

CSE 936: Cyber-Physical Systems HW #1

Assigned: 2017-08-22

Due: 2017-08-29 uploaded to Canvas before class

Introduction

The objective of this homework is to familiarize you with what CPS is, and to introduce you to the literature. I also anticipate that you'll do #1 and #2 below before class on Thursday as it will prepare you for the next two lectures.

What to Do

All of the required readings are in Canvas in the “assignments/hw1” folder.

1. If you're not familiar with reading research papers, read: S. Keshav, “How to read a paper,” ACM SIGCOMM Computer Communication Review, vol. 37, no. 3, pp. 83–84, 2007.
2. Read: E. A. Lee, “The Past, Present and Future of Cyber-Physical Systems: A Focus on Models.” Sensors, 2015
 - (a) Please read this before class on Thursday.
3. Read: W. Wolf, “Cyber-physical Systems,” Computer, vol. 42, no. 3, pp. 88–89, 2009.
4. Answer the following questions (typed):
 - (a) What is a CPS?
 - (b) What is CPS research?
 - i. How is it different from research areas robotics, embedded systems, control, real-time systems, and research sub-categories in those areas? Or is it any different?
 - (c) Define “cyber” for CPS and give examples. NOTE: there is NO clear definition in the community so you won't be wrong...just be thoughtful in your answer. We will discuss this more in class.
 - (d) Define “physical” for CPS and give examples. NOTE: there is NO clear definition in the community so you won't be wrong...just be thoughtful in your answer. We will discuss this more in class.
 - (e) What is required in the development of new models for CPS?

What to Submit

Please submit the following, on Canvas, by the specified time above:

1. **(100 points)** A PDF document with your answer to the questions above. Please observe the following:
 - Homework must be typed
 - Please limit this homework to 1 full page. I will dock points for going too far under or over.