HELMHOLTZ RESEARCH FOR GRAND CHALLENGES

Helmholtz Call for Chinese Applicants Interested in Running for CSC 2021 Fellowship

Helmholtz Centre: Forschungszentrum Jülich GmbH – www.fz-juelich.de

Department/Institute: Jülich Supercomputing Centre
https://fz-juelich.de/portal/EN/Research/research-infrastructures/jsc.html

Supervising scientist: Dr. Ing. Gabriele Cavallaro

University for registration or for a future degree: University of Bonn

Research Field: Deep Learning and Remote Sensing

Position open for: **PhD Student X** **Sandwich PhD Student □**

Title of the research: Scalable meta-learning approaches for effective deep transfer learning for remote sensing

More description of research topic:

The High productivity data processing research group at the Jülich Supercomputing Centre focuses on application driven parallel and scalable machine learning methods that exploit innovative high performance and distributed computing technologies. Part of the research activities focus on feature engineering, statistical data mining and innovative Deep Learning (DL) techniques. The group cooperates with academic research groups worldwide as well as with selected industry companies including the support of start-ups.

The doctoral student will investigate the transferability capacity of DL models based on meta-learning with Neural architecture search (NAS) methods. The student will pioneer the research of this advanced transfer learning methods in the context of complex remote sensing learning scenarios. The main research question of the thesis is: "Can deep meta-learning with NAS approaches transfer more efficiently than classical supervised and advanced unsupervised methods in multi-temporal classification problems?". The milestones that will be reached: (1) DL models pre-trained with unsupervised and computationally efficient NAS methods, (2) pre-trained DL model that supports diverse architectural settings for hardware transfer learning and (3) transfer of sub-networks to devices with limited computational power.

Specific requirements:

MSc degree in computer engineering or computer science with experience in machine learning, deep learning and Python programming.

Working Place: Forschungszentrum Jülich, Germany (near Cologne)

Earliest Start: September 2021

Language Requirement: Very good knowledge of English language, written and spoken. German language courses are organised in the context of our in-house training program and are free of charge.

Name and Address of the Supervisor: Forschungszentrum Jülich, Jülich Supercomputing Centre, Dr. Gabriele Cavallaro, 52425 Jülich, Germany;
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