MiFuture News

Industry news, papers and events related to 6G & MIMO

December 2024

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MiFuture News: Monthly Updates on 6G and MIMO Technologies

MiFuture News is a monthly publication of the MiFuture project, complementing the MiFuture Newsletter, which will be published every six months. While the Newsletter includes internal project updates, MiFuture News features articles and information from external sources freely available on the internet.

This publication aims to gather the most interesting industry news, relevant technical papers, and upcoming events related to 6G and MIMO technologies to share with supervisors and PhD students within the project.

If you come across any interesting news, please share it with us for inclusion in the next issue.

Industry news

Building the Future of 6G Mobile Networks with Causal AI

December, 6 - As research efforts in Mobile Wireless Networks (MWNs) transition from 5G to 6G, one of the most promising transformations is the integration of Artificial Intelligence (AI) as a native element of these networks. Unlike in previous generations, where Machine Learning (ML) and AI could be incorporated later for specific tasks, 6G envisions AI as a core component from the outset, driving network planning, operation, and optimization. To fully realize this vision, AI systems must be both robust and explainable, ensuring trust and reliability in their applications.

5G Americas Publishes Comprehensive Insights on AI's Role in Cellular Networks

December, 10 - 5G Americas, the voice of 5G and beyond for the Americas, has released a groundbreaking white paper titled Artificial Intelligence in Cellular Networks. This document dives into the transformative potential of AI/ML across telecommunications networks, emphasizing its pivotal role in advancing efficiency, scalability, and innovation across the evolving 5G landscape.

NGMN says 6G radio must be measurably better than 5G

December, 3 - NGMN, an Alliance of mobile operators, has produced a guideline paper aimed at 3GPP to ensure that any new Radio Access Technologies (RAT) proposed for 6G standards do indeed deliver cost, performance, customer experience and even revenue growth opportunities for mobile network operators.

Telefonica Germany and AWS Partner to Explore Quantum Technologies for Mobile Networks and 6G Development

October, 18th - Telefonica Germany, in partnership with Amazon Web Services (AWS), is piloting quantum technologies to enhance its mobile network capabilities. This initiative aims to optimize mobile tower placement, implement quantum encryption for network security, and explore quantum-driven innovations for future 6G networks.

The collaboration reflects a proactive approach to leveraging quantum technology prototypes in anticipation of their mainstream adoption..

2025 6G: A look forward

December 9 - 6G work is dominated today by research, but the next two years will see the balance shift from research to actual development. The industry has aligned on the timing of the first implementable standard for 6G to be complete no earlier than March of 2029 — so we have a ways to go. The list of enabling technologies that got lots of attention a few years ago has gone through some degree of cultivation.

Research project in 6G receives funding from the Swedish Research Council

November 15 - The Swedish Research Council recently presented awarded grants in natural and engineering sciences in 2024. Musa Furkan Keskin, researcher at the Communication Systems unit at the Department of Electrical Engineering, was granted SEK 4.4 million in starting grants over 4 years. Hear him talk more about the project and the significance of the grant.

mmWaves bring interconnect challenges to 5G and 6G

November, 5 - Data demands keep pushing for more bandwidth in wireless networks, and this trend will surely continue. AI, autonomous vehicles, AR/VR, and other technologies will see to that. The mmWave spectrum allocated for 5G can meet the bandwidth needs, but not without economic and technical tradeoffs.

Global MBBF 2024: Huawei announces several new innovations to embrace opportunities of the mobile AI era

