

# A note on using generative tools for research papers at the Infocommunications Journal

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**T**HERE is a new emerging trend of using large language model-based applications – such as ChatGPT, Bard, Claude or LLama – in the research and innovation processes. This reaches from data processing through writing (parts of) reports to using them in reviewing scientific articles.

The policy of Infocommunications Journal is to follow general guidelines of professionalism and the Codes of Conduct provided by ACM, IEEE and others. When it comes to the usage of ChatGPT and similar tools, they should be used as professional tools, as these make work easier. Still, authors should make sure that the output is scientifically supported and in general, true. When it comes to text editing, both authors and reviewers can use them for *light text-editing* purposes. When authors generate text or multimedia content with such tools, it must be properly quoted and cited, following the publication rules that are anyway applicable for works not part of the authors' contribution.

With this in mind, let's take an overview of the current issue – with the help of ChatGPT, and manual verification, indeed.

Marwah Haleem Jwair and Taha A. Elwi propose a metasurface antenna structure for 5G communication networks. They demonstrate that the proposed antenna design, utilizing twelve unit metasurface unit cells, effectively miniaturizes the antenna size to 30x35mm<sup>2</sup> while covering the frequency bands from 3.15GHz-3.63GHz and 4.8GHz-5.1GHz. The numerical simulations validate the antenna's performance, showing improved impedance bandwidth and achieving gains of 3.5dBi and 4.8dBi at 3.5GHz and 5GHz respectively. The proposed antenna is deemed highly suitable for modern wireless communication networks.

The paper by András Mihály and László Baczárdi focuses on the use of satellite channels in creating a quantum network with extended coverage compared to optical fiber networks. By minimizing the number of satellites required for an efficient quantum network, the costs associated with launching and maintaining satellites can be reduced, enabling a more affordable quantum internet. The authors present an optical transmittance-based routing algorithm that facilitates successful quantum entanglement transfer between terrestrial nodes. They present the performance differences between various satellite architectures and systems, highlighting the potential of non-continuous communication channels in realizing a quantum network over sparsely populated satellite systems.

In their paper, Naseer-Al-Imareen and Gábor Lencse explore the impact of path QoS metrics and path weight settings on the throughput aggregation capability of the MPT network layer multipath communication library. The study involves testing the library's channel aggregation capability using both symmetric and asymmetric paths, while considering various QoS metrics such as latency, transmission speed, packet loss rate, and jitter. The research findings indicate that the distribution of outgoing packets based on weights contributes to achieving a tunnel throughput close to the sum of the individual path throughputs. However, inappro-

priate weights and degraded performance in one of the paths can negatively affect the tunnel's throughput.

Gergely Hollósi and István Moldován study the use of Ultra Wideband (UWB) communication for clock synchronization in Time-Sensitive Networking (TSN) applications. Their paper explores wireless synchronization possibilities using UWB, which offers high accuracy timestamping even in the presence of multipath propagation. Their evaluation uses affordable hardware, and they reach sub-10-nanosecond accuracy, which is comparable to wired solutions. The paper highlights UWB as a cost-effective and wireless solution for accurate Precision Time Protocol (PTP) master clock synchronization, with potential for further improvements in synchronization accuracy.

Next, Dubem Ezech and Jaudelice de Oliveira present a framework for anomaly detection in SDN environments using a Generative Adversarial Network (GAN) ensemble algorithm. Their contributions include proposing an SDN Controllerbased framework that deploys the GAN ensemble approach for network anomaly detection. The authors evaluate the framework's performance using both publicly available datasets and the newly created dataset by themselves, demonstrating its potential for detecting a wide range of anomalies. Their evaluation is conducted on a real testbed with geographically separated nodes, adding to the robustness of the findings.

Sandor R. Repas analyzes the encryption capabilities of ARM-based single board microcomputers. His study evaluates ten different microcomputers for encryption tasks and concludes that even the slowest SBCs are sufficient for normal applications. His recommendations are provided based on performance characteristics, and the study also examines the random number generators of the microcomputers. Overall, Sandor's paper highlights the suitability of these microcomputers for encryption applications.

Khadija Touya et. al. introduces a game theoretic framework to control user behavior on social networking sites in their pursuit of popularity. By formulating the competition as a non-cooperative game, their study aims to find an equilibrium point. Their focus is on solving the popularity competition problem and proposing an efficient algorithm to learn the equilibrium point.

With this overview, let us all enjoy the summer – and the Infocommunications Journal papers in the 2<sup>nd</sup> issue of 2023.



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