*Article*

**Exploring Smartphone-Based Edge Computing for AI Inference using Real Testbeds**

**Matías Hirsch 1, Cristian Mateos1, and Tim A. Majchrzak 2\***

1 ISISTAN (UNICEN-CONICET), Tandil, Buenos Aires, Argentina; {matias.hirsch,cristian.mateos}@isistan.unicen.edu.ar

2 University of Agder, Kristiansand, Norway; tmaj@ieee.org

**\*** Correspondence: tmaj@ieee.org

Dear Editors,

We have submitted our research article to *Sensors* and kindly ask for your consideration.

In our article, we combine work on smartphone-based edge computing with real-time AI inference. The body of knowledge on edge computing clusters based on regular smartphones is growing. At the same time, the workloads for artificial intelligence-based tasks increased rapidly. Particularly inference could benefit from edge computing. We provide a study on several low-end and mid-tier smartphones as well as on three single board computers. In our experiments we not only focus on latency as a measurement of effectiveness but also on energy efficiency. A efficiency is important due to the growing workloads and their footprint as well as the edge devices’ typical reliance on battery power. The article explains the experimental setup and the result in detail. It also discusses implications, allowing not only for replication but also to provide connecting points for future studies and real-world application of smartphone-based edge computing.

Our work fits well with the scope of *Sensors*. While not focusing on *sensing* in a narrow definition, it follows work on edge, dew and fog computing and studies utilizing single board computers published in *Sensors*. In fact, we partly build on the article “Speeding up Smartphone-Based Dew Computing: In Vivo Experiments Setup Via an Evolutionary Algorithm” we published in Sensors 23(3)[[1]](#footnote-2), which is similarly themed. Therefore, we also provide continuity[[2]](#footnote-3).

Our team comprises researchers with various backgrounds:

Matías Hirsch is researcher at CONICET and assistant professor in Platforms and Operating Systems related subjects at the Systems Engineering career at UNICEN. His research interests are in topics related to parallel and distributed computing, sustainable computing, mobile computing, IoT and edge intelligence

Cristian Mateos…

Tim A. Majchrzak is a full professor for information systems. His research focusses on software engineering, in particular mobile information systems and domain-specific application of technology.

We confirm that neither the manuscript nor any parts of its content are currently under consideration for publication with or published in another journal.

All authors have approved the manuscript and agree with its submission to *Sensors*.

There is no specific conflict of interest to declare from our side. Moreover, we cannot think of any conflict of interest of potential reviewers. In case of any questions, please kindly get back to us.

Thank you very much for your consideration. We are looking forward to hearing from you.

Best Regards

Matías Hirsch Cristian Mateos Tim A. Majchrzak

1. https://doi.org/10.3390/s23031388 [↑](#footnote-ref-2)
2. Even more fundamental work leading to the current article was published by us in Electronics 10(16), https://doi.org/10.3390/electronics10162006. [↑](#footnote-ref-3)