The Security of Cyber Physical Systems

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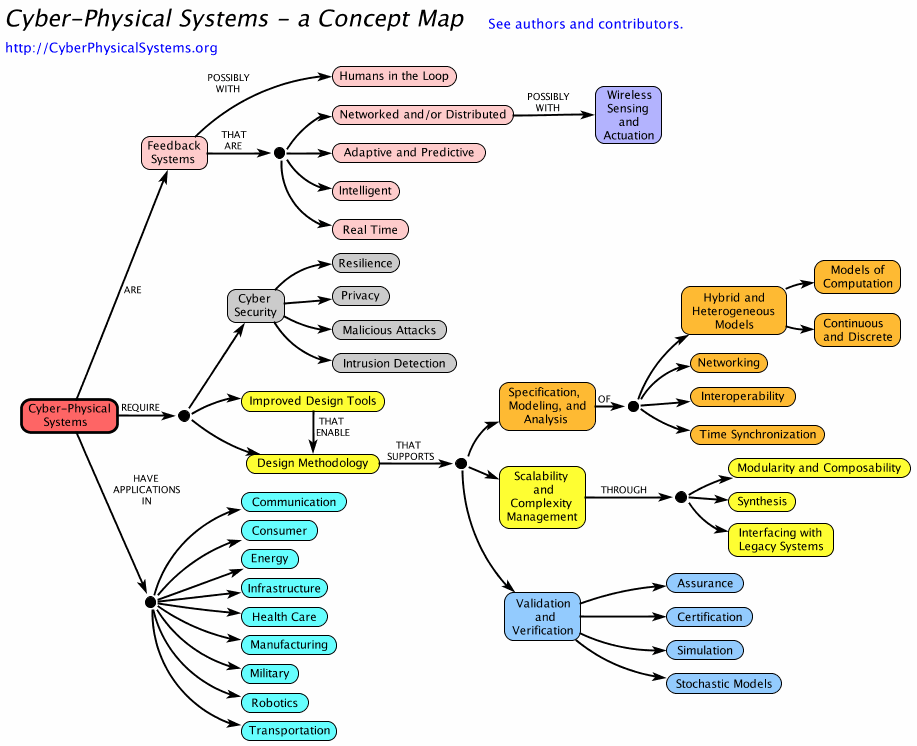
# Abstract

# Introduction

# Background

## What Are Cyber Physical Systems?

Cyber physical systems, or CPS, are feedback systems that require merging physical components and computational components (National Science Foundation).

Figure 1 - A tree explaining cyber-physical systems (Cyber Physical Systems)

Cyber-physical systems can be explained using a well-designed flowchart, (see Figure 1 above). These systems usually have distributed using wireless technology. They must be able to change due to certain conditions and even expected changes to come in how the processes execute. CPS can learn from its environment, changing its behaviors. All of these can be done while it is executing commands in real-time to meet the required time restraints.

## How Do Cyber Physical Systems Work?

## How Are Cyber Physical Systems Used?

Cyber physical systems can be used in many different fields. Examples of each are listed below.

|  |  |
| --- | --- |
| Consumer | Examples of a consumer using CPS would be video systems, interactive games, and audio systems. |
| Health Care | In the health care field, technology provides important information to health care workers, such as the heart rate of a patient. The CPS can be used to help the flow of medical visits and assist in patient safely by integrating all the information into one location. |
| Energy | Smart buildings are become more popular from their use of CPS. CPS allows smart buildings to control and monitor functions such as lights and air conditioning from a control system. |
| Military | There is a large part of all military systems that are cyber physical systems to aid in the exchanging of information. |
| Transportation | Systems used for automotives, railroads, planes, traffic control, and even elevators and escalators are depended upon cyber physical systems. |
| Infrastructure | Infrastructure for society, such as power, roads, and water, can be maintained using cyber physical systems. These examples include monitoring of water safety, helping in disaster recovery, and working on the water distribution in the city. |
| Communication | Wireless communication is an example of a communication system that uses CPS. |
| Manufacturing | Computer-controlled systems and machinery used in production uses cyber physical systems. |
| Robotics | A couple of areas that CPS assists in the robotics field would be artificial intelligence and robotic motion control. |

Table 1 - Applications and examples of cyber physical systems (Cyber Physical Systems)

## Cyber Physical Systems and the Internet of Things

# Purpose

The purpose of this report is to examine the various issues that affect security of cyber physical systems.

# Scope

This report will discuss the various security issues and vulnerabilities that occur within cyber physical systems, and give examples of potential solutions to these issues.

# General Discussion

Before diving into

# Conclusion

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