2nd Annual Cal Poly Pomona Student Research Conference
March 7, 2014
University Library, Oral Presentations from 1 to 4 pm
Bronco Student Center (Ursa Minor), Poster Session and Reception from 4 to 6 pm

Lead Author: Shih-Wei Fang
Degree objective when research was completed: Master's
Major: Computer Science
College: COS

Co-presenter(s): Not applicable

Faculty Mentor(s): Dr. Mohammad Husain

Session 10: University Library - Special Collections Room
Time of Presentation: 1:30 PM

Presentation Type: Oral presentation

Project Title: A Game-theoretic Model for Moving-Target Defense for Cyber-Physical System

Synopsis: An analysis method using Game Theory for Moving-Target Defense for Cyber-Physical System, which is a combination of computer and embedded system.

Abstract: This paper presents a game-theoretic model, which analyzes Moving-Target Defense in Cyber-Physical Systems. As technology improved, such as the decrement of the cost of micro-processors, and the increment of regions using internet, Cyber-Physical systems (CPS), a combination of computer and mechanical devices, start reforming our life. Novel systems generate new security challenges. Being implemented to prevent cyber attacks for decades, Moving-Target Defense (MTD), a defense strategy that switches the victim target away, is able to solve several security problems in CPS. For example, when a physical attack occurs, a CPS datacenter can move the data away by constantly detecting the status of physical security elements. This implementation solved the physical security issue in CPS. With the development of CPS, we are able to implement more MTD in CPS; that is, the more CPS are produced, the more MTD are implemented. How to analyze MTD becomes a problem for designers. In this paper, we introduce a model with game-theory to examine the efficiency and feasibility of MTD. This model corresponds to the network layer of MTD, which solves a security challenge in CPS. The model provides an opportunity for the designer to understand the strength and vulnerability of the designed MTD, as well as users.