

Dear Editor,

We would like to submit the manuscript "PQBench: Post-Quantum Encrypted Network Traffic Classification Benchmarking" for consideration for publication in IEEE Journal on Selected Areas in Communications' Quantum Series: Quantum Communications and Networking issue.

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This paper details the first comprehensive framework for benchmarking the classification of encrypted Internet traffic using PQC algorithms. We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere. Furthermore, by being solely a network-based framework and utilizing application-layer protocols, there is no apparent similarity with other papers, except for our affiliations and abbreviations. The manuscript substantially extends a conference paper of ours that was presented in the IEEE International Conference on Communications (**ICC**-2025) and will appear in the conference proceedings (an attachment of the submitted letter will be added to alongside the rest of the paper submission files).

Currently, post-quantum cryptography algorithms are being integrated into modern Internet systems, adding additional layers of complexity to the already intricate task of encrypted traffic classification. In this paper, we set the first benchmarks for network-based classification results of post-quantum encrypted traffic. It introduces two novel open-source datasets for enabling PQC existence classification, underlying client environment classification, such as the browser and the operating system used in communication, and the classification of the Key Encapsulation Mechanism algorithms used in the session encryption process. This is significant because establishing these baseline benchmarks will allow for deeper exploration of the impact post-quantum cryptography has on internet traffic.

We believe that this manuscript is appropriate for publication by IEEE Journal on Selected Areas in Communications' Quantum Series: Quantum Communications and Networking because it delivers a novel approach to an important aspect of secure data transmission in a PQC-integrated networking ecosystem, which can shape it to meet the demands of future generations, and lead to creating efficient quantum communications.

We have no conflicts of interest to disclose.

Thank you for your consideration of this manuscript.

Sincerely,

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