Postdoc in the Distributed Systems Group

"Robust, Private and Distributed Machine Learning Systems"

Delft University of Technology, the Netherlands

Delft University of Technology invites applicants for a 2-year postdoctoral researcher position in the Distributed Systems Group in the Department Software Technology of the Faculty of Electrical Engineering, Mathematics and Computer Science.

The Distributed Systems Group

The Distributed Systems group (http://www.ds.ewi.tudelft.nl), under the leadership of Prof. Dick Epema, performs world-class research in the design, implementation, deployment, and analysis of large-scale, Internet-based computer systems. It currently has three research lines: scheduling and resource management in distributed computing systems (e.g., in clusters and clouds), big-data analytics (e.g., differential approximate processing), and cooperative systems (blockchain technology, trust and reputation systems). Its research is fundamental, aimed at the development and evaluation of new generic concepts in systems software, and application-driven, motivated by important application areas. Much of it is experimental, validating the proposed new concepts by means of implementation and deployment in prototypes that are used in the real world.

The Department Software Technology

The Department of Software Technology (ST) is one of the leading Dutch departments in research and academic education in computer science, employing over 150 people. The department ST is responsible for a large part of the curriculum of the bachelor's and master's programmes in Computer Science as well as the master's programme in Embedded Systems. The inspiration for its research topics is largely derived from technical ICT problems in industry and society related to large-scale distributed processing, embedded systems, programming productivity, and web-based information analysis.

The Faculty Electrical Engineering, Mathematics and Computer Science

The Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS) is known worldwide for its high academic quality and the social relevance of its research programmes. Offering an international environment, the faculty has more than 1100 employees (including about 400 PhD students) and more than 3700 bachelor's and master's students. Together they work on a broad range of technical innovations in the fields of electrical sustainable energy, microelectronics, intelligent systems, software technology, and applied mathematics.

Job description

Artificial Intelligence (AI) and Machine Learning (ML) are ubiquitous in our daily lives, e.g., search engines, machine translation, and self-driving cars. Existing algorithmic solutions may fall short in addressing many challenges around the data, namely its quality, privacy and distributed nature. The selected postdoctoral researcher will work towards adversary-robust, privacy-preserving, and distributed machine learning systems. The focus of this project will be on system and algorithmic designs for ML systems, with one of applications being health-care images analysis. The expected deliverable is scalable end-to-end ML systems from data collections at edge devices to the algorithm processing, adhering the constraints of data privacy and analysis accuracy. The project will leverage methodologies from deep neural network, active learning, adversarial learning and differential privacy. The postdoctoral will lead the project with a sizable team of multiple PhD students and mast students, guiding and integrating their ML software modules.

The research activities will be in close collaboration with international institutes and leading AI companies.

Requirements

We are looking for candidates who satisfy the following requirements: a PhD degree with excellent results in Computer Science and Mathematics, preferably in ML systems, theory, or related areas

- In-depth knowledge in machine learning methodologies, e.g., generative adversarial networks, Bayesian neuralnetworks, transferred learning, and active learning
- Hand-on experience in integrating and prototyping distributed system development
- Solid background on privacy-enhancing technologies will be a plus

Conditions of employment

The TU Delft offers a customisable compensation package, a discount for health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged. An International Children's Centre offers childcare and an international primary school. Dual Career Services offers support to accompanying partners. Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities.

Information and application

For more information about this position, please contact Prof. Dick H.J. Epema, e-mail: Dr. Lydia Y. Chen, e-mail: **y.chen-10@tudelft.nl**. To apply, please send by e-mail an application letter, a curriculum vitae, PhD thesis or relevant papers, copies of MSc and PhD diplomas, proof of language skills if applicable, and the names of two references by **December 1, 2020**