

Editorial

We present the first issue of the fifteenth volume of the **Signals and Telecommunication Journal** with the following research.

In the opening paper, “**Pareto-Optimal Sparse Array Synthesis for Fractal-Inspired UWB-MIMO Antennas: Balancing Hardware Complexity and Radiation Performance in 5G/IoT Systems,**” the authors presented a fractal inspired ultra wideband (UWB) multiple input multiple output (MIMO) antenna design framework integrated with multi objective optimisation for next generation 5G, IoT, and wireless communication systems. They used Pareto front analysis to systematically characterize fundamental trade-offs in sparse array synthesis. The results support multi objective optimisation as a physics grounded methodology in 5G/6G infrastructure.

In the second paper, “**Analysis of Terahertz Orbital Angular Momentum Communications for 6G: Propagation Constraints, Atmospheric Windows, and Deployment Feasibility,**” the authors studied the terahertz (THz) communications leveraging orbital angular momentum (OAM) for next generation 6G wireless systems. This work presented a physics based simulation dataset comprising 270,000 samples across four deployment scenarios. The evidence proved that the THz OAM systems are inherently range limited (<100–500 m), environment sensitive, and require operation within specific atmospheric windows.

In the final paper, “**A Dual-Method Framework for Churn Prediction and Customer Segmentation in Telecommunications Using SVM and K-Means Clustering,**” the authors examined machine learning approaches for predicting customer churn and segmenting customers in the telecommunications sector. The Support Vector Machine (SVM) with a radial basis function kernel modeled nonlinear relationships between customer attributes and churn behavior. The results demonstrate that effective churn management requires integrating predictive accuracy with nuanced customer understanding.

We hope that the research published in this issue represents technical advances in telecommunications research.

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