

Dear Editor,

Enclosed please find our updated manuscript entitled “*Hierarchical Annotation of Medical Images*”. Following the comments and the suggestions from the reviewers, we have made extensive correction and added some new material. The update can be summarized in three major points: additional experiments on a general database of images (including a comparison with state of the art approaches as suggested by the reviewers), running time results and additional descriptions (as requested).

To show the generality of our approach, we performed experiments on a recent public database with general photos that was used in the ImageCLEF@ICPR2010 competition. We compare random forests of PCTs for HMC with the performance of SVMs with χ^2 kernel (which is one of the most widely used approach for image annotation in the literature and the competitions for image annotation). We show that our approach outperforms the SVMs both in terms of predictive power and efficiency. Also, Mensink et al. (LEAR and XRCE's Participation to Visual Concept Detection Task - ImageCLEF 2010) showed that per-label-trained linear SVM classifiers outperform the TagProp system (an approach suggested as a baseline by the reviewers). Thus, we conclude that our approach outperforms also TagProp.

Second, we added a table with running times. The table includes both the time needed for learning/constructing the classifiers and time needed to produce an annotation for an unseen image. Random forests of PCTs are approximately 5.5 times faster to construct than SVMs. Furthermore, producing an annotation for an unseen image is approximately 165 times faster than SVMs. With this, we clearly show that our approach is more efficient than the SVMs.

Third, we have included additional text in the manuscript to conform to the changes we mentioned above and to the reviewers comments. To begin with, we have added a section that presents related work and state-of-the-art approaches for image annotation. Next, we have added a sub-section that further describes the PCTs framework and its application for hierarchical classification. We have also added several paragraphs of text in the introduction that describe the wider context of the problem we are solving and the possible use of such a system. Finally, we have further discussed and commented on the results.

To summarize, the updated version of the manuscript includes all comments and suggestions from the reviewers. Our approach outperforms state-of-the-art approaches (SVMs) for image annotation on both medical images and general photos. Moreover, our approach is much more computationally efficient than the SVMs: it is 5.5 times faster to train and 165 times faster to produce an annotation for an unseen image. All in all, we propose a system that offers several advantages over the current state-of-the-art approaches in image annotation.

Hoping that you will find the revisions that we have made adequate, we look forward to hearing from the reviewers and yourself,

Ivica Dimitrovski and co-authors