Language Technologies for Lifelong Learning

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Background

Technology-enhanced learning (TEL) becomes ever more pervasive in the world of education. Technologies of many kinds enter the learning and teaching arena and challenge students from before primary age to retirement and beyond. Everyday teaching and learning has been enhanced with a diversity of technologies that allow the harvesting of lifelong and lifewide learning opportunities by all types of learners. In this way, people's learning experiences become ever more connected and truly 'lifelong'.

Nowadays, technology is no longer only a means to an end, as was the case in the days of OHPs and VCRs, but takes a more central role in the management and provision of learning, be it in formal institutional courses or in self-organised ambitions. A number of challenges are imposed by the technology itself, such as gaining access to the right tools, mastering them, usability and optimised utilisation as well as interoperability issues when using different tools or devices. However, increasingly, also the products produced by these technologies ('content' in the widest sense) become a challenge. The deluge on digital content produced by learners calls for new innovative strategies and ways to deal with it, in order to control the workload for tutors and students, while at the same time improving the understanding of what has been produced and how it contributes to reaching the learning goals.

The LTfLL Project

Finding new innovative ways to tackle this newest challenge is one of the ambitions of the *'Language Technologies for Lifelong Learning'* project (LTfLL). Its two baseline objectives are: (a) helping people learn, and, (b) helping tutors/teachers to support learners.

With respect to the problem statement about content overload made above, LTfLL investigates and develops more intelligent next generation support and advice services for individual and collaborative learning. LTfLL is directed towards text-based artefacts and uses a number of different language technologies to analyse them and to give feedback about them back to the users.

A number of scenarios of pedagogic relevance have been created that highlight particular problems in dealing with digital text artefacts. These fall into the area of positioning the learner and their progress, providing qualitative and just-in-time feedback on text production, and, knowledge retrieval and sharing.

[1] *The LTfLL project is partially supported/co-funded by the European Union under the Information and Communication Technologies (ICT) theme of the 7th Framework Programme for R&D (FP7-ICT-2007-1-4.1)*

The LTfLL Toolbox

A number of services are being developed during the project lifespan, which intend to alleviate the issues identified in the above three areas. More details about them will come forth in later sessions of this workshop, but as a simple overview, our services reach out to the following areas:

To make positioning of new learners better scalable in an organisational context, thus perhaps eventually replacing the need for learner interviews or manual testing, LTfLL analyses and scores phrases extracted from learner submitted texts or free-text responses. By comparing these with exemplary reference material (such as textbooks or expert answers), advice can be given on the coverage of the domain by a learner. Later in the learning cycle, progress on the mastery and coverage of topics, can be measured through the LTfLL portfolio analysis tool *Conspect*. This tool neatly visualises the concepts covered by learner submissions, e.g. via a weblog and allows comparison with peers and experts in the field.

The production of texts for learning follows two main concepts: prose and dialogue. To support the development of prose writing skills, the *Pensum* summary writing tool helps learners to measure up their excerption and synthesis of texts against the originals. On the other side, our dialogue analysis tool *PolyCafe* helps getting a quick overview of multi-party long-term chat and forum conversations. This is especially useful when tutors have to deal with chat sessions of a large number of students from large subject areas such as Computer Science. It would be tremendously laborious for a tutor to analyse multiple semester-long chat protocols to assess whether students discussed the right topics, and which students were driving the discussion forward and which ones were loafing behind. Since the tool can provide instant feedback also during the running of a session, continuous intervention from the tutors is made possible, as is self-correction by students. *PolyCafe* uses dialogue and interaction analysis to provide the relevant feedback.

In the area of knowledge retrieval, the typical search machines like Google are unsurpassed, but provide unreflected results to learner queries. It often becomes a burden to the learners to assess and validate the resources coughed up by the search engines. A recent study has shown that 85% of students stick with the first three results coming back from the online search query. However, Google and co are following search algorithms that are commercially oriented and not necessarily relevance-based for learning. Our semantic search framework tries to change this situation by giving value to ‘connected’ and ‘rated’ resources from the learners’ social networks. The hypothesis behind it is that resources from a known network of people are more trustworthy, and potentially more relevant than those from anonymous searches. Additionally, there is added social currency through being able to contact the person behind a resource directly, e.g. the teacher if they are included in the social network. To help this process, a semi-automatic annotation engine hopes to make the process of keyword extraction to identify resources easier and faster.

LTfLL development work does not end with producing these different services and tools. Since we realise that learners and tutors have personal needs and circumstances that could vary a

great deal, our services are conceived in a portable manner that allows them to be included in a learner's personal learning environment (PLE) of their choice, e.g. Elgg, Moodle, iGoogle. The tool widgets can be combined and mashed-up to each person's liking, and can even provide support in existing learning platforms which allows widgets, so everything can be in one place and always at hand.

Project details

The LTfLL Consortium has 11 partners, most of which are academic and research institutions from around Europe. The project has a lifespan of 3 years until 2011 and a financial volume of 2.8m Euros. More information and detailed service descriptions as well as screen videos can be found on the LTfLL project website: http://www.ltfll-project.org.