

A method for secure control of cyber physical systems subject to cyber and physical attacks

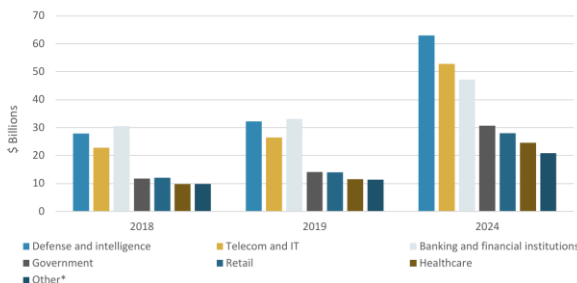


INVENTION

The technology is a method for secure control of cyber physical systems (CPSs) in the presence of cyber and physical attacks. It maintains the stability of CPSs when it is subject to both cyber (denial of service (DoS) and deception) and physical attacks.

MARKET SIZE AND GROWTH

The global cyber security market should reach \$267.2 billion by 2024 from \$142.9 billion in 2019 at a compound annual growth rate (CAGR) of 13.3% for the forecast period of 2019 to 2024.



*Others includes manufacturing, education, transportation, etc.
Figure 1. Global Market for Cyber Security, by End User, 2018-2024 (\$ Billions). Source: BCC Research.

APPLICATIONS

This technology has a wide range of applications in many sectors (e.g., defence and intelligence, telecom and IT, banking and financial institutions, manufacturing, healthcare).

ADVANTAGES

The controller considers randomly occurred physical and cyber-attacks. It also considers two types of cyber-attacks i.e. DoS and deception attacks. The occurrences of the physical and cyber (DoS and deception) attacks are considered as Bernoulli distributed white sequences with variable conditional probabilities. These features make the controller more practical.

PROJECT STATUS

The method is analytically developed, mathematically proved and verified by computer simulation. It can be enhanced by implementing it on a testbed.

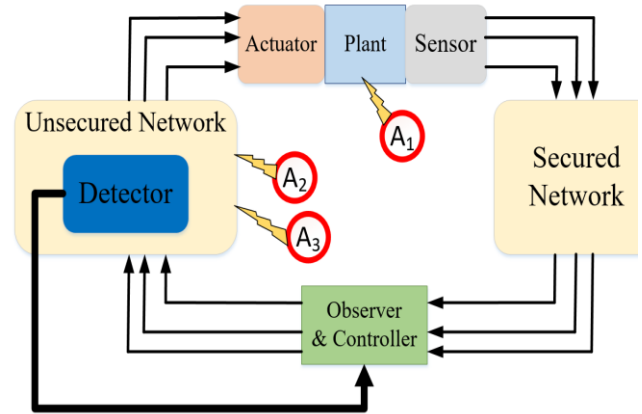


Figure 2. A model of the system.

LOOKING FOR DEVELOPMENT PARTNER

KFUPM seeks an industrial partner to collaborate on building up a testbed for practical implementation of the systems in Fig. 2 subject to the attack scenarios demonstrated in Fig. 3.

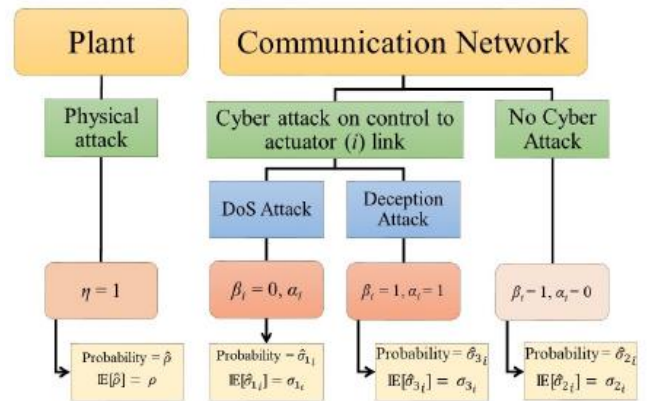


Figure 3: Types of Attacks.

IP PROTECTION

The technology is covered by patent application No. 16782763, in the USA. KFUPM would like to talk to companies that are interested in developing and marketing this product.

ABOUT KFUPM

KFUPM was established in year 1963 and is located in Dhahran city of Saudi Arabia. KFUPM currently ranks at 163 in QS World University Rankings 2022. KFUPM's Innovation & Technology Transfer office strives for taking innovation from lab to market place.

For further information, please contact ip-license@kfupm.edu.sa