**ASSIGNMENT**

A cyber-physical system (CPS) is an integration of computation with physical processes

whose behavior is defined by both cyber and physical parts of the system. Embedded computersand networks monitor and control the physical processes, usually with feedbackloops where physical processes affect computations and vice versa. As an intellectualchallenge, CPS is about the intersection, not the union, of the physical and the cyber. Itis not sufficient to separately understand the physical components and the computationalcomponents. We must instead understand their interaction.

the three major parts of the process, modeling,design, and analysis. Modeling is the process of gaining a deeper understanding of asystem through imitation. Models imitate the system and reflect properties of the system. Models specify what a system does. Design is the structured creation of artifacts. It specifies how a system does what it does. Analysis is the process of gaining a deeper understanding of a system through dissection. It specifies why a system does what it does(or fails to do what a model says it should do).

**MODEL**

we define a system to be simply a combination of parts

that is considered as a whole. A physical system is one realized in matter, in contrast

to a conceptual or logical system such as software and algorithms. The dynamics of a

system is its evolution in time: how its state changes. A model of a physical system is a

description of certain aspects of the system that is intended to yield insight into properties

of the system.

**DESIGN**

It refers to implement systems while thinking across traditional abstraction layers — e.g., hardware and software, computation and physical processes. While such cross-layer thinking is valuable in implementing systems in general, it is particularly essential in embedded systems given their heterogeneous nature.

**ANALYSIS**

It focuses on precise specifications of properties, on techniques

for comparing specifications, and on techniques for analyzing specifications and

the resulting designs. Reflecting the emphasis on dynamics in the text.

BY- Abhinav kumar

13bit0087