

[ICVGIP 2016](#)

Indian Conference on Computer Vision, Graphics and Image Processing

Reviews For Paper

Paper ID 318

Title Towards Quantifying the Amount of Uncollected Garbage through Image Analysis

Masked Reviewer ID: Assigned_Reviewer_1

Review:

Question

[Summary] Please provide a short summary of the paper and its contributions.	This paper address the problem of volumetric estimation of garbage dump via computer vision techniques in metro cities (with a running example of cities in India). A new dataset for this problem was collected in the Indian cities via a crowd-sourced mobile app, and then computer vision techniques (like detection, and 3D reconstruction) are applied to estimate the volume.
[Paper Strengths] Please discuss the positive aspects of the paper. Be sure to comment on the paper's novelty, technical correctness, clarity and experimental evaluation. Notice that different papers may need different levels of evaluation: a theoretical paper may need no experiments, while a paper presenting a new approach to a known problem may require thorough comparisons to existing methods. Also, please make sure to justify your comments in great detail. For example, if you think the paper is novel, not only say so, but also explain in detail why you think this is the case.	The approaches used in this paper are pretty straight forward, and is not super novel. In my opinion, the major strength of this work is a useful application to address the concerns of pile up of garbage in many cities in the world.
[Paper Weaknesses] Please discuss the negative aspects of	1. The paper is ver low on novelty. Fairly standard approaches have been used. Though a new dataset is proposed for this problem, but I am not sure how much relevant (or challenging for computer vision

the paper: lack of novelty or clarity, technical errors, insufficient experimental evaluation, etc. Justify your comments in great detail. If you think the paper is not novel, explain why and give a reference to prior work. Keep in mind that novelty can take a number of forms; a paper may be novel in terms of the method, the problem, the theory, analysis for an existing problem, or the empirical evaluation. If you think there is an error in the paper, explain in detail why it is an error. If you think the experimental evaluation is insufficient, remember that theoretical results/ideas are essential to ICVGIP and that a theoretical paper need not have experiments. It is **not** okay to reject a paper because it did not outperform other existing algorithms, especially if the theory is novel and interesting. It is not reasonable to ask for comparisons with unpublished, non peer reviewed papers (e.g. ArXiv) or papers published

community) it will be for future research as the performance of current system is already 85%.

2. The authors have sufficiently confused between detection and segmentation terminology. I understand that word 'segmentation' can be 'literally' used to refer, but they have followed 'detection' based approaches from computer vision. I would suggest to rewrite section 4 considering the computer vision audience in mind.

3. A good baseline for 'segmenting' out the garbage from the remaining image (via a fully supervised approach) will be a scribble-supervised method. This might be required to solidify the claim regarding the need of labeling the bounding boxes for the dataset.

4. For the 3D reconstruction, authors have used SIFT for feature matching. I am not sure how SIFT based feature matching will work for the elements in garbage. I guess most of them would look alike. Not sure how much robust SIFT feature might be.

5. The goal of this work was to do volumetric estimation. It is not clear how will they remove earth from the garbage while doing this estimation?

after the ICVIP'16 deadline.	
Overall Rating	Accept
[Recommendation Justification/Request for Clarification in Rebuttal] Please explain to the AC, your fellow reviewers, and the authors your current opinion on the paper. This explanation may include how you weigh the importance of the various strengths and weaknesses you described above. Please summarize the key things you would like the authors to include in their rebuttals to facilitate your decision making. There is no need to summarize the paper.	Despite all its technical limitations, I still feel that it might be a simple and effective computer vision application for the use in developing countries. It might be worthwhile for presentation at this conference.

Masked Reviewer ID: Assigned_Reviewer_2

Review:

Question

[Summary] Please provide a short summary of the paper and its contributions.	The paper address a challenging problem of estimating the volume of garbage using a combination of classic geometric and recent machine learning techniques. This application is very useful for local cleaning authorities.
[Paper Strengths] Please discuss the positive aspects of the paper. Be sure to comment on the paper's novelty, technical correctness, clarity and experimental evaluation. Notice that different papers	<ul style="list-style-type: none"> - Focusses on a challenging problem - Has a real value to the society.

may need different levels of evaluation: a theoretical paper may need no experiments, while a paper presenting a new approach to a known problem may require thorough comparisons to existing methods. Also, please make sure to justify your comments in great detail. For example, if you think the paper is novel, not only say so, but also explain in detail why you think this is the case.

