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数据库、信号与信息处理

# 改进的SOFM算法及其在低延迟语音编码中的应用

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摘要 根据低延迟语音编码算法训练码书的尺寸和码字维数的特点，提出了一种改进的自组织特征映射（SOFM）神经网络的码书设计方法。对输入训练矢量以及连接权矢量进行归一化，为降低计算量和提高码书训练质量，采用快速的网络学习决定获胜的神经元并对网络权值分阶段进行自适应调整，最后应用于低延迟语音编码中。实验表明，与传统LBG算法比较，采用SOFM神经网络训练的码书其合成语音的主、客观质量均有较大提高。

关键词 矢量量化 自组织特征映射神经网络 自适应调整 低延迟语音编码
分类号

# Modified SOFM algorithm and application in low delay speech coding

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**Abstract**
According to the character of codebook size and codeword dimension in low delay speech coding algorithm，a codebook design algorithm based on modified Self-Organizing Feature Map（SOFM） neural network is proposed.The input train vectors and connection weight vectors are normalized.In order to reduce computation complexity and improve codebook performance，some fast search methods are used in SOFM iterations during searching for the winning neuron and decompose the adaptive adjusting process of network weights into two steps of sequencing and convergence.The proposed algorithm is used to generate vector quantization codebook in low delay speech coding algorithm.Experiment results show that，compared with LBG algorithm，modified SOFM algorithm can greatly improve the synthesized speech quality in the aspect of subjective and objective.

**Key words** vector quantization Self-Organizing Feature Map（SOFM） neural network adaptive adjust low delay speech coding

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