Clustering and chatbots in learning tools

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The I-TUTOR plug-in

Alerting, Learning Design, Profiling, Monitoring, Clustering Engine, Chatbot

Moodle

I-TUTOR plugins

I-TUTOR Servlets, Apache Lucene, WEKA, Jabber

Java EE

I-TUTOR / Moodle DB

www.intelligent-tutor.eu
Quality in online learning means to

- monitor, track and assess what the student does within the learning environment;
- analyze students’ writings;
- manage knowledge sources by, for instance, building representations of knowledge through conceptual maps or taxonomies;
- watch the network of formal and non-formal relationships as it develops within the class, fosters its strengthening and supports the inclusion of all individuals; and
- give formative evaluation and feedback.
What the tutor can do? Statistics

Check behaviours and performances of the classroom and of the single student.
The data mining technique that underpins this is “clustering”. Many techniques exists, but this has some important benefits:

- Easy to understand
- Measure against others
- Different learning styles
- Anomaly detection
Clustering

Technically there are also many reasons:

• Purely statistical (k-means)
  • No training algorithms required
  • (Almost) No data preparation
    • Moodle database provided a good data foundation.
  • No after analysis required, and therefore relatively easy to summarize results in a meaningful way
Clustering on Moodle databases:
- Assignment Submissions
- Chat Messages
- Comments
- Files
- Forum Discussions
- Forum Posts Responder
- Forum Posts
- Grade Grades
- Grade Grades Participation
- Log

Statistics

- Message
- Message Read
- Message ReadTo
- Message To
- My Pages
- Post
- Quiz Grades
- Tag
- User Last Access
- Overall
- Overall Activities
- Overall Marks
What the tutor can do? Profiling

Profile the student (University of Palermo)
What the tutor can do? Monitoring

See the student’s activities over a given timeframe
What the tutor can do? Alerting

Create automatic alerts based on clustering and other critical (non-)events
And now something different!
Chatbots
What the tutor can do? Surveying

Install the survey chatbot as additional tool

The chatbot deals with the students and asks if s/he has used the tools to promote self-regulated learning.
Chatbot System

- ProgramD
  - Interpreted using
    - AIML 1.1
- Gets domain knowledge from
  - Ontology based Knowledge
- OwlLang
- Gets Evaluation feedback from
- Chatbot
  - Static chat patterns made in
  - Performs grammar-check using
    - Link grammar 4.1b
  - Persistent storage
    - mySQL
    - File logs
Chatbot System

Some say that the [SUBJECT | PREDICATE | OBJECT]. Do you agree?
The I-TUTOR plug-in is FREE!

Download it now!

The project website: www.intelligent-tutor.eu

The plug-in section in Moodle: TBD

Chatbot system: https://code.google.com/p/owllang/