[Paper Weaknesses]
Please discuss the negative aspects of the paper: lack of novelty or clarity, technical errors, insufficient experimental evaluation, etc. Justify your comments in great detail. If you think the paper is not novel, explain why and give a reference to prior work. Keep in mind that novelty can take a number of forms; a paper may be novel in terms of the method, the problem, the theory, analysis for an existing problem, or the empirical evaluation. If you think there is an error in the paper, explain in detail why it is an error. If you think the

- The overall method isn't very novel since they put together various well known pipelines in the process. However, the application is novel and may find its usefulness in immediate future.

<p>experimental evaluation is insufficient, remember that theoretical results/ideas are essential to ICVGIP and that a theoretical paper need not have experiments. It is <i>*not*</i> okay to reject a paper because it did not outperform other existing algorithms, especially if the theory is novel and interesting. It is not reasonable to ask for comparisons with unpublished, non peer reviewed papers (e.g. ArXiv) or papers published after the ICVIP'16 deadline.</p>	
<p>Overall Rating</p>	<p>Accept</p>
<p>[Recommendation Justification/Request for Clarification in Rebuttal] Please explain to the AC, your fellow reviewers, and the authors your current opinion on the paper. This explanation may include how you weigh the importance of the various strengths and weaknesses you described above. Please summarize the key things you would like the authors to include in their rebuttals to facilitate your decision making. There is no need to</p>	<p>I don't think this paper has any technical novelty as such but application seems interesting and useful.</p>

summarize the paper.	
----------------------	--

Masked Reviewer ID: Assigned_Reviewer_3

Review:

Question

<p>[Summary] Please provide a short summary of the paper and its contributions.</p>	<p>In this paper authors are trying to find the volume of garbage collection in a city, by just using garbage images taken at different view points. They construct a novel pipeline in which first they segment the garbage area, then they perform 3D reconstruction using 8 images of the same garbage collection taken at different view points. Finally they perform surface reconstruction and do volume estimation using it. Also they crowd-source the data collection for this task.</p>
<p>[Paper Strengths] Please discuss the positive aspects of the paper. Be sure to comment on the paper's novelty, technical correctness, clarity and experimental evaluation. Notice that different papers may need different levels of evaluation: a theoretical paper may need no experiments, while a paper presenting a new approach to a known problem may require thorough comparisons to existing methods. Also, please make sure to justify your comments in great detail. For example, if you think the paper is novel, not only say so, but also explain in detail why you think this is the case.</p>	<p>-- The volume estimation of garbage is really useful problem for society and it is well defined in the paper. -- They created a pipeline well suited for their task. Also they provide clear reasoning behind choosing each component in their pipeline. They tried various approaches for each stage in pipeline and choose the most suited one. -- The garbage dataset collected for their task will useful for computer vision community. It will be help in further advancement toward solving this problem. -- Paper is well written and is very easy to follow. Also Figure 1 nicely explain the whole pipeline. -- Provided computational analysis.</p>
<p>[Paper Weaknesses] Please discuss the negative aspects of the paper: lack of novelty or clarity,</p>	<p>- This paper is missing some ablation studies. They could try all the 3 proposed segment approaches and show how it influence the volume estimations. Same with other stages of the pipeline. -- This is not weakness but just an inquiry. Why more high capacity</p>

technical errors, insufficient experimental evaluation, etc. Justify your comments in great detail. If you think the paper is not novel, explain why and give a reference to prior work. Keep in mind that novelty can take a number of forms; a paper may be novel in terms of the method, the problem, the theory, analysis for an existing problem, or the empirical evaluation. If you think there is an error in the paper, explain in detail why it is an error. If you think the experimental evaluation is insufficient, remember that theoretical results/ideas are essential to ICVGIP and that a theoretical paper need not have experiments. It is **not** okay to reject a paper because it did not outperform other existing algorithms, especially if the theory is novel and interesting. It is not reasonable to ask for comparisons with unpublished, non peer reviewed papers (e.g. ArXiv) or papers published after the ICVIP'16 deadline.

CNN layers are not used for method 2 of segmentation instead of 3 fully connect layers? Also why RCNN was not used for the bounding box segmentation?

-- More qualitative results should be added for the final surface estimates of the garbage collections.

-- Their approach won't work for garbage beneath the ground level. It should be discussed in the paper.

Overall Rating	Accept
<p>[Recommendation Justification/Request for Clarification in Rebuttal] Please explain to the AC, your fellow reviewers, and the authors your current opinion on the paper. This explanation may include how you weigh the importance of the various strengths and weaknesses you described above. Please summarize the key things you would like the authors to include in their rebuttals to facilitate your decision making. There is no need to summarize the paper.</p>	<p>In rebuttal address the points covered in the weaknesses. Overall this is very interesting and useful problem. They propose a well suited pipeline for this task and I recommend acceptance of this paper.</p>