URN etd-0407109-183720-1675
Author Yu-Chang Chen
Author's Email Address No Public.
Statistics This thesis had been viewed 50 times. Download 17 times.
Department
Year 2006
Semester 2
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title A Study on Fast Search Algorithms for ITU-T G.723.1 Speech Codec
Date of Defense 0000-00-00
Page Count 53
Keyword
G.723.1
Five-tap closed loop adaptive gain codebook
Stochastic codebook
Fast search

Abstract
Speech coding has extensively applied on multimedia communications, recently. The development of speech coding technology greatly diminishes the compressed data, and which with low bit-rate can reduce the bandwidth required for communications. Furthermore, synthetic speech remains good quality as well as toll quality. Recent works based on the analysis-by-synthesis (AbS) technique has demonstrated that it can achieve good synthetic speech quality at low bit rate (ex: 5.3 kbit/s and 6.3 kbit/s of ITU-T G.723.1 speech codec) for speech coding. Although the codec structure can achieve toll speech quality and low bit rate coding, they required the huge computational load of the codec for CPU's loading is the most important disadvantage.
In order to reduce computational complexity and CPU's loading. We proposed several efficient fast search algorithms for adaptive codebook search and stochastic codebook search respectively. Therefore, the CPU times has been reduced. A fast search algorithm for adaptive gain code-vector search of quasi-periodic excitation is proposed, which predict and determine a part of adaptive gain codebook for search ranges before standard fifth order closed loop pitch gains prediction. Another fast search method is for stochastic codebook search of non-periodic excitation, we pre-selected the candidate pulses positions before ACELP and MP-MLQ search process respectively to reduce the computation. Based on our experiments, the proposed fast search methods will reduce the computational complexity of the codec with slightly performance degradation in synthetic speech quality.
Advisory Committee Rong-San Lin - advisor

Files etd-0407109-183720-1675-001.pdf

indicate access worldwide
Date of Submission 2007-07-16