

Cyber-Physical Systems: Cognitive Mobile Actuator/Sensor Networks

ECE Graduate Colloquium

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December 01, 2009

1 Introduction

- Cyber-Physical Systems
- “Physical”
- “Cyber”
- Potential Applications

2 Optimal Observation and Stimulation for Parameter Estimation

- Parameter Estimation
- Mobile Sensor and Actuator Model
- Optimal Actuator/Sensor Location Problem
- Illustrative Example

3 Interlaced Optimal Trajectory Planning

- The Chicken and Egg Problem
- The Interlaced Scheme with Communication Topology
- Example

4 Other Results

- Remote Sensing
- Fractional Dynamics

What is a Cyber-Physical System?

The definition of a Cyber-Physical System (CPS) has not yet been set in stone besides the vague attempt made by the National Science Foundation (NSF):

"the tight conjoining of and coordination between computational and physical resources" .