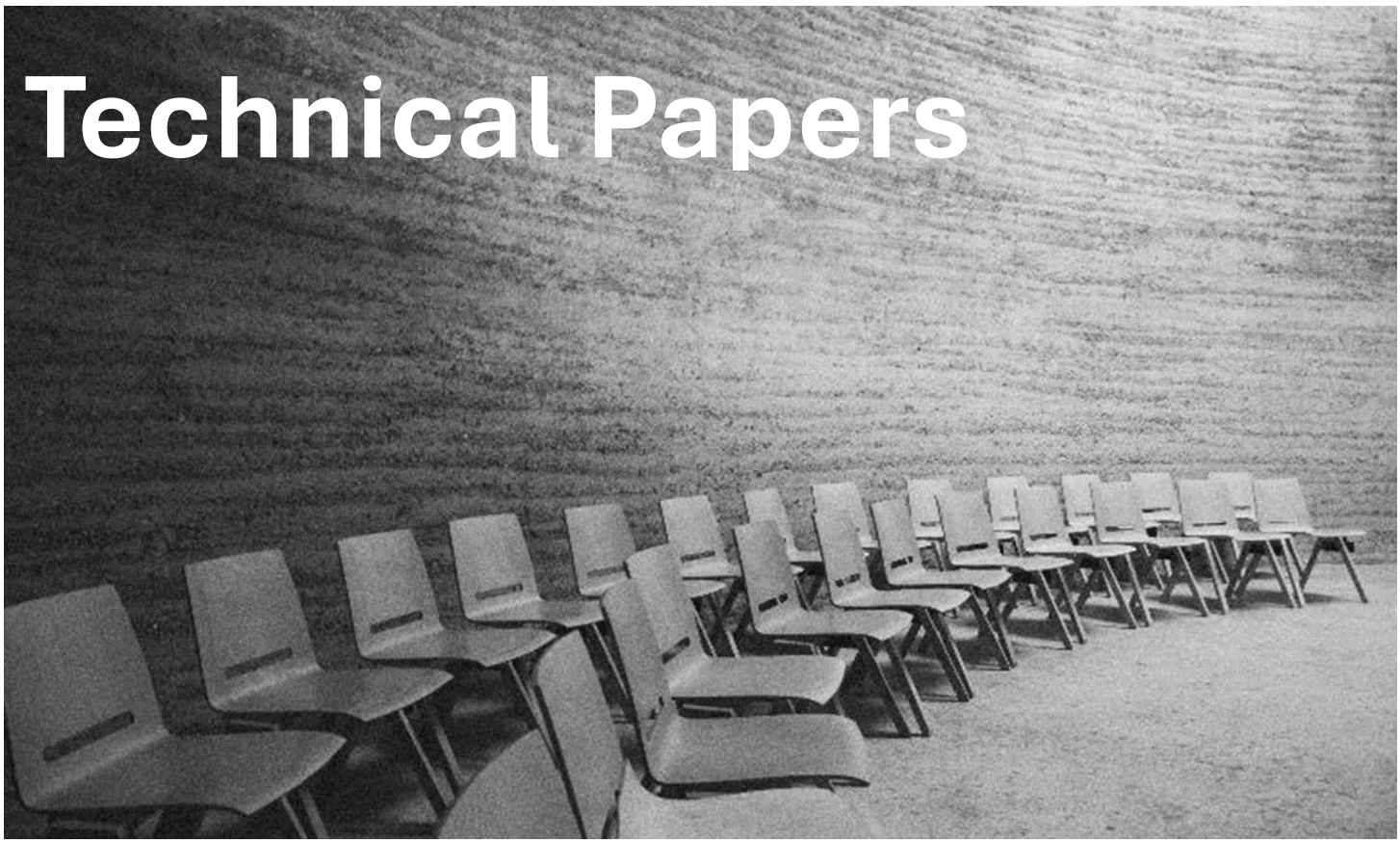
November, 4 - Yang Chaobin, Huawei board member and president of ICT products and solutions, delivered a keynote speech on 31st October 2024 at the Global MBB Forum 2024, saying, "The upcoming mobile AI era will create huge opportunities for the mobile industry and profoundly shape the decade to come..

The LICRIS Research Project: Building the 6G Radio Channel

December, 9 - Reconfigurable intelligent surfaces (RIS) will be an important technology pillar of the next 6G mobile communications standard. The objective is to use RIS to actively control radio channels, which until now have always been passive.

SynaXG Joins AI-RAN Alliance to Advance AI-Powered RAN Innovation

December, 9 - SynaXG, a leading provider of AI-RAN solutions, announced its membership in the AI-RAN Alliance, a collaborative initiative aimed at integrating artificial intelligence (AI) into cellular technology to advance radio access network (RAN) technology and mobile networks.



Artificial Intelligence in Cellular Networks

5G Americas

The increasing complexity of cellular networks, driven by diverse 5G use cases and massive IoT deployments, demands real-time decision-making and adaptive resource allocation. Traditional approaches are inadequate, making AI essential for optimizing network performance, efficiency, and user experience across all layers. At the physical layer, AI enhances spectral efficiency and signal quality, while in higher layers, it manages tasks like scheduling, mobility, and network slicing. Discriminative AI excels in lower layers for precision tasks, whereas Generative AI, though emerging, offers innovative solutions for customer interactions and dynamic operations. Ensuring AI's trustworthiness, addressing privacy, bias, and explainability is crucial for reliable, secure networks..

