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Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	Ms_BJAST_18907
Title of the Manuscript:	APPLICATION OF ANT COLONY OPTIMISATION ALGORITHM ON SOLID WASTE COLLECTION: A CASE OF UNIVERSITY OF PORT HARCOURT
Type of the Article	ORIGINAL RESEARCH ARTICLE

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<u>Compulsory</u> REVISION comments		
<u>Minor</u> REVISION comments	The paper proposes a technique based on Ant Colony Optimization (ACO) and applies it to a real world route optimization problem. In their work, they integrate ACO with Floyd-Warshall's all pairs shortest path algorithm. Overall the paper is well written and technically sounds. My comments are listed below. In the analyses, the weight function between the nodes in the graph is chosen as Euclidean distance. Why did not use actual route distance? You can obtain this information by using Google Map's API. Do you think your algorithm is the best for such problems? Is there any other works related to the problem presented in the paper? You need to present some related works about applications of ant colony optimization to path optimization problems. Is the distance only factor affecting desirability (Eq.2)? How do you prove that your algorithm is effective?	C1. Why did you not use actual route distance? As stated (in lines 79-80) during data collection the Euclidean (or Taxicab) distances between waste collection points were also obtained using Google earth with respect to this research; it was considered better and more convenient when considering the road situation and structure within the study area and as such gave an approximation of the actual route distance. C2. Do you think your algorithm is best for such problem? For the purpose of the research the Ant Colony Optimization Algorithm was applied to see its applicability to the research and based on the results obtained from the research, the applied algorithm was able to optimize the distance usually taken by waste collectors within the study area and for now we will consider it as the best option. C3. You need to present some related works about applications of ant colony



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	How about the future work? What other types of problems can be solved by the proposed technique? Can you extend your algorithms with some additional features? Is the proposed algorithm scalable and performance efficient?	optimization to path optimization problems. Two additional references as per the above question are found on page 4. Karadimas, Papatzelou and Loumos (2007) presented an ant colony system (ACS) for determining waste collection routes for the Municipality of Athens (MoA). The collection involves 72 loading spots. When compared with empirical model the improvement obtained was approximately 25.6%. Also, Bell and McMullen (2004) applied Ant Colony Optimization Technique on Vehicle Routing problem. C4. Is the distance only factor affecting desirability? From literature with regards to the Ant Colony Optimization Algorithm the distance was the only factor considered and this distance take into consideration the road network and obstructions between the collection points. That was why Floyd-Warshall's Algorithm was applied in order to obtain pairs of shortest distance between nodes. C5. How do you prove that your algorithm is effective? It was proven effective when compared with the usual collection pattern and routes taken by the waste collectors within the study area as shown in Table 2.
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		C6. How about the Future work? <i>The future work on the application of the Ant Colony Optimization (ACO) algorithm on route optimization for solid waste collection system should be extended to a larger area such as towns, cities and metropolis.</i> C7. What other type of problems can be solved by the proposed technique? <i>Travels Sales Man problems can be solved by the proposed technique.</i> C8. Is the proposed algorithm scalable and performance efficient? <i>Yes, it is scalable and efficient as suggested for future work.</i>
<u>Optional/General</u> comments		