Proceedings of the 8th International Conference of Control Systems, and Robotics (CDSR'21)
~~Niagara Falls, Canada~~ Virtual Conference– May 23-25, 2021
DOI: 10.11159/cdsr21.005

A Generic Model for Resilient Dynamic Systems

Dr. W.J. (Chris) Zhang
University of Saskatchewan, Canada

Abstract

Resilience is a concept unfamiliar to biology, sociology. It simply says about how a biological system and social system can recover from catastrophic disturbances that may come from both internal and external and may be incident and accident. Engineering resilience has raised attention in the early 1990s after the 911 disaster. Engineered systems refer to any system that is built from humans, such as manufacturing system, robotic system, and so forth. A considerable number of studies are conducted on engineering resilience. In this paper, we propose a generic model for resilient dynamic systems. We shall first propose a set of structural characteristics of a resilient dynamic system in the modern technological context, namely digitization and artificial intelligence. We shall then give a summary of engineering resilience research in literature, and then outline this generic model. We will show applications of this generic model to robotic manufacturing systems upon the modern technological context.