(14) Title

A Proposal of The Refinement STPA Guide Words on Human Factor of Supervisory Control Systems for Safety (Security) Analysis of Automated Vehicles

Speaker, Authors

Hitachi, Ltd. Service Platform Business Division Group Security Business Division. Yasuhiko NAGAI

Abstract

The new system safety (security) analysis technique "STAMP/STPA" begins to be attention with technique suitable for analysis of system which became complicated in the IoT/CPS age. Because by using the technique, we can identify the abnormality about system characteristics such as software abnormality or interaction abnormality between system components. Particularly in future, I think that STPA is an effective means for analysis on the human factor problem with MMI (Man-Machine Interaction) of SVC (SuperVisory Control system) applying automation technologies such as AI. However, it is difficult in the present CF (Casual Factor) guide words that a general engineer extracts the issue of human factor of SVC appropriately and systematically.

Therefore, this subject propose the refinement guide words to be able to extract the issue of SVC human factor easily by defining the class structure of guide words such as the following figure for SVC analysis and using the knowledge from previous studies on SVC human factor of aeronautical fields, and then reports a simple example of analysis result using the proposed guide words on the security attack application to an automatic driving car.

The hierarchical class structure of STPA/CF guide words
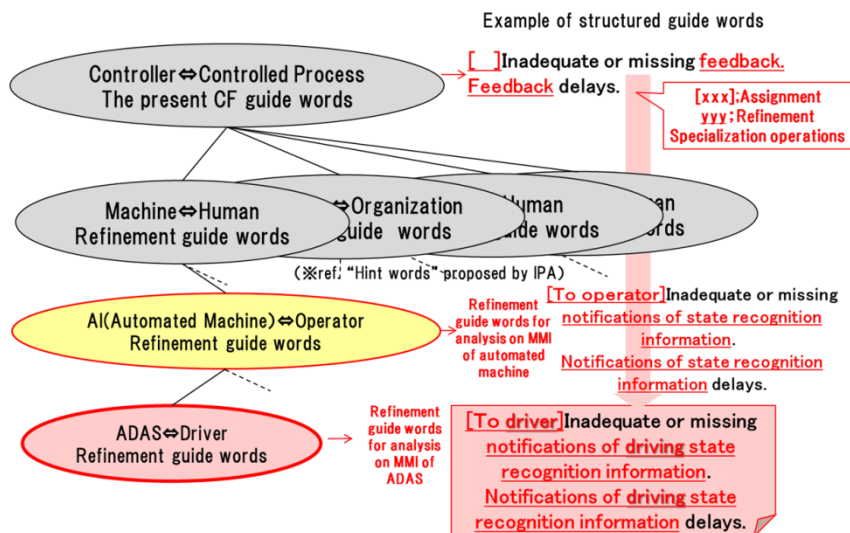
Keywords

(1)   STAMP/STPA

(2)   system safety (security) analysis

(3)   supervisory control system

(4)   man-machine interaction

(5)   human factor