DLR Projektträger

AIMM
AI-enabled Massive MIMO

Motivation: The new mobile communications standard 5G is an important building block for advancing digitalisation in Germany and the world. One example is Industry 4.0, which relies heavily on wireless communication. The standardisation of the first version of 5G with the necessary basic functionalities has been completed. The focus is now on the further development of these basic functionalities, for example through the improved "Massive Multi-Antenna Functionalities" (Massive MIMO) and the use of artificial intelligence. The combination of these two technical processes forms the core of AIMM - Artificial Intelligence-enabled Massive Multiple-input multiple-output.

Goal: The aim of AIMM is to analyse "conventional" signal processing methods, as they are commonly used today, and to compare them with new artificial intelligence-based methods that are being developed as part of the project.

Intended outcomes: The AIMM consortium aims to achieve radical performance improvements and efficiency dividends for 5G's Radio Access Network (RAN) and beyond through advanced antenna array (Massive MIMO) and reconfigurable intelligent surface (RIS) technologies, driven and controlled by the latest advances in artificial intelligence and machine learning. During the project, new concepts will be created and investigated and evaluated using computer simulations. In addition, individual selected components will be implemented and demonstrated.

Expected impact: The knowledge gained in the project will be used to incorporate German and European requirements into the further development of 5G. International cooperation is of great benefit to achieve this.

Tags: Testbeds, AI, algorithms, antenna configurations, Radio Access Network, RAN, antenna array, CELTIC-NEXT, EUREKA

2 YEARS DURATION

October 2020 - September 2022

10 PARTNERS

British: BT; Vilicom UK Ltd; University of Bristol; Loughborough University; InterDigital Europe Limited (project coordinator)

Canadian: ThinkRF; CEMWorks

German: Nokia Bell Labs Stuttgart; Universität Stuttgart; IMST GmbH

€ 0.8 MILLION FUNDING

The total project costs are € 3.2 million, of which € 0.8 million will be funded.

CELTIC-NEXT

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