

OPTIMAL ESTIMATION WITH SCHEDULED MEASUREMENTS

ORHAN C. IMER, TAMER BAŞAR

ABSTRACT. Abstract. We consider the problem of scheduling one of several sensor measurements in a communication bus for estimation purposes. The sensors prioritize their measurements by assigning priority numbers to each measurement they make, and the bus access is granted using a decentralized arbitration mechanism. In the case of two sensors observing independent discrete, Gaussian, or uniform random variables, we show that the optimum scheduling policy for each sensor is a threshold policy where the thresholds depend on the a priori distribution of the sensor measurements.

Key words: Communication networks; sensor networks; optimum scheduling; estimation.