URN etd-0407109-183717-1370
Author Ji-Tai Lee
Author's Email Address No Public.
Statistics This thesis had been viewed 53 times. Download 0 times.
Department
Year 2004
Semester 1
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title The Design and Implementation of Parameterized Soft IP module for Channel Codec in Third Generation Mobile Communications
Date of Defense 0000-00-00
Page Count 53

Keyword
Third Generation Mobile Communications
Channel Coding
Convolutional Codes
Turbo Codes

Abstract
Due to the fast developments in wireless communications and digital information technology in recent years, there gets an increasing demand for accessing to gigantic amounts of data anytime and anywhere. To maintain the quality of service (QoS) or vice versa to improve the performance for given transmission consideration, channel coding plays a key element of any digital wireless communications system as it reduces the effects of noise and interference on the signal transmission. As a result, in third generation (3G) mobile wireless communications standards, offering two channel coding schemes, convolutional coding and Turbo coding for multimedia services transmission.
This thesis presents a programmable and flexible soft IP design of a dual-mode Viterbi/Turbo channel coding for 3G mobile wireless communication systems such as CDMA2000 and WCDMA. Further, by merging some similar circuit units in both convolutional and Turbo codec architecture, a dual-mode reusable and parameterized IP for forward error correction kernel applied to 3G communications is implemented.
With the proposed reconfigurable and reusable IP, adaptive design and rapid implementation are available for different mobile wireless communication systems just by way of specified parameters tuning, for example, code rate (1/2~1/4), constrain length (3~10) and trace back (1~64), etc., via user-friendly GUI to generate the associated HDL codes for hardware implantation. Moreover, the efficiency of proposed dual-mode IP-based channel codec for 3G communications has been verified with Altera FPGA platform.
Advisory Committee Yu-Pin Chang - advisor

Files No Any Full Text File.
Date of Submission 2005-08-18