2018-06-08

PhD student position in Computer Science

at BTH, Blekinge Institute of Technology with placement at the Department of Computer Science and Engineering, Karlskrona

Diarienr: BTH 3.1.2-0428-2018

About the position:
The position is associated with the research profile Scalable resource-efficient systems for big data analytics. As a first step the position is until the licentiate degree. However, the position may be extended to the doctoral degree depending on funding. The research is to be conducted within the research profile, and concerns industrially relevant challenges, and should be performed in close cooperation with BTH and the profile's industrial partners. Teaching at basic and advanced level is part of the position (up to 20% of full time).

The announced position is focused on developing of evolutionary clustering techniques that are suited for applications affected by concept drift phenomena. In many practical applications the information available in the system database is periodically updated by collecting (extracting) new data. The available data elements are usually partitioned into a number of categories. It is becoming impractical to re-cluster this large volume of available information. For example, in the context of profiling with the purpose to provide personalized recommendations, as more data is gathered one needs to re-cluster the initial clusters and also assign new incoming data points to the existing clusters. The existing original clusters can also become outdated caused by aging and degradation due to influence of changing external factors. This outdating of models is in fact a concept drift and requires that the clustering techniques, used for deriving the original clusters, can deal with such a concept drift and enable reliable and scalable model update.

The research area outlined above is challenging and very relevant for a number of application domains. For example, in the context of smart buildings and sustainable energy distribution networks, evolutionary clustering can be used to find interesting patterns in data acquired from sensors and other sources that describe the health, status, or other important factors regarding the operation of services or the experience of customers or users. Smart wearables are another example where you can use clustering to improve the understanding of personal experiences under various conditions and in different environments, such as: a patient that receives treatment at home, an employee in an open office space, or a person who practices a sporting activity and wants to improve his/her performance.

About the research profile:
Data will be generated at an ever-increasing rate for the foreseeable future. Added value and cost savings can be obtained by analyzing big data streams. The analysis of large data sets requires scalable and high-performance computer systems. In order to stay competitive and to reduce consumption of energy and other resources, the next generation systems for scalable big data analytics need to be more resource-efficient. The research profile, Scalable resource-efficient systems for big data analytics, combines existing

expertise in machine learning, data mining, and computer engineering to create new knowledge in the area of scalable resource-efficient systems for big data analytics. The value of the new knowledge will be demonstrated and evaluated in two application areas (decision support systems and image processing).
The needs and interests of our 8 industrial partners are grouped into industrial challenges. Based on these challenges and in cooperation with our partners we have defined initial sub-projects grouped into four research themes:

- Research theme A: Big data analytics for decision support
- Research theme B: Big data analytics for image processing
- Research theme C: Core technologies (machine learning)
- Research theme D: Foundations and enabling technologies

This research profile is in the center of the university's vision to be a globally attractive knowledge community within applied information technology and innovation for sustainable growth. The research group currently includes five professors, two associate professors, five assistant professors, and a number of Ph.D. students. The mix of competences gives unique possibilities to develop new knowledge in the profile area. The profile includes a well-defined career advancement program and a visiting researcher program.

Requirements:
A successful candidate must:

- Hold a master degree in computer science or equivalent
- Be proficient in written and spoken English
- Have experience in machine learning or data mining & knowledge discovery
- Be proficient in at least one scientific computing language, such as R, C/C++, Python

Desired qualifications also include:

- Good knowledge in one or more of the following areas: data preprocessing & analysis, statistics, visualization
- Relevant industrial experience
- Thinking out-of-the-box mentality, creativity, curiosity etc.

Appointment:
Only those who are being admitted or already have been admitted to postgraduate studies at an institution of higher education may be appointed to the position.

Commencement:
To be agreed.

Employment:
100%

Duration:
Employment until licentiate exam, which means 2,5 years if employment is divided as 80% research and 20% departmental work. The employment can be extended to PhD exam.

Salary:
For PhD students at BTH a standard salary scale is applied, which means that the salary is adjusted upwards as the student progresses through the program.

Application:
The application should include the following:

- A letter of interest, including a statement of the applicant’s background and experience/knowledge in the targeted areas
- CV
- Certified copies of certificates and diplomas
- Contact information for 2 references
- The earliest date the candidate can start work
- Appendix with current publications (if applicable)
- Link to your thesis (latest/highest degree)

Please submit your application, marked with the reference number for the position, **by August 15, 2018 at the latest**.

Applications should be sent to: The Registrar, Blekinge Tekniska Högskola, SE-371 79 Karlskrona, Sweden or by email to **diarium@bth.se.** BTH is an equal opportunity employer, thus all applicants are welcome to apply.

For more information:
About the research profile: http://www.bth.se/bigdata
About the department: http://www.bth.se/didd

Contact:
Veselka Boeva, professor, tel +46-455-38 58 05, veselka.boeva@bth.se
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Instruktioner rörande utformningen av ansökan finns på www.bth.se/lediga-tjanster eller kan fås från HR-avdelningen, tfn 0455-38 50 16.

Övrigt:
Vi har valt medier för denna rekrytering och undanber oss därför kontakt med annonssäljare eller andra säljare av rekryteringstjänster.

The Department of Computer Science and Engineering (DIDD)

was established on January 1, 2014. DIDD belongs to the Faculty of Computing and currently includes 42 staff members out of which 18 are senior researchers and 11 are PhD students. The department offers education and conducts research in computer science and computer engineering as well as related areas. The University profile is applied IT and innovation for sustainable development. The research and education at DIDD are completely aligned to this profile, and are conducted in close collaboration with partners from both the private and the public sector.

Blekinge Institute of Technology, BTH,

is one of the most distinctly profiled universities in Sweden, where IT and innovation for sustainable growth are in focus. In our education and research, engineering and IT are integrated with other disciplines such as urban planning, industrial economics, design and health sciences to contribute to solving the challenges facing society. Everything we do at BTH has three distinct perspectives: innovation, sustainability and in real life, which means cooperation and exchange with both business and industry as well as society. A characteristic of BTH is the close cooperation with industry and society, which permeates both education and research at the regional, national and international level. We conduct education and research at a high international level. BTH has two faculties – the Faculty of Computing and the Faculty of Engineering.

Welcome with your application!