

XGMF 6G 無線技術プロジェクトにおける AI とデジタルツインの活用 WG の取り組み

Recent Activities of AI and Digital Twin WG in XGMF 6G Radio Technology Project

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概要

本発表では、XG モバイル推進フォーラム(XGMF: XG Mobile Promotion Forum) 配下の 6G 無線技術プロジェクトにおける「AI とデジタルツインの活用ワーキンググループ(WG: Working Group)」の活動について紹介する。6G の実現には、通信技術の進化に加え、人工知能(AI: Artificial Intelligence)や機械学習(ML: Machine Learning), デジタルツイン技術の導入が不可欠である。本 WG では、無線技術への AI/ML やデジタルツインの適用に関する標準化動向や技術動向、国内の研究開発の取り組みをまとめた Beyond 5G 白書「AI/ML and Digital Twin Technologies」の策定に取り組み、2025 年 5 月に初版を公開した。また、AI 学習用の共有データセットの構築に向けた議論を開始した。本発表では、白書の概要と共有データセット構築に関する議論の進捗状況について報告する。

表 Beyond 5G 白書「AI/ML and Digital Twin Technologies」初版に掲載されている研究開発の取り組み

Contributor (1st author)	Contents Title
Nokia	Scalable AI/ML for Radio Cellular Access
Panasonic Holdings	Study on Training Collaboration at UE- / NW-side for CSI Compression with Two-sided AI/ML Model
NTT	Proof-of-concept for AI-native Air Interface toward 6G
KDDI Research	Neural Network-based Digital Pre-distortion for Wideband Power Amplifiers using DeepShift
NTT	AI Calibration Network under Hardware Limitations
Huawei Technologies Japan	Performance Requirements and Evaluation Methodology for AI and Communication in 6G
KDDI Research	Study on AP Clustering with Deep Reinforcement Learning for Cell-Free Massive MIMO
Sharp	Cross-layer Access Control Techniques using AI
NEC	AI-based Application-aware RAN Optimization
KDDI Research	AI Ops for Autonomous Network
NEC	Logic-oriented Generative AI Technology for Autonomous Networks
Huawei Technologies Japan	In-Network Learning for Distributed RAN AI, ~Distributed LLMs via Latent Structure Distillation~
NTT	Throughput Prediction Technology for 28 GHz Channels using Physical Space Information
Tokyo Denki University	AI/ML-based Radio Propagation Prediction Technology
KDDI Research	AI-Based Radio Propagation Modeling for Wireless Emulator
NTT DOCOMO	6G Simulator Utilizing Future Prediction Control Technology Based on AI/ML
NTT DOCOMO	Optimization of 6G Radio Access Using Digital Twin
Osaka University	Digital-Twin for and by Beyond 5G
Huawei Technologies Japan	Task-Oriented 6G Native-AI Network Architecture

Abstract

This presentation introduces the activities of AI and Digital Twin working group (AI-DT WG) in 6G Radio Technology Project of XG Mobile Promotion Forum. AI-DT WG has been engaged in activities for getting the beyond 5G white paper “AI/ML and Digital Twin Technologies” ready for the world. AI-DT WG also launched the discussion for establishing a shared dataset for AI training. This presentation provides an overview of the white paper and the status of the discussion for shared dataset establishment.