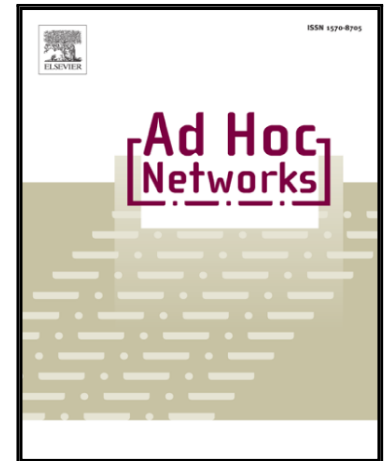


Accepted Manuscript

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PII: S1570-8705(18)30204-X
DOI: [10.1016/j.adhoc.2018.05.003](https://doi.org/10.1016/j.adhoc.2018.05.003)
Reference: ADHOC 1671



To appear in: *Ad Hoc Networks*

Please cite this article as: Ludovico Ferranti, Francesca Cuomo, Stefania Colonnese, Tommaso Melodia, Drone Cellular Networks: Enhancing the Quality of Experience of Video Streaming Applications, *Ad Hoc Networks* (2018), doi: [10.1016/j.adhoc.2018.05.003](https://doi.org/10.1016/j.adhoc.2018.05.003)

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Drone Cellular Networks: Enhancing the Quality of Experience of Video Streaming Applications

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Abstract

This article addresses the problem of delay mitigation for video streaming applications in congested cellular macro-cells by using a mobile micro-cell mounted on an Unmanned Aerial Vehicle (UAV). Small-scale UAVs are at a mature stage of development and can carry lightweight commercial micro-cells with small form factor. The mobile micro-cell is used to offload users from a congested macro-cell to optimize the bandwidth usage of video streaming applications. The paper proposes algorithms and comprehensive design criteria for user offload selection (selecting what users need to be offloaded to the micro-cell) and drone positioning (selecting the position of the UAV that minimizes the network delay). The effectiveness of the proposed criteria is evaluated through extensive performance analysis. We show that the performance increases consistently in terms of bandwidth requests mitigation and average delay reduction under different system configurations.

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