

## Fast Methods Fbr Split Codebooks

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### Summary

This paper presents a fast method for building and searching split codebooks for vector quantization. The proposed method is evaluated in near transparent quality vector quantization of Line Spectral Frequencies (LSF) at 24-bit per frame. The method is based on a family of fractals called Space-Filling Curves (SFC). The SF curves achieve a significant saving in the complexity of vector quantization by reducing the problem to quantization in one-dimensional space. The paper presents algorithms for the generation of the SFC mapping utilizing the self-replication feature of the curves, and a number of simulation experiments to demonstrate the effectiveness of the method. It is shown that the SFC can reduce the search complexity of split codebooks by a factor of 8-32 times with a slight degradation in the vector quantization performance. (C) 2000 Elsevier Science B.V. All rights reserved.

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