Trends and Developments in Open RAN

5G Americas

Open RAN is transforming telecommunications by shifting from proprietary to open, modular architectures, fostering multi-vendor interoperability, reducing costs, and driving innovation. Its cloud-native design enables scalability, AI/ML-driven analytics, and streamlined management. Open RAN supports diverse technologies, including beamforming, energy-saving features, and Non-Terrestrial Networks (NTNs) like satellites, enhancing global connectivity and sustainability. While integration of multi-vendor components poses challenges, collaborative efforts and supportive policies are accelerating adoption. Transitioning from greenfield to brownfield deployments, Open RAN is modernizing networks, promoting flexibility, efficiency, and innovation. With ongoing research into intelligent RAN principles, Open RAN is poised to shape future 6G networks and beyond.

The Programmable 5G Network and API Ecosystem

5G Americas

The cellular telecom industry is undergoing a transformation driven by network virtualization and IT advancements like cloud computing, containerization, and modular services. This convergence enables programmable networking through Service-Oriented Architecture, offering “as a Service” (aaS) capabilities via standardized APIs. Initiatives like GSMA Open Gateway and Linux Foundation CAMARA are establishing a secure, simple, and scalable API framework for application developers. This shift could generate $100–$300 billion in industry revenue within 5–7 years, requiring collaboration among developers, enterprises, and vertical players. North American stakeholders must focus on standards-based APIs, privacy, and security to foster ecosystem growth and unlock this opportunity.

EUROPEAN VISION FOR THE 6G NETWORK ECOSYSTEM

6G-IA Vision Working Group, 6G SNS IA

This white paper outlines global efforts to develop and standardize 6G networks, targeting a commercial launch by 2030. It emphasizes Europe's proactive role, led by the 6G-IA and SNS-JU, in advancing 6G R&D and addressing societal, environmental, and economic challenges. Key 6G advancements include native AI integration, ISAC, and enhanced cybersecurity, with a strong focus on sustainability and energy efficiency. Six use case families—Immersive Experience, Collaborative Robots, Physical Awareness, Digital Twins, Fully Connected World, and Trusted Environments—are highlighted, alongside specific KPIs. The paper calls for aligning global standards, integrating sustainability metrics, and fostering an interconnected ecosystem for 6G-enabled smart networks and services.

Beyond 5G White Paper Supplementary Volume Cell-Free Distributed MIMO

XG Mobile Promotion Forum

The widespread adoption of 5G since 2020 has established mobile communication as vital societal infrastructure, enabling the Internet of Things (IoT) and cyber-physical systems (CPS) that connect people and devices. Future mobile systems must address social challenges and ensure safe, prosperous living. Cell-Free MIMO, or distributed MIMO, is a key technology for advancing mobile networks by reducing cell interference and improving connectivity in challenging environments. However, technical hurdles remain, including scalable signal processing, fronthaul capacity and efficiency, effective high-frequency coverage, operational flexibility, and real-world demonstrations. Addressing these challenges is crucial for realizing the next-generation mobile communication system.


Events


5th IEEE
International Symposium on
Joint Communications & Sensing
January 28 - 30, 2025
In Finland & Streaming Worldwide

IEEE WCNC

IEEE Wireless Communications and Networking Conference

24-27 March 2025 // Mico Milano Congressi, Milan, Italy

6G Horizons: Bridging Beyond Wireless

IEEE ComSoc
IEEE Communications Society

International Workshop on Resilient 6G Networks (WResNet 6G)

24 March 2025

IEEE 6G Summit Dresden 2025

May 14–15, 2025 in Dresden, Germany

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6G Summit

Discover the future of mobile networks at the 6G Summit, where industry stakeholders gather to envision the next generation of connectivity.

Industry stakeholders are already talking about the next generation mobile networks, known as **6G**, and what this might look like. Many research and white papers have already been published by reputable organisations—from vendors and CSPs to standards bodies and universities—that discuss the potential 6G technologies represent. Partnering with **ATIS** and **Next G Alliance** provides access to valuable insights in the USA and data on global telecommunications.


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