Research Networking Programmes

Short Visit Grant ☒ or Exchange Visit Grant ☐

(please tick the relevant box)

Scientific Report

The scientific report (WORD or PDF file – maximum of eight A4 pages) should be submitted online <u>within one month of the event</u>. It will be published on the ESF website.

<u>*Proposal Title*</u>*:* Extending Average Precision to Multi-Graded Relevance Judgements

<u>*Application Reference N°*</u>*:* 6900

1) Purpose of the visit

I am a student at the University of Padua, in March I got the master degree in math and I recently applied for the PhD in computer science. For my final thesis we studied a problem concerning evaluation in Information Retrieval (IR), in particular, we used Markov chains to describe possible user behaviours. Starting from this work we had a paper accepted at SIGIR 2014 [1] and we had a paper accepted at CLEF 2014 [2].

Thanks to the refund provided me by ESF, I took part in CLEF 2014 to present our paper and to discuss its contents with the research community. It was my first presentation at an international conference and it was a positive experience for many reasons. First of all, I got some advice and some new ideas that can be useful to improve this work, but also to develop future works. Secondly, I got in touch with key people in the IR field and so I can start a collaboration with them. Finally, I enlarged my knowledge in the field and learnt new research subjects that I can exploit for my research project.

2) Description of the work carried out during the visit

During my stay in Sheffield I took part in the conference CLEF 2014 that concerned the evaluation of complex information systems for cross-language tasks and scenarios. I listened the keynote speeches delivered by Ann Blandford, professor of human-computer interaction at the Univerity College London (UCL) and former director of UCL Interaction Centre; Susan Dumais a distinguished scientist at Microsoft and deputy

managing director of the Microsoft Research Lab in Redmond and Fabio Ciravegna, professor of language and knowledge technologies at the department of computer science at the University of Sheffield.
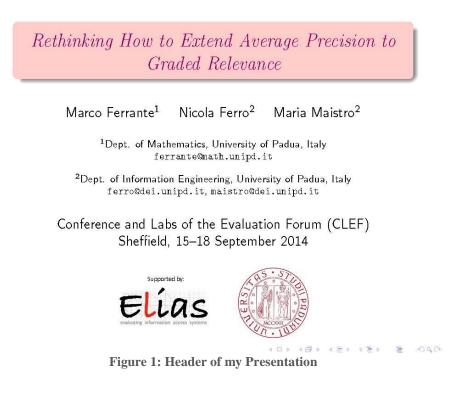
Ann Blandford presented the notion of "information journey" a perspective that focuses on the person and how he or she interacts with the system instead of putting the system at the centre. She related the information journey with models of information retrieval and information seeking and described evaluation approaches based on this new perspective.

Susan Dumais' talk concerned the importance of using the context to improve search quality. She highlighted the fact that search engines return the same result to everyone who ask the same question, but this strategy limits the performance of systems since queries depend on the user. In particular, this talk was very useful and it inspired some new ideas that I can use for the analyses of the user behaviour which lays behind the Markov Precision [1].

Fabio Ciravegna discussed his experience in working with emergency services and organisers of very large events involving hundreds of thousands of participants to help identify planned and unplanned situations through social media. From a technical point of view, he described how to meet the requirements that this task needs, for instance social media analysis, human computer interaction and visual analytics.

Moreover, I partook in the paper sessions, when each author introduced his work and then discussed it with the scientific community. In particular, I presented the paper *Rethinking How to Extend Average Precision to Graded Relevance Judgements* [2]. I organized my talk in a first part describing the motivations that drove us to begin this work, then the state of the art and the main results from which the paper starts, the approach and the model that we used to tackle our problems and finally the experimental evaluation and the main results that we obtained, Figure 1 and 2.

Finally, I attended to the presentation of the CLEF Labs, which deal with the

Figure 1: Header of my Presentation

experimentation on shared tasks to promote the systematic evaluation of information access systems.

3)   Description of the main results obtained

After the presentation of my work there were some minutes dedicated to questions and observations. The scientific community made me some questions about some aspects of the work that could be thoroughly studied. In particular, they concerns the type of users that we took into account, the study of the correlation of our new measures with other multi-graded metrics and finally the consequences of increasing the numbers of relevance grades. These were excellent starting points for a scientific discussion and possible future works.

Moreover, I met the professor Tobias Schreck, of the University of Konstanz, who works in the field of Visual Analytics methods to explore data collections. He described me his research work and he gave me some useful advice regarding my future PhD project.

I also met the professor Julio Gonzalo, of the Universidad Nacional de Educación a Distancia (UNED). We discussed with him a future work which deals with the possible axioms that can univocally characterize every evaluation measure. Moreover, we planned a visit to begin a collaboration on this topic.

[1] M. Ferrante, N. Ferro, M. Maistro, *Injecting User Models and Time into Precision via Markov Chains*. In S. Geva, A. Trotman, P. Bruza, C. L. A. Clarke, K. Järvelin editors, Proceedings 37th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval, SIGIR 2014, pages 597-606. ACM Press, New York, USA.

[2] M. Ferrante, N. Ferro, M. Maistro, *Rethinking How to Extend Average Precision to Graded Relevance*. In Information Access Evaluation meets Multilinguality, Multimodality, and Visualization. Proceedings of the Fifth International Conference of the CLEF Initiative, CLEF 2014. Lecture Notes in Computer Science (LNCS), Springer, Heidelberg, Germany.

4)   Future collaboration with host institution (if applicable)

5)   Projected publications / articles resulting or to result from the grant (ESF must be acknowledged in publications resulting from the grantee's work in relation with the grant)

M. Ferrante, N. Ferro, M. Maistro, *Rethinking How to Extend Average Precision to Graded Relevance*. In Information Access Evaluation meets Multilinguality, Multimodality, and Visualization. Proceedings of the Fifth International Conference of the CLEF Initiative, CLEF 2014. Lecture Notes in Computer Science (LNCS), Springer, Heidelberg, Germany.

6) **Other comments (if any)**