FRAUNHOFER HEINRICH HERTZ INSTITUTE

PRESS RELEASE

Slawomir Stanczak from Fraunhofer HHI unanimously elected Chairman of a new ITU Focus Group on 'Machine Learning for Future Networks including 5G'

At its meeting in Geneva, Switzerland, the ITU-T Study Group 13 created a new ITU Focus Group on 'Machine Learning for Future Networks including 5G' (FG-ML5G). Prof. Dr.-Ing. Slawomir Stanczak, Head of Wireless Communications and Networks Department at Fraunhofer Heinrich Hertz Institute HHI, has been elected as the Chairman of the Focus Group, which will play an important role in providing a platform to advance Machine Learning approaches for 5G and draft related technical reports and specifications. The Deputy Chairmen come from Korea, China, Russia and Nigeria. The first meeting of the new Focus Group will take place in the form of a workshop in the end of January in Geneva.

The areas of Machine Learning (ML) and communication technology are converging. The design and management of networks and communication components can be significantly enhanced when combined with advanced ML methods. In particular, fixed and mobile networks generate a huge amount of data at the network infrastructure level and at the user/customer level, which contain a wealth of useful information such as location information, mobility and call patterns. To improve network performance and enhance user's experience, new ML methods for big data analytics in communication networks can extract relevant information from the network data while taking into account limited communication resources, and then leverage this knowledge for autonomic network control and management as well as service provisioning. Considering the growing complexity of Software Defined Networking (SDN), Network Functions Virtualization (NFV) and 5G networks, ML may be well applicable for automatic network orchestration and network management.

The standardization of interfaces, processes and data formats is of high importance in communications, because it increases the reliability, interoperability and modularity of a system and its respective components. Standardized formats may be needed to specify how to train, adapt, compress and exchange individual ML algorithms, as well as to ensure that multiple ML algorithms correctly interact with each other and that certain security or protection of personal information

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requirements are fulfilled. Furthermore, it can be expected that a large number of new information and communication technologies (ICTs) applications would emerge, if the complexity of state-of-the-art ML algorithms, especially deep neural networks, can be reduced to a level, which allows their use in computationally/energy limited environments.

The objective of the Focus Group 'Machine Learning for Future Networks including 5G' is to conduct an analysis of ML for future networks in order to identify relevant gaps and issues in standardization activities related to this topic. Such analysis includes an overview on related activities by other standards developing organizations and groups. Furthermore, it includes technical aspects such as use cases, possible requirements, architectures and others. The Focus Group also serves as an open platform for experts representing ITU members and non-members to quickly move forward studies on ML related to future networks including 5G. Therefore, the Focus Group will conduct regular meetings.

ITU is the United Nations specialized agency for information and communication technologies. ITU is an organization based on public-private partnership since its inception and currently has a membership of 193 countries and almost 800 private-sector entities and academic institutions. ITU has its headquarter in Geneva, Switzerland, and has twelve regional and area offices around the world.

Innovations for the digital society of the future are the focus of research and development work at the **Fraunhofer Heinrich Hertz Institute HHI**. In this area, Fraunhofer HHI is a world leader in the development for mobile and optical communication networks and systems as well as processing and coding of video signals. Together with international partners from research and industry, Fraunhofer HHI works in the whole spectrum of digital infrastructure – from fundamental research to the development of prototypes and solutions. www.hhi.fraunhofer.de