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MASTER'S THESIS PRESENTATION

A Critical Review of the Convolution Operator in Graph Convolutional Networks

WHEN
November, 11, 2021
4:00 PM, CST

WHERE
Via ZOOM
ZOOM information will be provided in the email announcement for this seminar.

Victor Kang, MS candidate

Graph Convolutional Networks (GCNs) and its variants have gained significant attention in recent years due to state-of-the-art performances on a variety of machine learning tasks on graphs. In traditional neural networks that have achieved impressive results on, for example, vision or language tasks, there is heavy emphasis on network depth and the use of non-linear activations to enhance expressivity. On the other hand, recent success in GCNs has been empirically linked more closely to the convolution operator. Moreover, consensus has converged towards the use of the normalized adjacency matrix with self-loops as this operator, proposed by Kipf & Welling, despite limited justification for its appropriateness. In this thesis, we seek to shed some light on this choice. Specifically, we empirically evaluate the robustness of results on benchmark datasets to the choice of the operator, understand how signals can be amplified from a theoretical view, and in turn consider a topology on which performances of different operators may vary.

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