Opposition Review for Abubakrelsedik Karali's essay

By

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For the course - **FID3018**

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The three paper's chosen by the author are:

- [1] Unsupervised Representation learning by predicting image rotations

- [3] Improvements to context based self-supervised learning.

- [2] Revisiting self-supervised visual representation learning.

The topic chosen by the presenter indeed is a very important topic in the domain of computer vision (CV). While neural networks are heavily used in image classification problem, the scarcity of labels in those problems has led researchers to explore the domains of self-supervised learning, representation learning, or unsupervised learning to solve the issue. The author has chosen an array of three relevant and popular papers in the domain to stream the story in the domain.

The presentation was organized and structure nicely, starting with unsupervised representation learning and segwaying into the domains of self-supervised

learning. The composition of the presentation in terms of highlighting the interesting aspects of the papers was very good.

Considering the audience of the course, it would have been a really good exposure if the technical details of individual papers were explored a bit more. However, due to technical issues the presentation had to be cut short.

In a separate QA session, the presenter managed to address the questions put forward by the audience succesfully.

References

[1] Spyros Gidaris, Praveer Singh, and Nikos Komodakis. "Unsupervised representation learning by predicting image rotations". In: *arXiv preprint arXiv:1803.07728* (2018).

[2] Alexander Kolesnikov, Xiaohua Zhai, and Lucas Beyer. "Revisiting self-supervised visual representation learning". In: *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*. 2019, pp. 1920–1929.

[3] T Nathan Mundhenk, Daniel Ho, and Barry Y Chen. "Improvements to context based self-supervised learning". In: *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*. 2018, pp. 9339–9348.

Opposition Review for Vangjush Komini's essay

By

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The three paper's chosen by Vangjush are:

- [1] Deep Evidential Regression.

- [3] Uncertainty Estimation Using a Single Deep Deterministic Neural Network.

- [2] Depth uncertainty in neural networks.

The essay talks about Uncertainty estimation using neural networks. It is a very relevant and important topic since neural networks are unanimously used in almost all machine learning methods. The quantification of uncertainty of the data and the models is crucial for model reliability and hence its adaptation in important applications.

Vangjush did a great job in terms of topic selection. The papers are recent and the presentation is well-structured to tell the story of uncertainty estimation. Furthermore, the presenter did a decent job in boiling down the theoretical concepts into easier constructs that are easy to follow.

An improvement on the presented material could have been a comparison among individual papers that are selected. While, the methodology and the experiments were thoroughly discussed, the comparison among each of the papers would have further enriched the presentation.

Vangjush also demonstrated his understanding on the topic during the discussion section, where he was able to explain some answers clearly to the audience.

References

[1] Alexander Amini et al. "Deep evidential regression". In: *arXiv preprint arXiv:1910.02600* (2019).

[2] Javier Antorán, James Urquhart Allingham, and José Miguel Hernández-Lobato. "Depth uncertainty in neural networks". In: *arXiv preprint arXiv:2006.08437* (2020).

[3] Joost Van Amersfoort et al. "Uncertainty estimation using a single deep deterministic neural network". In: *International Conference on Machine Learning*. PMLR. 2020, pp. 9690–9700.