)

LEARNING DECISIONS

CONTENT MODEL

Teacher

REVIEW RECOMMENDATIONS

DISCUSSION FORUMS

CSCL

GROUP WORK

STUDENT

STUDENT

STUDENT

TASKS
Why Is The Teacher’s Role Crucial In Adaptive Learning Systems?

- ALGS deploys the mentor’s physical existence with technology to maintain a healthy learning environment that corresponds to individual learners’ needs.

- Motivation, procrastination, engagement, and keeping cohesive learning environments online are noted as issues that can be better enhanced by personal relationships.
Why Is The CSCL Important In Adaptive Learning Systems?

CSCL contexts:

- Facilitate group interaction among learners.
- Enable learners to exchange ideas and help each other to understand the topics and answer the test questions in a collaborative way.
**The Role of ML in ALGS**

- Building a reliable User Model, which is the key in the adaptation process, by collecting data about students’ actions and behavior patterns, and then analyzing these large datasets.

- Detecting any deviation in the behavior of each learner from peer groups (CSCL feedback) and alarming the teacher to intervene accordingly.

- Generating automated recommendations to students of the content they should study next based on analyzing students’ learning patterns and behaviors.

- Processing highly time-consuming analyses that are beyond human capabilities.

- Tailoring adaptive recommendations to individual learners’ needs based on the User Model.

**The Role of The Teacher In ALGS**

- Creating the database upon which the system filtering function is based

- Feeding the system with data about learners that result from face-to-face interaction in the classroom

- Suggesting an initial path since there are no usage data stored yet in the system to adapt to particularly at the very early stages in ALGS

- Receiving system alarm and tracking the history of a particular student to interpret the rationale behind such deviation or failure to cope with the peers

- Reviewing and refining the system-generated recommendations

- Intervening and taking the proper action either in class or feeding adaptive decisions to the system
- creates content model (what students should be learning)

- builds user model (from psychometrics, CF, and CB Filtering)

- generates recommendations (based on student’s interaction)

- reviews system recommendations
- makes learning decisions

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**Adaptive Learning Guidance System (ALGS)**

**Teacher**

**Machine**
REFERENCES


