

UNIVERSITY OF OXFORD

COMPUTING LABORATORY

COMPANIONS:

Intelligent, Persistent, Personalised Multimodal Interfaces to the Internet.

Research Assistant post.

FURTHER PARTICULARS

The objectives of the project are to develop autonomous, persistent, affective and personal multimodal interfaces, or **COMPANIONS**, embedded in the Internet environment, with intelligent response in terms of speech and language, and the manipulation of visual images and their content. The post is funded by the European Union as part of an FP6 Integrated Project. The project is coordinated by Sheffield University, and the EU academic partners are University of Teesside, Charles University (Prague), Swedish Institute of Computer Science, Napier University, University of Tampere (Finland), University of West Bohemia (Czech Republic). Other participants are As An Angel (France), Loquendo (Italy), University of Washington (USA), Telefónica I+D (Spain), France Telecom, University of Albany (USA), and TeliaSonera (Sweden).

The main contribution of the Oxford University Computing Laboratory team will be to (a) contribute towards an initial prototype implementation largely using existing components and (b) to carry out research into the use of machine learning and probabilistic techniques for dialogue-related knowledge representation and reasoning. The following extract from the proposal will give an idea of the content of the main work package that Oxford is responsible for:

*Area4, which is concerned with the maintenance and updating of information about the user in a **COMPANION** interface and is responsible for planning, at a high level of abstraction, the most relevant next action to be carried out by one of the components of the **COMPANION**. This means that the functionality of the module to be developed in Area4 must include many of the functions of traditional and more recent knowledge representation systems, as well as various types of decision making 'software agents'. In order to arrive at rational decisions (i.e., decisions which will maximise the agent's utilities, thereby allowing goals to be attained, and desires or preferences to be satisfied) it is necessary to have an explicit model of the agent's beliefs, desires, and intentions, and the values (preferences or utilities) associated with different courses of action or eventual goal states. Furthermore, the current state of the world needs to be taken into account: if circumstances mean that the most preferred outcome is not achievable then some kind of intelligent compromise is needed. Representing the current state of the world, in the context of the **COMPANIONS** project, may involve information in several different media: speech, text, image or in formal representations like databases or knowledge representation languages. Hence the need for the architecture to be multi-modal, in order to integrate and reason with information gained via different modalities. Of course, in the limit there will always be some information that is completely modality specific (e.g., timbre, colour intensity, font size) but our aim is to find representation methods that enables us as far as possible to integrate information from different sources homogeneously so that we can reason about it where necessary.*

The post

This post is available immediately and will finish in October 2010. The post-holder will work in the Computing Laboratory. The successful applicant will be expected to undertake both research and development activity, and will join a rapidly growing computational linguistics group (www.clg.ox.ac.uk). The project involves collaboration with other institutions, and, as such, frequent interaction with other members of the consortium will be necessary. The post-holder will be required to undertake research and development activity, and will be expected to report upon such experience in the scientific literature.

Selection criteria

Essential:

- Programming experience, preferably in Java or C++.
- Familiarity with dialogue modelling for spoken language systems; or knowledge representation and reasoning methods, particularly bayesian networks and related formalisms.
- A first degree in Computer Science, Linguistics or related discipline.

Desirable:

- A postgraduate degree in Computational Linguistics, Artificial Intelligence, or related discipline.
- Experience of working in collaborative or interdisciplinary environments.
- Familiarity with machine learning for language processing.

Salary and Benefits

Salary will be on the University grade 7 scale (currently £27,466 - £33,780 p.a). The post is available for an immediate start, will finish at the end of October 2010, is pensionable and includes an annual leave entitlement of 38 days per year, inclusive of public holidays and university closed periods.

Application Procedure

Applications should be in the form of a letter of application (clearly stating the post title) setting out how the candidate meets the selection criteria, and supported by a full curriculum vitae, together with the names and addresses of two referees. These should be emailed (most formats accepted) to job14@comlab.ox.ac.uk or alternatively, posted to:

The Administrator
Oxford University Computing Laboratory
Wolfson Building
Parks Road, Oxford
OX1 3QD

to arrive by the closing date of **Monday 16th June 2008**. **Applications received after this time will not be considered.**

Candidates must ask their referees to consider the further particulars and email the reference directly to job14@comlab.ox.ac.uk or, alternatively, post it to the above address (fax (+44 1865 273832) so that references arrive by the closing date.

It is expected that interviews will be held during the week commencing 30th June 2008.

The policy and practice of the University of Oxford require that all staff are offered equal opportunities within employment. Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. Subject to statutory provisions, no applicant or member of staff will be treated less favourably than another because of his or her age, sex, marital or civil partnership status, sexual orientation, religion or belief, racial group or disability.