

SUMMARY OF Ph.D. DISSERTATION

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<p>Title A Study on Adaptive Transmitting and Receiving Algorithms for Wireless Communication Systems</p>		
<p>Abstract</p> <p>Recently, radio link capability of wireless communication systems is dramatically increasing between 3G and future 4G standards. It implies that a system can control variety of communication schemes which depend on the data rates. In other words, adaptive algorithms such as link adaptation are important in order to improve the effective data rate. In this paper, adaptive transmitting and receiving algorithms are proposed and evaluated in several platforms. At first, a brief introduction of background and motivation of this study is described in Chapter 1.</p> <p>Chapter 2 presents a fast Viterbi decoding method for a DS-CDMA canceller. In DS-CDMA, each user is interfered by the other users which occupy the same frequency band. Interference canceller is an effective way to eliminate it. In this chapter, the calculation amount of Viterbi decoder is proposed in the canceller. Decoded paths are adaptively controlled based on the previous decoded information when generating the replica signal. Simulation results show that the calculation amount is 80% reduced.</p> <p>Chapter 3 proposes an adaptive subcarrier allocation scheme in MC-CDMA (MultiCarrier Code Division Multiple Access) system. Simulation results show that the performance of the proposed scheme is better than that of conventional DS-CDMA (Direct Sequence Code Division Multiple Access).</p> <p>Chapter 4 presents an adaptive threshold controlling scheme for MCS (Modulation and Coding Scheme) switching. The proposed scheme controls MCS switching thresholds according to target block error rate. Simulation results have shown that the throughput performance of the proposed scheme is very close to the performance, which obtained by the optimum thresholds.</p> <p>Chapter 5 presents the adaptive modulation and code channel elimination for VC (Vector Coding) system. In VC systems, several code channels corresponding to the eigenvalues of the channel matrix are created. In the proposed scheme, the number of code channels is adaptively changed based on the packet error information. It is shown that the throughput performance of the proposed scheme is improved compared with the maximum throughput of each individual MCS.</p> <p>Finally, Chapter 6 presents the conclusion.</p>		