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ACCEPTED MANUSCRIPT

# Expediting assessments of database performance for streams of respiratory parameters

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**Abstract**

A new methodology is proposed to compare database performance for streams of patient respiratory data from patients in an intensive care unit. New metrics are proposed through which databases may be compared both for this and similar streaming applications in the domain of the Internet of Things. Studies are reported using simulated patient data for four freely available databases. The statistical technique of non-parametric bootstrapping is used to minimise the total running time of the tests. We report mean values and bias corrected and accelerated confidence intervals for each metric and use these to compare the databases. We find that, among the four databases tested, ScaleDB is an optimum database technology when handling between 200 and 800 patients in this application, while PostgreSQL performs best outside of this range. Comparing the non-parametric bootstrapping method to a complete set of tests shows that the two approaches give results differing by a few percent.

**Keywords**
database metrics performance ICU respiration IoT

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