ERCIM « Alain Besoussan » Fellowship Scientific Report

Fellow: Bao Quoc HO
Visited Location: Norwegian University of Science and Technology (NTNU), Trondheim
Duration of Visit: 20.01.2008 – 20.01.2009

I.   Scientific Activities

I joined with Healthcare Informatics Research Group of the department of Computer and Information Science of Norwegian University of Science and Technology. My work is trying to apply text mining technique (my background) on processing healthcare information. At the first period, I studied lectures on healthcare informatics domain to catch up the global view about this domain, the challenges in applying information technology on healthcare. I concentrated on using text mining techniques to analyse Electronique Health Records (EHR). In the developed countries as Norway, the EHR stored in Healthcare Information System for long time. This is very rich resource for several purposes in Healthcare processing, but it is not easy to explore useful information from EHR, specific, in the narrative text sections of EHR. I have trying to use Natural Language Processing (NLP) techniques to annotated the hidden medical objects on narrative text of EHR to make them easier to be accessed through one well define framework. To get the first experimentations, I participated in the Challenges in Natural Language Processing for Clinical Data Obesity Challenge of i2b2 (Informatics for Integrating Biology and the Besides) https://www.i2b2.org/NLP/. I developed one system which annotate the medical objects as diseases, drugs, symptoms and use annotated objects as features to classify the EHRs. The results are published on the Second i2b2 Shared-Task and Workshop.
The obtained results encouraged us in using NLP techniques in specific or text mining in general to enrich and explore EHR for healthcare processing.

II.   Publications

(1) Bao-Quoc Ho, Øystein Nytrø, Carl-Fredrik Bassøe *NLP Obesity Challenge: Using Clinical Markers for EHR Classification*. The Second i2b2 Workshop on Challenges in Natural Language Processing for Clinical Data, Washington, D.C., USA, 7-8 November 2008.

(2) Bao-Quoc HO, Van B. DANG,Minh V. Luong, Bich-Thuy DONG: *English-Vietnamese Cross Language Information Retrieval: An experimental Study* Proceedings of 6th IEEE International Conference on Computer Science - Research, Innovation and Vision of the Future (RIVF'2008), Ho Chi Minh City (Vietnam), July 14-17, 2008,pp.107-113.

III.   Attended Seminars, Workshops, Conferences

I participated in many shorter workshops and seminars at NTNU and NSEP (Norwegian EHR Research Centre). I also held one seminar at NSEP
I presented my work at ERCIM institutes during the "Exchange Programme" visits:

o 26.10.2008 – 02.11.2008, the **Institute of Computer Science (ICS)** of the **[Foundation for Research and Technology – Hellas (FORTH)](#)**. Text mining for Healthcare Information

o 14.12.2008 – 21.12.2008, **Norwegian Centre for Telemedicine** (NST): Text mining for Healthcare Information and i2b2 NLP challenge collaboration
- Presentation of papers (1) at i2b2 workshop.

IV.   Research Exchange Programs

I visited two institutes:
- FORTH (Foundation for Research and Technology - Hells
- NST (Norwegian Centre for Telemedicine)
At both institutes, I have presented my project in general and also specifically about my contributions to the project. I attended the seminars they offered during my visit and consulted many of the colleagues there to get deeper insights about their research involvements.
Our conversations concerned both theory and practical know-how. I observed the practices and work methods of other institutes which strengthened my leadership abilities. I have made valuable professional contacts through these programs.