Title: **HA.ZEE: A Vehicular Pollutant Estimation Application Using Traffic Footage**

| **Panel/Reader’s comments** | **Actions** | **Location in the document** |
| --- | --- | --- |
| During training, are the data sizes reduced? | * Stated in the document that there are augmentation processes that modifies the image size | Section 3.2.4, Page 36 |
| Show results of demo in the manuscript | * Showed the display of the system in the results | Section 4.1: System Display, Page 43 |
| Display time the video was taken | * Date and time of video was included on the information of the figures | Section 4.3: Object Detection, Page 55, 56, 57, 58, 59 |
| Introduction incomplete. Discuss a high level overview of the research done by students. How does the thesis provide solutions to the said problems? Authors must discuss or present some RRL that PM can indeed be estimated from traffic. Discuss the advantages of using Hazee over traditional practices- how does it make air quality monitoring more efficient and/or accessible? | * Referenced RRL that was able to estimate pollutants of vehicles from crowdsourced data and Google Maps * Stated advantages in Current State of Technologies by stating that Ha.Zee could be cost-effective | Chapter 2, Page 13, 3 |
| Problem Statement incomplete. | * Added statements as how DOAS/Air Quality Monitoring Systems’ scope is on the pollutants in the air and not the ones from vehicles. | Section 1.2, Page 6 |
| Section 1.3.1. General objective - Calculate -> estimate. Also remove/revise statement 2 onwards | * replaced the stated word | Section 1.3.1, Page 6 |
| Objective 1: Replace “study” with “implement” or “explore” | * replaced the stated word | Section 1.3.2, Page 7 |
| Objective 2: “Gather a collection” -> “Collect” | * replaced the stated word | Section 1.3.2, Page 7 |
| Discuss YOLOv5 architecture in the methodology section | * Included the YOLOv5 architecture in RRL instead of Methodology to add context to YOLO | Section 2.4.1: YOLOv5, Page 15 |
| Section 3.2.1. “Identify an area’s” -> “Estimate an area’s…” | * replaced the stated word | Section 3.2.2, Page 27 |
| Why 16 batches and 300 epochs? | Explained the reasoning | Section 3.2.4: Training and Performance Testing, Page 35 |
| Why not include CH4, N2O and CO2 in your estimation? If madali lang naman icompute and averages are already included | * Included in the system * SP’s scope is now including greenhouse gases | First mention in 1.2: Problem Statement. Found throughout the whole document |
| Include table of hyperparameters and their values | * Explained the reasoning | Section 3.2.4: Training and Performance Testing, Page 36 |
| Include experimental setup | * Added section for development flow | Section 3.2.1: Development Flow, Page 27 |
| Include more information on the dataset (where the data was collected), how many videos/images, average number of tricycles, jeeps, etc, average PM in the collected images. Data distribution in short  It was mentioned in the methodology that 300 epochs were used, but R&D, only 100 epochs. | * Info on where the data was collected * Explained reasoning why 100 epochs was used instead (time constraint and potential overfitting) | Average PM is in 4.4.1, Page 61  Section 3.2.4: Training and Performance Testing, Page 35 |
| Figure 4.1. Give more info on the graph titles  Figure 4.1. Any more insights or observations? | * Added specific loss values (object, box, classification) and metric progressions (precision, recall, and mean average precision) to the graph titles * Added more insight | Section 4.2.1, Page 45 |
| Table 4.1. Why is it that Tricycle got the highest accuracy? How come car got the lowest accuracy? | * Added discussion on why the vehicles have varying accuracies | Table 4.1, Page 51 |
| Which dataset was used for training? Only those that were gathered by the authors? Include dataset distribution | * Included a section about the sample distribution | Section 3.2.2, Page 30 |
| How come no reported results on PM estimation? | * Added new section for pollutant estimation results | Section 4.4, Page 61 |
| Refrain from using Wikipedia as source of your  Study | * Instances of Wikipedia usage initially not found | N/A |
| Double check your spellings and word repetitions in  your texts.  Refrain from using the words “below and above” when  referring to a table or figure. Instead use “Figure # or Ta-  ble # ……”. It would be easier to follow. | * Replaced instances of ‘above’s and ‘below’s into proper references | Throughout multiple tables/figures |
