

PhD Studentship

Smart Technology Research Centre / Computational Intelligence Research Group

School of Design, Engineering and Computing, Bournemouth University, United Kingdom

Applications are invited for a 3 year PhD research studentship to work on a project entitled "**Robust Adaptive Algorithms for Relational Data Mining**" funded by the Great Western Research (GWR) and Screwfix Direct Ltd. This is a collaborative project between Smart Technology Research Centre from Bournemouth University, Artificial Intelligence Research Group from Bristol University and Screwfix Direct Ltd, the UK's largest direct and online supplier of trade tools, accessories and hardware products.

This project will investigate the application of relational data mining to large real-world data sets. Screwfix Direct is an example of a data rich organisation that can use data mining and analysis skills to improve their relationships with their customers. However, current attempts to analyse their data frequently encounter significant problems due to the large amount of data, the complexity and the dynamic nature of the relationships and the poor quality of the data. In order to address these three very practical problems the project will focus on the following three challenging research areas: a) **Data Uncertainty Modelling and Propagation** - Investigation of novel approaches related to data quality and ways to represent and propagate uncertainty (in its different forms) caused by missing or low quality data (i.e. mislabelled, mistyped, wrong options selected, etc.); b) **Scalability and Algorithm Design** - Investigation of methods of avoiding data extraction from large databases by improving the implementation of algorithms, developing database structures suitable for processing data in context and using meta-data to improve the inference process; and c) **Learning and Adaptive Mechanisms** - Investigation of issues related to general on-line adaptation mechanisms in the context of the type and size of data in Screwfix's databases and the continuous adaptation of the working inference (prediction/classification) models.

In practical terms related to the software development the overall approach of the project will include: a) Implementing robust versions of proposed relational learning algorithms; b) Developing algorithms that link to commercial database management systems; c) Adapting relational learning to handle real world data; d) Designing user-friendly interfaces to relational learning algorithms.

The student will be joining the Computational Intelligence Research Group within the Smart Technology Research Centre and will be primarily based in the School of Design, Engineering & Computing in Bournemouth but will also be required to frequently visit and work at the Screwfix offices in Yeovil and Artificial Intelligence Research Group at Bristol University providing an outstanding opportunity to gain a diverse experience of both academic and commercial environments.

The studentship carries a basic remuneration of £12900 pa tax-free and payment of tuition fees at home/EU rate. The successful applicant will normally need to be an EU citizen though outstanding non-EU candidates will also be considered.

Applicants should have a very strong mathematical background and hold a first or upper second class honours degree or equivalent in computer science, mathematics, physics, engineering, statistics or a similar discipline. Additionally the candidate should have strong programming experience using any or combination of C++, Matlab or Java and a very good knowledge of databases operations and management including any or combination of Sybase, Oracle, MS SQL Server and Alterian.

For further details please contact Prof Bogdan Gabrys, e-mail: bgabrys@bournemouth.ac.uk or visit the following www pages: http://dec.bournemouth.ac.uk/staff/bgabrys/PhD_Studentships_2008.html.

Interested candidates should follow the application procedure listed on the School of Design, Engineering and Computing web pages: http://dec.bournemouth.ac.uk/research/postgraduate_research.html. Further details concerning the studentship and application procedure can be also obtained from the School of DEC Research Administrator - Ms Jo Sawyer, Email: jsawyer@bournemouth.ac.uk. Tel: +44 (0)1202 965985