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| 1 | Checkmark with solid fill | You mention Mean Errors, but what are you predicting? Errors in what? Voxel intensities? Presence (y/n) of artefacts? I see lots of numbers but have no idea what it means. Give brief info, including some interpretation as to how good this is (e.g. what outcomes are required for it to be clinically applicable, or is it acceptable?). |
| 2 | Checkmark with solid fill | Abbreviation\*s\*; AI = Artificial Intelligent? |
|  | **Introduction** | |
| 3 | Checkmark with solid fill | "more than 50% of all recorded photons result in a Compton scatter fraction before capturing by detectors" Crooked sentence. You mean more than 50% is Compton-scattered? |
| 4 | Checkmark with solid fill | "dense materials in the patient's body and surrounding area and causes energy loss" The last 'and' seems to be part of the enumeration but starts a new sentence clause; confusing, rephrase. |
| 5 | Checkmark with solid fill | "which has not been declined after energy window discrimination and random coincidence correction technique" Declined? I don't know what this sentence means. |
| 6 | Checkmark with solid fill | "ASC was performed using a CT scanner to model attenuation coefficient maps (μ-maps)." Is this part of your M&M? Weird text flow. A bit of explanation of what attenuation maps are would be useful. |
| 7 | Checkmark with solid fill | "neighboring areas .. might assign negative or zero values" Do areas assign values? Or are they assigned values? |
| 8 | Checkmark with solid fill | "the quantitative interpretation of clinical diagnosis" What is that, a quantitative interpretation of a diagnosis? |
| 9 | Checkmark with solid fill | "To remove these artifacts, like giving diuretics" You mean to prevent the artefacts? |
| 10 | Checkmark with solid fill | Fig.1 caption, please explain a bit more. What am I supposed to look at? What differences should I notice? These are two subjects, I presume, with and without ASC. Colorbars are a lot different. So are values increased, or images "sharper", or more organs detectable, or what? Figure captions should give a brief explanation in a few sentences that can reasonably be understood without reading the whole text; not just a "title sentence". (Holds for many figures.) |
| 11 | Checkmark with solid fill | "Overall, this field has seen progress" What field? You refer back to something that is unclear. Here you start about μ-maps again; |
| 12 | Checkmark with solid fill | suggests that it would make more sense to re-order paragraphs (the bit about sources of artefacts can likely go before μ-maps). |
| 13 | Checkmark with solid fill | "which is limited by insufficient coincidence time". Not understandable for the target reader. |
| 14 | Checkmark with solid fill | "Further, MLAA and similar algorithms are enhanced in combination with time of  flight (TOF)" Are algorithms enhanced, or are resulting images enhanced? Be more precise. Also, TOF is new and the reader doesn't understand what this sentence means. THe next sentence repeats the same info (sloppy). |
| 15 | Checkmark with solid fill | "utilizing artificial intelligence.." Here you seem to start a new topic (AI), so why not a new paragraph? Rule of thumb: every paragraph should have a clear topic and the reader can get the gist of it by reading the first and last sentence. |
| 16 | Checkmark with solid fill | "the GAN model's performance .. has been evaluated" & "the detection and correction of 18Ga image artifacts .. have been assessed" What were the results then? |
| 17 | Checkmark with solid fill | "We will use our approach" Avoid future tense (the study is complete). |
| 18 | Checkmark with solid fill | "using both strategies" What two strategies? Deep Learning versus some gold standard? |
| 19 | Checkmark with solid fill | "we will integrate domain expertise into our deep learning framework" How? |
| 20 | Checkmark with solid fill | "The main aim of this study" You don't mention DL until the end. I think it would be useful to explicitly state here that (one of) your goal(s) is to predict, using DL, the ASC corrected (MAC) PET image based on only the uncorrected raw (NAC) image. |
|  | **M&M** | |
| 21 | Checkmark with solid fill | "from the previous study" Upon first introduction it is "a study". Preferably include the reference there immediately. Next references can then call it "the study" since it was already introduced and known to the reader. |
| 22 | Checkmark with solid fill | "a specialized set of images presenting artifacts was included" Source of those? |
| 23 | Checkmark with solid fill | "antigen (PSMA). PET/CT" One sentence, I think. |
| 24 | Checkmark with solid fill | "So, it is different patiently" Improve English. |
| 25 | Checkmark with solid fill | "This method of normalization ensures .. and assessment of metabolic activity." seems more appropriate for Discussion section. Try to focus purely on \*what\* you did in M&M. |
