

## Open Ph.D. Position in Cognitive Production Systems

Institute for Technical Informatics, Graz University of Technology  
Complexity Science Hub Vienna, Austria

We are at the dawn of a transition from mass-produced one-size-fits-all products to cognitive products that are tailor-made to the desire of each customer, and constantly adapt to changing demands of users and environments. A new generation of cognitive factories is required to produce cognitive products (of which no two are identical) at industrial scale with high quality and low cost. This can only be achieved by means of tight interaction of cognitive products among each other, with humans, environments, machines, tools, robots, etc. These interactions result into an unprecedented level of complexity which gives rise to exciting research questions such as:

- How can we accurately perceive the state of products, their environments, users, factories, and interaction patterns among them using massively distributed low-cost sensors?
- How can we extract accurate, yet efficient models of cognitive products and factories from the resulting massive and noisy sensor data streams?
- How can we use these models to effectively predict, control, and adapt the behavior of cognitive products, robots, machines to changing demands?

We seek to fill a full-time and fully-funded Ph.D. position (40 hours / week) to pursue high-level research in the above domain with a particular emphasis on safe, autonomous and intelligent sensing systems using low-cost, small-sized, noisy and unreliable networked sensors.

The successful candidate will work in the unique environment of the Complexity Science Hub in Vienna, Austria ([www.csh.ac.at](http://www.csh.ac.at)) where international researchers from different disciplines collaborate to analyse, understand, and control complex networked systems such as cognitive products and factories, but also smart cities, Internet of Things, innovation dynamics, medical, social, ecological, and economic systems. The Complexity Hub is a joint initiative of AIT, IIASA, Medical University of Vienna, TU Graz, TU Wien, and Vienna University of Economics and Business.

The position is to be filled in collaboration with the Institute of Technical Informatics of TU Graz ([www.iti.tugraz.at](http://www.iti.tugraz.at)), where the successful candidate will be employed and enrolled into the Ph.D. program. The main work place will be in Vienna at the Complexity Hub with regular business trips to TU Graz.

Applicants must hold a Master degree (or equivalent) in computer engineering, computer science, or electrical engineering before they can take on the position. Good knowledge and experience in programming languages for data analysis (*e.g.*, Python), good understanding of statistics, machine learning and Big Data analysis methods, experience in building sensor systems, programming robots or drones will be considered as a plus. Proficiency in English (spoken and written) is required. Applicants should be highly motivated, have initiative and responsibility, be able to work independently and in an interdisciplinary team, should have interest in scientific research, and commitment to publish research results and to obtain a doctoral degree.

The position is to be filled from **April 1, 2018** with an initial appointment for three years. The position is remunerated according to the collective contract (Kollektivvertrag) for Austrian Universities, *i.e.*, the salary amounts to at least 39.124€/year before taxes and may increase depending on prior experience.

We aim to increase the number of female employees and therefore invite qualified women to apply.

Applicants should send their application material to [saukh@tugraz.at](mailto:saukh@tugraz.at) with the subject line: "PhD in CPS Vienna Team". Application material should include a CV, including transcript of records, a copy of the master's degree, a copy of the master's thesis, and a research statement (why do you think you are an excellent candidate). Please include in your application any further material that could help us to understand your skills and experience and that you are research oriented and creative.

The application deadline is **February 28, 2018**. For further information please contact Dr. Olga Saukh [saukh@tugraz.at](mailto:saukh@tugraz.at).