



WT2.18c: University of Birmingham, UK

Report

Activities performed during the visit

in University of Birmingham, UK

period: 26-01-2015 - 28-01-2015

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Personal Information

Dr. Konrad Jackowski and Dr. Michał Woźniak, faculty members of Wrocław University of Technology, Poland visited

(name of sending institution, country)

in the period from 26.01.2015 to 28.01.2015 in University of Birmingham, Birmingham, UK

(name of the visited institution, country)

order to carry out research and training activities in the field of ensemble learning.

(give the area)

Information about Seminars

The seminar presentations were organized on 27-01-2015
the date

They were were entitled:

1. Presentation of the team from WrUT and selected topics on one-class classification and imbalance data analysis (Dr. Michał Woźniak).
2. Conferences organized by ENGINE and students activities of the Faculty of Electronics (Dr. Michał Woźniak)
3. Compound machine learning algorithms - An overview of research tracks in WrUT (Dr. Konrad Jackowski).

Description of scientific activities

(Please describe value added to the ENGINE project i.e. new knowledge, new skills with respect to the objectives of the project, the assigned common area of future cooperation with the partner, plans for common research, projects, publications and how it could be used in the scope of ENGINE)

During our stay in University of Birmingham we have the opportunities to talk with the researchers from the Natural Computation Group, School of Computer Sciences, University of Birmingham. as group leader Prof. Xin Yao and Dr. Leonardo Minku.

I learned a new knowledge related to:

- Research projects currently realized by the Prof. Xin Yao's team..

- Cercia (The Centre of Excellence for Research in Computational Intelligence and Applications) which was established in 1 January 2003, as a joint project between Advantage West Midlands (AWM) and the University of Birmingham.
- Cooperation between universities and SME in UK under the framework of CERCIA center..

The main topic of the talks and discussions was focusing on the presentation of the research topics of each team, students activities, potential fields of common scientific research. Additionally we discussed about possibility of the organization of common scientific events.

During our visit we were discussing on the topic of imbalance classification, ensemble learning, one-class classification and compound machine learning methods which could be applied to the problem of data stream classification. Dr. Jackowski and Dr. Woźniak presented 3 talks (two of them were devoted chosen research topics realized by the group headed by Prof. Wozniak and one talk on the conferences and workshops organized under the framework of ENGINE project and students activities related to the computer science, as conferences or study direction). Additionally we participate in the seminar of Dr. Leonardo Minku on the new method of on-line classifier ensemble learning dedicated to imbalance data.

We agreed that the following topics could be interesting for both team and we can work on them together:

1. How to apply knowledge of the minority class distribution for on-line learning classifiers.
2. Developing evolutionary ensemble with the negative correlation as one of the criterion.
3. Working on the clustering-based ensemble pruning methods.
4. Applying multi-criteria optimization to the AdaSS algorithm.

We are going to write at least one common paper this year. Additionally, we agree that Prof. Xina Yao's team will support ENGINE in organizing workshop on Machine Learning in May – probably Dr. Minku will be responsible for one of the module. We also agree that Dr. Minku will visit Wrocław in May, and Prof. Xin Yao in the last quarter of 2015.

We believe that our stay in University of Birmingham will boost collaboration with the team headed by Prof. Xin Yao.

Information referring to the intellectual property

(the generally binding law in this area in the visited country and procedures of patenting);

Because of the lack of time we were not able to gather such information, but it will be collected during the next visits in Birmingham and visit members of the Natural Computation Group in Wrocław.

Description of the cooperation between universities and industry

(how it is organized in partner's organization, the sources of funding, the opinions about drawbacks and strengths of existing solution).

Because of the lack of time we were not able to gather detailed information on cooperation between academia and industry. We focused on the role of the Cercia center (The Centre of Excellence for Research in Computational Intelligence and Applications) which was established in 1 January 2003, as a joint project between Advantage West Midlands (AWM) and the University of Birmingham. This center is headed by the Prof. Xin Yao. The main objective which has been set for this center is to exploit the world-class research run at Natural Computation Group of the School of Computer Science for the benefit of industry and business in the West Midland region. Cercia has been working at the cutting edge of research and transferring knowledge to the local business. Cercia has been work out efficient procedure of cooperation which can be shortly described as follow:

1. Clear and short presentation of domain of researches which can be offered by Cercia to potential industrial partners. Ex. Optimization, data mining, and design.
2. Clear message on what services are offered, ex. Consultancy, Courses, Shared long term projects.
3. Clear message what they do not offer, ex. "no web design", or, "marketing by recommending any one external company above any other".
4. Resources presentation, ex. access to HPCC cluster.

All events organized by Cercia are published on web pages, and announced actively by emails and directed PR actions.

Position of Cercia developed also activity of Cercia stuff such as:

1. active participation on local and international conferences,
2. establishing cooperation with other researchers and research teams,
3. strong PR actions via Internet, classical paper publications (broshures which presents achievements), etc.

Other activities

REMARK: Apart from this information also a program of the visit and the presentation in electronic version should be given to the project office (please send all of them to Urszula.Markowska-Kaczmar@pwr.wroc.pl). Please respond to the points 1-5 for outgoing visit and points 1-3 for incoming visit. Point 6 is for extra activities that are not put in points 1-5.