Editorial

We are pleased to present the second issue of this volume of ***Progress in Signals and Telecommunication Engineering*,** featuring a diverse collection of high-quality research detailed below.

The issue opens with the paper, "**Robust Change-Point Detection of Tactical Engagement Transitions in Underwater Telemetry Using Multimethod Statistical Analysis**." In this study, the authors develop and evaluate a robust, multimethod change-point detection framework designed to accurately identify operational transitions in continuous underwater telemetry. By applying seven complementary statistical approaches including CUSUM, PELT, binary segmentation, Bayesian inference, kernel detection, ruptures style segmentation, and multivariate Mahalanobis analysis to a comprehensive 12,000 observation dataset, the study demonstrates exceptional cross method convergence. The results establish that the proposed framework provides rigorous cross validation, ensuring that the identified boundaries reflect genuine features of the underlying telemetry dynamics rather than algorithmic artifacts.

The second paper, "**Uncovering Temporal Regimes and Spatiotemporal Patterns in Antenna Structure Registrations,**" examines 124,811 Antenna Structure Registration (ASR) records across the United States from 1996 to 2012. The analysis reveals a strong, statistically significant monotonic upward trend accompanied by weak seasonality. Notably, the registration process is shown to be highly non-stationary, characterized by multiple structural breaks converging around 2011–2012 and two persistent latent regimes (low and high activity) with transition persistences exceeding 94%. Ultimately, this study demonstrates that the evolution of antenna infrastructure is a complex, regime-dependent, and geographically heterogeneous process, establishing a foundational framework for future spatial and temporal analyses.

The final paper, "**Multidimensional Evaluation of Telecommunication Network Quality: Construction and Empirical Analysis of the Total Network Quality Index (TNQI),"** introduces and empirically validates the Telecommunication Network Quality Index (TNQI). This composite measure integrates three heterogeneous network performance indicators signal strength (dBm), latency (ms), and packet loss (%) into a unified 0–100 quality scale. Employing directional min max normalization, equal weight aggregation, Pearson and Spearman correlation analyses, weighted reliability scoring, and quartile based classification, the authors show that multidimensional integration via the TNQI yields a more comprehensive and interpretable representation of network quality than any individual key performance indicator (KPI). This work establishes a reproducible analytical foundation for network monitoring, technology comparison, tracking temporal degradation, and early-warning applications.

We believe the papers in this issue make significant and timely contributions to telecommunication engineering, and we hope readers find this collection both insightful and valuable for their research and practical applications.

Editors