

PARLIAMENTARY BRIEFING

THE CONVERSATIONAL COMPUTER

Education for Human Language Technologies

The conversational computer, which understands and speaks many languages of the world, which is always available for getting information wherever you are, which helps you to learn other languages, or which translates information and speech.

A conversational computer, a friend, but an era away.

Sure, several services are available nowadays that make use of language and speech technologies. You can get train travel or flight information, you can make an appointment or order a pizza, you can find yourself a nice restaurant just by phoning a spoken dialogue information system. This is a tremendous achievement we could only dream of twenty years ago, but these are still very limited-domain applications. Current technology, when applied to only slightly more complex problems, always generates many errors and discourages users.

Building a conversational computer requires a deep understanding of human communication. It requires knowledge of speech and language, psycholinguistics and learning, and for its implementation it needs powerful methods of artificial intelligence, logic, mathematics and computer science. For a long time, these disciplines have had their own community of researchers, their own forums and their own education. In the early nineties the idea emerged that co-operation among these disciplines was needed for building successful spoken-language systems. This was the basis of the ESPRIT Network of Excellence in Language and Speech [ELSNET], now part of the EU Human Language Technologies Programme.

It is not easy to change long-standing traditions. Current spoken language systems are rather simple-minded and are the product of massive computational power that builds upon statistics derived from huge resources of text and speech. A famous saying of a leading scientist some time ago was 'every time I fire a linguist my recognition rate goes up'. Yet, it is also recognised that current

techniques would need the availability and analysis of *numerous* lifetimes worth of speech to reach the level of human communication while the amount of text needed has not been written yet over all history. A child does far better in a few years. So we'd better try to understand the kid's language acquisition.

Changes in tradition start in education, but it is hard to bridge disciplines, especially if these span technical and humanities departments. The apparent dichotomy between these two may reflect a deep divergence in minds and thinking as well. Yet, in 1996 ELSNET initiated a project to create a European Masters Study in Language and Speech that included elements from all these disciplines. Supported by the EU Socrates Erasmus Programme, a scheme was developed in which the contents of the studies were agreed upon by 15 universities throughout Europe, while partners were free to choose the way they implemented these contents in their programmes of study. No attempt was made to embed the Masters in existing degree systems. Upon fulfillment of all requirements, students get their national degree and in addition a certificate of the Masters in Language and Speech, signed by the presidents of the learned societies involved: the International Speech Communication Association and the European Chapter of the Association for Computational Linguistics. This approach is highly flexible and anticipates the implementation of the Bachelors – Masters system in Europe. The additional value of the certificate comes from the prestige of the learned societies that will be appreciated by employers. This year the first certificates were handed to graduates.

The European dimension of the Masters is not only expressed by a scheme that is open to any university, but also by encouraging students to spend part of their studies abroad or to participate in an annual intensive programme at a Masters School. In addition, ELSNET annually organises a summer school for post-graduates on advanced themes in spoken-language systems, with support from the EU Improving Human Potential Programme.

All these efforts demonstrate the vision that through innovative education Europe should build strong foundations for Human Language Technologies of today and tomorrow that allow citizens to take full advantage of the Information Society. A truly European approach in education for Human Language Technologies also reduces the danger that conversational systems will not provide access via local languages. The computer as a friend should be available for all and should reflect and value the variety and richness of culture and languages in Europe.

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ELSNET www.elsnet.org European
Masters in Language and Speech
www.cstr.ed.ac.uk/Euromasters
Human Language Technology
programme
www.hltcentral.org