

Best Achievable Tracking Performance under Limited and Constrained information Feedback

Jie Chen

Department of Electrical Engineering

University of California

Riverside, CA 92521

Abstract

Networked control is concerned with feedback control systems in which feedback or control signals are transmitted over communication links or networks. This emerging area, which seeks to integrate control and communication theories, presents several fundamental differences and challenges unlike those found in conventional control. A fundamental question facing networked control system design is how limited and constrained information may affect the system's performance. In this talk, we present analytical expressions of the optimal performance in tracking step reference signals, which show explicitly how the SNR ratio and quantization precision of communication channels may degrade a system's performance.