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**Supervisor Review for the Bachelor Thesis "Lung Data Analysis with Deep Learning" written by Hari Krishnan**

I had the pleasure of supervising the work of Hari Krishnan. He was extraordinarily motivated and eager to learn new things.

The task for his thesis was to classify ultra-high resolution histopathological images of lung slides with multiple instance learning (MIL) methods. The dataset he received was challenging to handle and from the beginning on it was unclear whether it is possible to get satisfying results out of it.

Large parts of the thesis give a general overview of neural networks, including a part explaining MIL methods. As he was going to compare two MIL approaches it would have been important to better highlight the differences of the two approaches which he was going to train. Overall the theoretical part was not written in a clear and concise manner and much of the introduction could have been left out. Also the dataset was - in my opinion - not sufficiently well explained.

The results, with AUCs between 0.56 and 0.58, are mediocre but it is hard to say if better results could have been obtained as the work is missing extensive hyperparameter tuning. Some training details like the exact data augmentation steps are missing. I suppose that the results could be improved by better data preprocessing and augmentation. A plot of the ROC curves would have been helpful to get a better understanding of the results.

Despite the above mentioned issues, I can confidently state that Mr. Krishnan is worthy of obtaining a Bachelor of Science title, given the work performed in this thesis.

  
Sepp Hochreiter