| 26 | Checkmark with solid fill | "From NAC to MAC, the complex MAC .. anatomy-dependent factors necessary for image correction." You seem to explain the same thing twice. And I don't really get it: you talk about textures and correction. There are two 'component maps', so if I add them up I get the original? Or I need to concatenate them? I am confused. Moreover, \*how\* do you divide it into two components? Describe it in a way that a peer can reproduce it. |
| 27 | Checkmark with solid fill | The interpretation of the ADCM map is rather unclear. What is it meant to contain, and what is its purpose, and how does it relate to those precious two "components"? Confusingly, the formula says PETNAC[x, y, z]/PETNAC[x, y, z] which equals one by definition. Moreover, what value for epsilon did you use. |
| 28 | Checkmark with solid fill | "famous normalization methods were not used" Famous? What methods? Most of this paragraph is superfluous for M&M. Basically, it suffices to describe what you did: "ADCM values were divided by 50. The resultant histograms, illustrating the distribution of maximum values both pre- and post-normalization, are depicted in Figure 5." (If that is what you did,) All the other stuff arguing that this is a good method is subjective and belongs better in Discussion. (Also try to avoid ChatGPT lingo like "careful", "ensures", "carefully", "critical"; it is okay in moderation, but let the reader decide what their scientific assessment is.) |
| 29 | Checkmark with solid fill | Fig.4 I find uninteresting (similar Fig.2A); rather obvious scaling of the x-axis. |
| 30 | Checkmark with solid fill | The subsection on 18F-FDG Datasets (incl. Fig.5 and T.2) I would present earlier to avoid confusion (like, I commented about the artifact set above). First state Materials (the stuff you used), then Methods (the stuff you did), like in a recipe (first ingredients then preparations). Also consider listing the employed relevant software (e.g. non-standard python modules with versions) as Materials (possibly appendix if it is a lot). |
| 31 | Checkmark with solid fill | "For final implementation, .. renowned .. precise results .. tailored .. specific .. specially". Again lots of Chat-GPT-like superlatives that make it sound unscientific. Don't toot your own horn how excellent and special everything is. |
| 32 | Checkmark with solid fill | "These parameters were determined by evaluating .. inherent characteristics of our medical images." I don't understand what this is saying. You 'evaluated' the dimensions and resolution to 'determine' kernel/stride parameters? |
| 33 | Checkmark with solid fill | "The Dyn-UNet model is specified with supervision heads .. with high fidelity." Sounds more like Introduction/Theory or Discussion again. I don't get what "supervision heads" are (how does one optimize intermediate layers?); this also screams for references. |
| 34 | Checkmark with solid fill | "computed kernel sizes and strides are set to four layers of [3, 3, 3] kernels ..". So this is the result of the automatic parameters selection process? |
| 35 | Checkmark with solid fill | "By adjusting the ReLU activation function". You 'adjusted' it? Or you 'set' it as the output activation function? |
| 36 | Checkmark with solid fill | "we can get the non-zero value". Avoid constructions with modal verbs like can/must/.. Here, you get \*non-negative\* values, is what you mean. |
| 37 | Checkmark with solid fill | "20 sample patches per patient". Why not more than 20? Were they still overlapping? |
| 38 | Checkmark with solid fill | "We trained the network near 500 epochs" Batch-size? |
| 39 | Checkmark with solid fill | Fine to refer to Supp.1 for details, but some basic info on e.g. the width and depth of the model and the number of parameters (weights&biases), as well as any use of regularization, dropout, batch normalisation, and such, would be useful as indicators of model structure and complexity. |
| 40 | Checkmark with solid fill | Note: lots of spikes in Fig.6 (idem Fig.7), also in training data! Also, validation loss is lower than training loss. Choosing the absolute best epoch like you suggest may lead to overfitting. |
| 41 | Checkmark with solid fill | In the IMCM model I still don't quite get what you predict: the MAC of individual voxels, their ADMC, or something else? (I guess this is unclear to me from the Introduction already.) Later you mention "The previous network focused exclusively on .. ADCM", is it that? |
| 42 | Checkmark with solid fill | "This methodology adopts a new approach by decomposing .. into two distinct components." I still don't get what those 'components' are; do you learn one of them, or both, or what? I am confused. |
| 43 | Checkmark with solid fill | "This method involves modifying the deep learning model by integrating learning with the new dataset." But \*how\* did you do that then? Did you add new layers and freeze some old ones? A peer should be able to more or less identically repeat your analysis, but I would have no clue. |
