



## Correction to: Artificial neural networks based techniques for anomaly detection in Apache Spark

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### Correction to: Cluster Computing

<https://doi.org/10.1007/s10586-019-02998-y>

The original version of this article unfortunately contained a graphical mistake in Table 4. Table 4 shows a list of performance metrics associated to the DSM1, DSM2, DSM3, and DSM4 methods proposed in the paper.

Due to a production problem, this table does not display the necessary vertical dividing lines required to distinguish the four methods. The original Table 4 intended for publication is given in this erratum. The original article has been corrected.

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The original article can be found online at <https://doi.org/10.1007/s10586-019-02998-y>.

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**Table 4** List of performance metrics for the DSM1, DSM2, DSM3, and DSM4 methods

Methods		Metrics
DSM2	DSM1	CPU utilization
		Percentage of time that the CPUs were idle during outstanding disk I/O request
		Percentage of time spent in involuntary wait by the virtual CPU
		Percentage of time that the CPUs were idle
		kvmemfree: free memory in KB on hostname
		kvmemused: used memory in KB on hostname
		X.memused: used memory in % on hostname
		kbbuffers: buffer memory in KB on hostname
		kbcached: cached memory in KB on hostname
		kbcommit: committed memory in KB on hostname
		X.commit: committed memory in % on hostname
		kbbactive: active memory in KB on hostname
		kbinact: inactive memory in KB on hostname
		kbdirty: dirty memory in KB on hostname
		Task spill: Disk Bytes Spilled
		Executor Deserialize Time
		Executor Run Time
		Bytes Read: Total input size
		Bytes Written: total output size
DSM4	DSM3	Garbage Collection: JVM GC Time
		Memory Bytes Spilled: Number of bytes spilled to disk
		Task Result Size
		Task Shuffle Read Metrics: Fetch Wait Time, Local Blocks Fetched, Local Bytes Read, Remote Blocks Fetched, and Remote Bytes Read
		Task Shuffle write Metrics: Shuffle Bytes Written and Shuffle Write Time
		Stage ID
		Task info: Launch Time, Finish Time, Executor CPU Time, Executor Deserialize CPU Time, Input Records Read, Output Records Written, Result Serialization Time, Total Records Read for Shuffle, and Total Shuffle Records Written

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