

Univ.-Prof. Dr. Sepp
Hochreiter
Institute for
Machine Learning

P +43 732 2468 4521
F +43 732 2468 4539
hochreit@ml.jku.at

Office:
Birgit Hauer
Ext. 4520
birgit.hauer@jku.at

Linz, May 25, 2023

Opponent Review for the Bachelor Thesis:

“Detection of Diabetic Retinopathy Using Deep Learning and Transfer Learning Techniques with Oversampling to Address Imbalanced Dataset” by Teodora Randelović

Reading the bachelor thesis by Teodora Randelović on the topic of detecting Diabetic Retinopathy (DR) using Deep Learning techniques leaves me with mixed impressions. This is clearly an important issue to tackle and the proposed solutions to issues identified with the dataset are sound in principle.

The introduction, while short, is well written and gives a good explanation of Diabetic Retinopathy and its symptoms and severity levels. The motivation for using Deep Learning methods to speed up diagnosis of DR is also well communicated. However, the background on Deep Learning methods is not of the same quality, containing some confusing or even wrong statements. While these are not severe mistakes it leaves the impression that Teodora did not fully grasp the methods she is investigating. Furthermore, some sections, such as manual data pre-processing, seem disconnected from the rest of her work and are rather confusing as to why they are included at all.

In her experiments Teodora aims to answer two questions, namely (1) if transfer learning can improve predictive performance, and (2) how to mitigate the issue of a severely imbalanced dataset. To me, the experiments for both issues are not conclusive as Teodora changes many variables for each comparison, making it difficult to identify the effects of individual measures.

In summary, while Teodora's bachelor thesis meets the necessary requirements for a Bachelor of Science degree, it would benefit from further, more rigorous experiments.



Markus Hofmarcher, MSc