| 44 | Checkmark with solid fill | RE(%), notation is a bit inconsistent: PETref(v) versus (PETref)\_v |
| 45 | Checkmark with solid fill | SSIM is conceptually a bit similar to a correlation coefficient, I presume? |
|  | **Results** | |
| 46 | Checkmark with solid fill | "The results demonstrate that both DL methods effectively performed some degree of attenuation and scattering correction" I don't quite get it. The IMCM and ADCM results are both DL models, right? So how do they compare to the difference between the MAC and NAC images? It looks to me that IMCM is usually a bit better than ADCM in Fig.9, but whether they are both bad or both good I cannot assess. Or can I; how do I see the improvement? P-values or indications of significance with stars would be useful here. |
| 47 | Checkmark with solid fill | Bottom P.19: if you have so many numbers to compare, then a Table would be better. "Details are available in the Supplementary Material, table 1." Numbering wrong? Cannot find it there. |
| 48 | Checkmark with solid fill | "various statistical tests, which compared" That would be M&M then. |
| 49 | Checkmark with solid fill | "suggesting a trend towards overestimation potentially linked to" sounds like Discussion. Results should be objective. |
| 50 | Checkmark with solid fill | In Fig.10 the colorbar is logarithmic SUV according to caption and goes all the way up to 10^6, but the x- and y-axes are labeled SUV too but go just to 300. Huh? Why the different y-scales; couldn't you make the dashed line always have the same slope? (Idem Fig.13) |
| 51 | Checkmark with solid fill | "this outcome contrasts with the ADCM's claim" Whose claim? Where does this come from? Reference? |
| 52 | Checkmark with solid fill | "These results show how important .. useful and accurate in various clinical settings." Sounds like Discussion. Same for parts of last paragraph on this page. |
| 53 | Checkmark with solid fill | Fig.14 "Coronal and axial views of 12 clinical studies" I see only eight? Maybe include arrows to the artifact areas; in some, the artifact is clear, but in some it isn't (to me). What is the scale of the B&W images? (Idem Fig.15,16,17) Maybe take an exemplary subset and combine into one image and put the rest in Appendix, because this is a lot of pages. |
|  | **Discussion** | |
| 54 | Checkmark with solid fill | This is an extremely short section in comparison. You want to include a summary highlighting your main results in the beginning. I would expect a (subjective) interpretation of the results, an assessment in relation to literature and clinical usefulness, a reflection on technical issues (what could be done differently or better), for instance. You mention a lot of relevant "high-level" points, but how they relate to your own results is not always clear to me. For example "This study has demonstrated that a single universal model may not be effective due to variations in tracer-injected activity across different hospitals." What results do you base that on exactly? Or "our investigation couldn’t prove that it may not be able to handle the differences between variant scanners and radiotracers well" (contains lots of negatives, hard to understand), but again based on what precisely. Or "We also observed scenarios where repeated scans, typically conducted to eliminate artifacts, failed and even exacerbated them." Which examples were those, and what was your gold standard then? |
| 55 | Checkmark with solid fill | "without needing anatomical images" If I remember correctly from the progress meeting (?), one of the goals is not to need the anatomicals anymore. Yet, I think this is the first time you mention anatomical images. If that is indeed an advantage, that would have made sense to mention in the Introduction. |
| 56 | Checkmark with solid fill | "The systematic bias towards higher SUV values .. suggests underlying problems in the algorithm" What kinds of problems are you thinking of? It seems indeed a bit weird that the model doesn't simply produce higher values to improve the MSE.. |
| 57 | Checkmark with solid fill | Suggestions for future research are a bit limited. Do you see any possible further improvements for the models themselves (types of models, settings etc.)? |
|  | **Backmatter** | |
| 58 | Checkmark with solid fill | Supp.Mat is quite long. You present it (Supp.1) almost as a narrative giving a timeline of your project. For example, is P38 relevant (this is an auto-encoder, right)? It is not necessary to give a complete overview of everything you did in the graduation period. You want the reader to understand the main message, not be distracted by sidelines. So if it supports understanding the main text, then keep it; if not, then omit. ("Kill your darlings.") If there are notebooks in your repo, that is fine, but for the report focus on supporting your conclusions |
| 59 | Checkmark with solid fill | Fig.7 might be useful in the Introduction or M&M. (No drop-out?) |