Semantic Competency-Based System for Recommending Study Materials

Athitaya Nitchot, Gary B Wills and Lester Gilbert
{an08r, gbw, lg3}@ecs.soton.ac.uk
School of Electronics and Computer Science
University of Southampton, UK

1. Problems behind AEH systems

Learner
Can you give me the study materials?

YES!
Without any interaction from the teacher?

Maybe?
After using the system, I will be able to perform my intended learning outcome?

Do not think so...

AEH system
- Abilities of the user after using
- Lack of lifelong using of user modeling
- Assumptions about user in the model may not be correct
- Risk of misunderstanding in user modeling

2. Aim and Motivation

To design a system so that a learner can find appropriate study materials on the web based on his/her competencies without any interaction from the teacher.

- Teacherless
- Lifelong using
- User ability supportive
- Consistency & Standard
- Effectiveness & Interoperability

3. System Algorithm

Input [Set of subject matter contents, capabilities and context]

Semantic Filtering [Subject matter content]

Semantic Filtering [Capability]

Classification [Context]

Term Search (Google)

Relevance Feedback

Desired Competence

Keywords

Existing Competence

Google Search

Links

Appropriate Study Materials

Output [Marked Materials]

( i ) = ( iii ) + ( ii )

( ii ) = ( i )

( iv ) = Δ ( i, ii )

4. How does Semantic Web Technology help the algorithm?

- Knowledge Representation of learner’s competence
  - Well-defined meaning with common format
  - Easy and more comfortable for using and searching information (competences)
  - Understandable for both human and machine

- Recommendation techniques with Semantic Web Technology
  - Semantic Filtering
  - Classification

5. Future Work

- Developing Algorithm
  The exploration of effective techniques for suggesting keywords

- Designing Prototype
  The design is based on system algorithm in order to suggest the Google input keywords for the learner based on his/her competence

- Compatible IMS LD
  The learning design with embedded competency model and adaptive component