Attention-based Adaptive Convolution with Progressive Learning in Speech Enhancement

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Abstract : The monaural speech enhancement task in the time-frequencydomain has a myriad of approaches, with the stacked con-volutional neural network (CNN) demonstrating superiorability in feature extraction and selection. However, usingstacked single convolutions method limits feature represen-tation capability and generalization ability. In order to solvethe aforementioned problem, we propose an attention-basedadaptive convolutional network that integrates the multi-scale convolutional operations into a operation-specific blockvia input dependent attention to adapt to complex auditoryscenes. In addition, we introduce a two-stage progressivelearning method to enlarge the receptive field without a dra-matic increase in computation burden. We conduct a series ofexperiments based on the TIMIT corpus, and the experimen-tal results prove that our proposed model is better than thestate-of-art models on all metrics.