An Overview of Cross Layer Design and Optimization for Cognitive Radio Network

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Abstract

A cognitive network provides the ultimate and optimal solution to the problem of large number of bandwidth intensive network elements competing for scarce resources. The adaptive nature of cognitive network enables it to utilize the situational and contextual knowledge to achieve optimal end to end performance. The limitations of conventional protocol stack based architectures have motivated the introduction of cross-layer design solutions for cognitive radio networks that result in optimized operation. In this paper, we present an overview and discussion of the general methodology for cross-layer design and investigate cross-layer optimization schemes and algorithms for cognitive radios. In addition, we also discuss current trends in cross-layer design and identify areas for future work.

Index Terms: automatic white balance, color constancy, video.