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

6G の実現には，通信技術の進化に加え，人口知能(AI)や機械学習(ML)，デジタルツイン技術の導入が不可欠である．XG モバイル推進フォーラム(XGMF)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)」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白書「AI/ML and Digital Twin Technologies」の策定に取り組み，2026 年 4 月に第 2 版を公開した．本発表では，本 WG の活動および白書の概要を紹介する．

表　XGMF 白書「AI/ML and Digital Twin Technologies」第 2 版に掲載されている研究開発の取組み

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	Hardware-Efficient Neural Network Digital Predistortion for Terahertz Power Amplifiers Using DeepShift and Pruning
NTT	AI Calibration Network under Hardware Limitations
Huawei Technologies Japan	Performance Requirements and Evaluation Methodology for AI and Communication in 6G
KDDI Research	AI-based Efficient Spatial Beam Prediction in Multi-TRP mmWave Communication Environments
KDDI Research	AI/ML Based Blockage Prediction Using Beam Measurement Reports for mmWave V2X Communication Systems
Ericsson	AI/ML 6G channel state information reference signal (CSI-RS) overhead reduction
Ericsson	A Transformer Inspired AI-based MIMO receiver
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	AIOps 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
NTT	Physical Space Information Preprocessing for 5G Throughput Prediction on 28 GHz Channels
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

Beyond advances in communication technologies, AI/ML and digital twin technologies are key enablers for 6G. The AI and Digital Twin Working Group under the XGFM 6G Wireless Technology Project has published the second edition of its white paper, “AI/ML and Digital Twin Technologies,” in April 2026. The paper summarizes global standardization trends, technological developments, and domestic R&D activities. This presentation provides an overview of the WG’s activities and the key highlights of the white paper.