

Data Science Final Project Reviewer Response

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1 Why did you choose this specific model? What did you learn?

Thank you Professor 鄭 for your questions. We chose Deep Hierarchical Embedding [1] for its focus on hierarchical learning, since that was information available in the training data. We state the reasons we initially chose our model in Sec. 3a when we introduce the deep learning portion of our approach. After training and evaluation we realized this model was not suited for the competition, since the hierarchical information in the training set might not have been as useful as we thought.

2 Consider other fine-grained approaches or contrastive learning.

We thank Professor 許 for the feedback. Section III “Related Work” introduces the approaches we considered at the beginning for the project proposal. Using some of the insights from the competition, we investigate contrastive learning approaches and fine-grained networks towards the end of the report in a section called “Alternatives”. We investigated these methods after the competition knowing the problems we encountered. In the future we wish to evaluate our training set with these approaches, since they might better handle the tough images in this competition.

3 Analyze which classes are harder for the model to classify.

Thank you Professor 李 for the valuable suggestion. We added a figure in the report comparing the accuracy in meta and level 2 categories as the number of samples increases. We found that there is a large variance in accuracies when the classes have few samples: some classes are easier to identify than others even with fewer samples. We noticed the accuracies varied less with classes that have around 150 samples or more. Even then, there was a clear overall increase in accuracy for both meta and level 2 categories as the samples increased per class. Since our dataset was imbalanced, the hardest classes to reliably classify are those with fewer samples.

References

- [1] Dehong Gao, Wenjing Yang, Huiling Zhou, et al. “Deep hierarchical classification for category prediction in e-commerce system”. In: *arXiv preprint arXiv:2005.06692* (2020).