**ML HW4 Report**

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1. **Make a brief introduction about a variant of Transformer**

A variant of Transformer is Conformer. Conformer is a model which combines models with self-attention and models with convolutional layers to achieve better performance. The convolutional layers are added in the encoder of Transformer.

1. **Briefly explain why adding convolutional layers to Transformer can boost performance.**

Convolutional layers can extract local features and patterns greater than models with self-attention such as transformer. In speech recognition, audio context and sequences have some important local features to be captured.