Lecture 6 Note

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Intelligent Tutoring Systems (ITS)

#ILE #lecture

From Intelligent Tutoring Systems (ITS)

A computer system that aims to provide immediate and customized instruction or feedback to learners

It can make decision and giving feedback based on the data
- using web and desktop application
- Intelligent Tutoring Systems does not to replace the teachers , they used to support the teachers.
- what #ITS offering ? What they need from the AI ?
- teachers need helps with course preparation , materials and resources , and to manage the personal attributes and the personal skills .
- Dealing with diverse student population
- Anderson trying open people brain , and answer how people act differently

- "Human is the golden standard" #Blooms
  - He measure the effectiveness and take about the low level skills .
  - Recently , and practically Human tutoring are not that good , in 2011 got the answer ITS is good as a human tutoring.
  - classroom is diff than the human tutoring , because there an interactions with the peers and learn things from the other peers ,so not to replace the classroom
  - ITS are as effective as adult, one-on-one human tutoring for STEM topics
  - None of the studies replaced a classroom teacher with ITS
  - ITS should be used to replace homework, etc but not a whole classroom experience
- Intelligent Tutoring sys #Architecture
  - User interface #UI
  - #Pedagogical-Model : responsible for MAKE DECISION for the student , ex what kind of material should provide to the student next .

    - #Student-Model : knowledge state , cognitive state for the student , in the tutoring sys -> by tracing how many time giving correct answer . (should update the knowledge , update all the time)
    - #Domain-Model : the domain knowledge that the student must learn (add /subtract numbers)
- #Effectiveness in terms of Learning Gains:
    - how to increase Learning Gain (tell us about the diff between post test and pre test) .
    - what we learn from practice , and this how they evaluate the effectiveness
    - Human tutor -> is the golden standard that we could have .
- Example for Tutoring systems:

    - #Math_Tutors
    - platform for student to learn math , they do the justification , why they do that , step by step .
    - for low level procedural skills

    #Auto_Tutor

    - work with peer or teachers , to learn how to read and write .. simulate the situation to lean with peer

    #ATLAS , #ANDES
    - practical problem to solve .
    - problem solving people tutoring sys
- How to design the Intelligent tutoring sys ?
    - #Model_tracing :
    - try to put us in one of the potential solution , not to getting us back to the process => find one optimal solution .
    - map how we solve to the optimal solution , also have other solutions and different paths, so put us in the one of the potential solution .
    - we need to model all possible path
    - diagrammatic representation for all the solution paths, some feedback to the student and the teachers
    - why the model base good ? we can identify the misconception when the student have some misconception , and generate real time feedback and hints to solve the problem.