

Peer Review

Review of: "Identification of Crowds Using Mobile Crowd Sensing (MCS) and Visualization with the DBSCAN Algorithm for a Smart Campus Environment"

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The article "Identification of Crowds Using Mobile Crowd Sensing (MCS) and Visualization with the DBSCAN Algorithm for a Smart Campus Environment" explores the use of Mobile Crowd Sensing (MCS) technologies and visualization algorithms like DBSCAN to identify and manage crowding in smart university campuses. The primary goal is to evaluate the feasibility of a mobile application capable of detecting and visualizing crowd formations, offering solutions to prevent accidents and manage public spaces. The study is motivated by the need for cost-effective alternatives for Peru's cities and campuses, where smart city technology implementation is limited.

Critical Analysis of the Content

Relevance of the Topic and Integration with Existing Literature

- The article aligns well with ongoing research on smart cities and campuses, referencing similar studies that employ MCS, IoT, and Big Data analytics. It acknowledges prior work on crowd detection using technologies like computer vision and predictive algorithms.
- References to international research (e.g., CrowdTelescope for crowd flow prediction and CrowdSenSim for simulating crowd behavior) add academic value and contextual depth.

Compatibility of the Topic with Other Specialized Studies

- The study continues research into digitalizing campuses as microcosms of smart cities, similar to the University of Málaga's approach. The topic is compatible with other research on using mobile sensors for urban environment monitoring.

Research Methodology

- **Strengths:**

- The combination of qualitative (surveys) and quantitative (randomly generated data simulations) methodologies is well-justified.
- The use of DBSCAN for clustering is suitable given the irregular distribution of data.
- **Limitations:**
 - Reliance on simulated data limits the validity of conclusions. Implementing a real application would provide more robust data.
 - The criteria for selecting parameters (e.g., epsilon and min_samples) in the DBSCAN algorithm are not detailed.

Conclusions and Their Foundation

- The conclusions are consistent with the data analysis and address the proposed objectives. The study provides a solid basis for extending research into larger urban contexts.
- However, there is a need for a stronger justification of the economic and technical viability of the proposed solution for broader implementation.

Improvement Suggestions

- Develop a pilot application to collect real-world data and test functional feasibility.
- Integrate additional data sources, such as weather conditions or transportation flows, to improve prediction accuracy.
- Evaluate other clustering algorithms for a detailed comparison with DBSCAN.

Suitability for Publication

- The topic is relevant and well-aligned with research on smart cities and campuses. The scientific approach is appropriate for a specialized journal, but implementing the suggested improvements would significantly enhance the impact and quality of the work.

Declarations

Potential competing interests: No potential competing interests to declare.