Interactive comment on "Technical note: AI-Track-tive: automated fission track recognition using computer vision (Artificial Intelligence)" *by* Simon Nachtergaele and Johan De Grave

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First of all, thank you for taking the time to test the developed software. Based on the constructive comments of Reviewer 1 (D. Chew) we took the opportunity to indeed develop and incorporate more options/modules in the presented software. We have implemented the new functionality options/modules that Reviewer 1 suggested. The new implementations of the software are currently in the testing phase and we hope to receive help for reporting bugs on the online platform (https://github.com/SimonNachtergaele) on which the entire program can be downloaded and tested.

To start, we have developed a first scrollbar that blends two images (with different focal level) in to each other. Hence, using this "z-scrollbar", the impression is created that the user works on live-images through which he/she can (de)focus (see below in Figure 1). Further, we added a second scrollbar in order to give the possibility to switch between reflected and transmitted light images while reviewing the results of AI semi-track recognition (see below in Figure 2). This second scrollbar is connected to mouse wheel scrolling, in contrast to the first toolbar (z) which can only be handled manually with the trackbar/scrollbar and not with the computer mouse. So, the user is given the opportunity to switch between transmitted and reflected light sources when checking the results of the fission track recognition of the DNN.

Although it was not specifically asked by the reviewer, when reviewing our first beta version with respect to reflected light, we took the opportunity to add a part in the software that makes further use of these reflected light images. This additional part of the software measures c-axis parallel etch pit sizes in apatite (Dpar) or mica. We will elaborate more on this topic in the revised manuscript, where additional dedicated paragraphs have been added to address these upgrades.

I cannot give an explanation for the failure of the mouse functionality that the reviewer experienced and I sincerely apologise for this annoying bug that did not appear on the pc's on which we tested the software. Software testing initiatives are taken on a wide range of pc's (inter)nationally. When the program is being run, a 'log.txt' file located in the downloaded folder is automatically updated and based on the content of this 'log.txt' file we could potentially point out the underlying reason for the bug if the reviewer could provide us this txt file.

Reviewer 1 also asked if it is possible to let the Deep Neural Network (DNN) learn from the user after the user added the semi-tracks that the DNN missed. That would be the ideal case, indeed, however this DNN training would require the utilization of US\$ >1000 graphics processing units (GPU). This is in most cases not available on the computers used for counting fission tracks. Your suggestion is very interesting and

currently I will be investigating this implementation for a perhaps second version of the software.

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Fig. 1. Trackbar z-stack

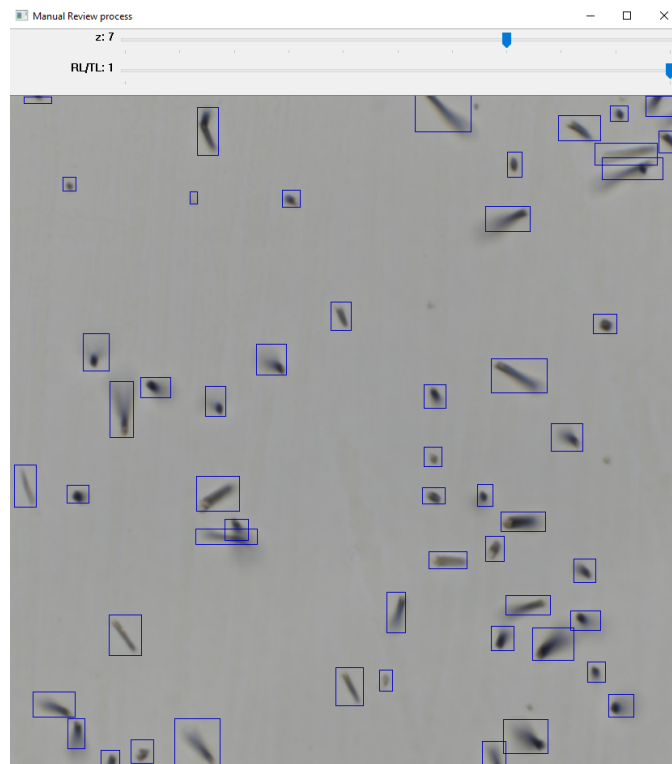**Fig. 2.** Trackbar reflected light - transmitted light

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