| Page 4: Paragraph 2, line 7, expand US EPA before  abbreviating it. | * expanded | Section 1.2, Page 5 |
| Page 5:  Last sentence of general objective: “The average PM2.5  value was then be displayed……” | * edited typo | Section 1.3.1, Page 7 |
| Page 6:  •First paragraph of Scope and Limitations: “This  application… “ –> “This study… “  •What vehicles that you took pictures of? Include  the vehicles that are not part of your study.  Because you mentioned that you took pictures of  the vehicles in traffic, is there a possibility that  buses and trucks are included? If you only have  few classes of vehicles, you may specify them as  they are part of your scope. | -“application” replaced to “study”  - included vehicles that were part of the study  -included vehicles that were present on the roads, but not used in the study (i.e. vehicles) | Section 1.4, Page 8 |
| Chapter 2:  • in writing your Chapter 2, kindly connect one  paragraph to another so that there is a continuity  of the topic from one paragraph to another. Some  of the paragraphs are not connected. Please re-  read and redo some portion of this chapter. | * Some changes to how paragraphs end to connect to one another | Section 2: Review of Related Literature, Page 11  Section 2.7: Summary, Page 21 |
| Page 9:  • 2.1 Air Quality Monitoring System:  First paragraph, line 3, Zoogman  showcased in a journal.. → mention the  name of the journal  Line 7 & 9: “This system…” → what  system? Are you referring to the instrument  developed by the authors? Please be  consistent. | * Specified the journal: Journal of Quantitative Spectroscopy and Radiative Transfer * Instrument specified: TEMPO | Section 2.1, Page 11 |
| Page 12: Last paragraph: “A recent study by Li et al.  (2022) studies……” -→ Moreover, another method of  vehicle detection and recognition – via infrared image and  feature extraction was recently studied by Li et al. (2022). | Replaced sentence | Section 2.3, Page 14 |
| Chapter 3:  include Hardware tools used in the study  make a diagram on how your algorithm will work  from capturing the image to training, etc. until  getting the result. And then discuss the diagram. | * Hardware tools were included in a new subsection * Process flow diagram was created and added to research activities | Section 3.1.2; Page 26  Section 3.2.1, Page 27 |
| Page 24-25: you can label the line of codes as Listing #  and then discuss each listing. In this way, it would be  easier for your reader to follow the flow of the content of this pages. Refrain from using “below/above”, rather use  “as shown in Listing #... | * Included subsection for lines of code * Added listings numbers | Section 3.2.4; Page 37,38 |
| Page 27:  3.3 Model Applictation (check your spelling)  Line 6: “The table below…” → Table 3.1 shows  the grams of emissions per kilometer.  Make 3.3.1 Calculating the PM2.5 Emission  Estimate | * Changed spelling * Changed ‘table below’ to ‘table 3.2’ * Changed \subsubsection to \subsection | Section 3.3, Page 38, 39 |
| Page 31: Place Figure 4.1 below the paragraph that  mentioned it. | * fig 4.1 (now fig 4.2) placed below the paragraph | Section 4.2.1, Page 45 |
| Page 40: Kindly mention that the streets where you took  the pictures of the vehicles are from Iloilo City. | * Specified the cities where the roads are from | Section 4.3, Page 54 |
| Page 41:  • Mention Figure 4.4 in your text.  • Second Paragraph: Table 4.2 shows the average…… Omit “the table below shows….”.  Same comments for the succeeding pages. | * Reflected the changes from ‘below/above’ to figures and tables | Section 4.3, Page 54 |
| Chapter 4: After implementing your application on  different streets mentioned in your paper, what did you  come up with? What vehicle(s) contributed the most in  the air pollution in the city? | * Added subsection that shows average pollutants from vehicles | Section 4.4, Page 61 |
| Recommendations:   * Analyze performance on a large dataset of traffic footage from various locations and times * Compare the estimated PM2.5 emission values obtained from the developed system with traditional air quality monitoring data * Investigate the feasibility of integrating the developed system with existing air quality monitoring infrastructure | * Implemented recommendations into Chapter 5 | Chapter 5, Page 66 |
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