



SDI Review Form 1.6

PART 1:

Journal Name:	<u>British Journal of Applied Science & Technology</u>
Manuscript Number:	2013_BJAST_5084
Title of the Manuscript:	Machine Learning Optimisation for Realistic 2D and 3D PET-CT Phantom Study
Type of the Article	Research Paper

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(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)

- This form has total 7 parts. Kindly note that you should use all the parts of this review form.



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PART 2: 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)
Compulsory REVISION comments	1. Notations shown in Figure 1 differs with information shown in 2.1 2. In Page 5, How α is calculated is to be mentioned 3. In page 6, Positron meaning is o be mentioned in the first page. 4. In page 6, How o determine the energies shown in second paragraph. 5. Image reconstruction techniques are to be mentioned in last paragraph of page 6. 6. Algorithm is to be included as mentioned in last paragraph of page 8. 7. Reference is required for the second part of first paragraph in page 10. 8. In page 11, as mentioned in second paragraph, best architecture is to be mentioned 9. Activation function for fig 5b is to be mentioned 10. In page 12, last part of first paragraph justify the statement "However bad performance has been achieved".	We would like to thank the reviewer for their comments. 1. Apologies we are slightly confused by the first comment: The inputs are x_1-x_m, the weights are $w_{11}-w_{1m}$ and the output Y which all appear compatible with Figure 1. 2. Different experiments have been carried out (data not shown) for different values of the learning rate and the most suitable value for PET application was found to be $\alpha=0.6$ (which gives the least error). We have added this in the text to clarify. 3. We have added 'A positron as the antimatter equivalent of an electron is produced by radioactive decay and can be used in medical imaging.' on page 1. 4. We have added 'The 511keV energy is a consequence of the conservation of energy and momentum. The scanner contains hardware discriminators which automatically reject photons with energies that are considerably lower as this will be due to scattered radiation which causes noise in images.'



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		5. The image reconstruction techniques have been mentioned and clarified. 6. The Algorithm has been mentioned and explained with the right references. 7. Misunderstanding, this is our current work and not referenced. 8. The best architecture has been mentioned (includes 9 inputs, 70 hidden neurons and 1 output.) 9. The linear activation function ($f(x) = x$) is mentioned at the end of page 11 and shown in Figure 5.b. 10. This method has been applied to the proposed PET application, however bad performance has been achieved in terms of the network performance error and the outputs error, both were high. This has been added in the text.
<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments		