3-years project funded PhD position in Auditable Semantic AI Systems, TU Wien, Austria
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HOURS PER WEEK: 30
FACULTY: Faculty of Informatics
GROUP: Information & Software Engineering Group
APPLICATION DEADLINE: April 30, 2020
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JOB DESCRIPTION

In recent years, we have seen a renaissance in Artificial Intelligence (AI) research and the diffusion of AI into industry-strength applications, such as intelligent question answering systems or self-driving vehicles. On the one hand, technologies in the area of symbolic semantic systems have emerged from Semantic Web research. This development culminated in the industrial adoption of Knowledge Graphs, which help capturing complex world knowledge in a reusable manner and makes it possible to infer new knowledge from it. On the other hand, machine learning research has been extended to solve problems where it is important to capture latent knowledge by learning from weak signals.

While advances have been made in both symbolic and statistical AI research (e.g., machine learning), further opportunities lie in the combined use of these two paradigms in ways that benefit from their complementary strengths, especially when applied in real-life settings that exhibit characteristics addressable by both paradigms. At this stage, there is still a lack of (i) a systematic understanding of categories of such semantic AI systems and (ii) technology stacks that enable the implementation of such systems. Finally, auditability, which is a necessary prerequisite towards providing transparency, is a major concern in AI in general and in many practical application contexts in particular. In this setting, our research group aims to advance the state of the art in semantic AI systems by investigating both conceptual aspects of these systems and by developing a technology stack that facilitates transposing these system types into concrete settings.

The Ph.D. position will focus on the intersection of a multidisciplinary approach that brings together research on Knowledge Graphs, Machine Learning, and Auditability. Concretely, a successful candidate will investigate at least the following research questions: (1) **How can Semantic AI Systems be classified into typologies?** and (2) **How to ensure the auditability of Semantic AI Systems?** This will involve a thorough literature study on the combined use of the symbolic and statistical AI research, as well as investigation into auditability topics such as automatic context information capturing and system monitoring and verification. **The exact topic of the Ph.D. will be defined within the first 6-months of the position based on the results of the literature study**.

Tasks of the PhD-student consist of (but are not limited to):
- Conducting scientific research in the fields of Semantic Web, Auditability, and Machine Learning;
- Investigating potential methods and tools to support automatic context information capturing, enrichment, and integration;
- Applying concepts and methods developed in the research to the use cases from various ongoing research projects (e.g., prototype developments);
- Writing scientific papers and project deliverables;
- Presenting in scientific venues (e.g., conferences, workshops, webinars).

Your responsibilities:
- Meet the goals/deadlines as set out in related research projects;
- Complete a PhD thesis within the contract period.

QUALIFICATIONS

We seek a highly motivated PhD student who has a strong interest in thinking about semantics, machine learning, and auditability, with:
- an MSc degree in Computer Science or Data Science;
- a strong affinity and motivation for doing scientific research in an interdisciplinary setting;
- an open mind, the ability to think creatively and outside the box;
- analytical skills and interest in semantic technologies, machine learning, and auditability;
- solid abilities in programming and application development are needed. Experience in Semantic Web development or Machine Learning is a plus;
- an independent, proactive working style;
- motivation to work in an international team with outside collaborators;
- excellent scientific communication skills (written and verbally) in English. Knowledge of German is a plus but not necessary for this position.

OFFER

We offer a position (30 hours/week) for three years in an international, young, and dynamic research group. Furthermore, the successful candidate will be involved in interesting research projects. The gross salary starts with €2,197 per month (14x yearly), which includes 25 paid vacation days per year.

HOW TO APPLY

Please enclose your CV, copies of relevant certificates and a motivational statement with your application. Please send the application via email to Dr. Fajar Ekaputra (fajar.ekaputra@tuwien.ac.at). **The application deadline is April 30, 2020.**

ABOUT THE ORGANISATION

Technische Universität Wien, generally referred to as TU Wien, is located in the heart of Europe, a place where one can experience cultural diversity and international life. Research, teaching and learning have been conducted here in the service of progress for 200 years. TU Wien is amongst Europe's most successful universities of technology and, with over 30,000 students and a staff of about 5,000, is Austria's largest scientific and engineering research and education institution.

ADDITIONAL INFORMATION

For more information about this position, please contact:
- Marta Sabou - marta.sabou@ifs.tuwien.ac.at
- Fajar Ekaputra - fajar.ekaputra@tuwien.ac.at
- Tomasz Miksa - tomasz.miksa@tuwien.ac.at