Editorial

Mechatronics: An Overview

Evanjali Pradhan *

Department of Microbiology, Utkal University, India

EDITORIAL

Mechatronics, also known as mechatronics engineering, is an interdisciplinary field of engineering that focuses on the design of electronic, electrical, and mechanical engineering systems, as well as robotics, electronics, computer, telecommunications, systems, control, and product engineering.

As technology progresses, numerous engineering subfields have succeeded in adapting and multiplying. The aim of mechatronics is to build a design solution that integrates all of these different subfields. Mechatronics was originally meant to be a mixture of mechanics and electronics, hence the name, which is a portmanteau of mechanics and electronics. Tetsuro Mori, a Yaskawa Electric Corporation engineer, coined the term mechatronics in a Japanese-English translation. In 1971, the company licenced the word "mechatronics" as a trademark in Japan, with the registration number "46-32714."

However, the company later granted the freedom to use the word to the general public, and the expression started to be used all over the world. The term has been translated into a number of languages and is now considered a significant term in the advanced automated industry.

A mechatronics engineer incorporates physics, electronics, and computing concepts to build a device that is easier, more cost-effective, and more efficient. Tetsuro Mori, a senior engineer at the Japanese company Yaskawa, coined the word "mechatronics" in 1969. A mechatronics device, such as an industrial robot, incorporates elements of electronics, physics, and computing to perform its tasks.

Mechanical simulation involves modelling and simulating physical dynamic phenomena through various scales and physical structures. This involves integrating modelling and optimization approaches and techniques into a systematic approach and implementing and maintaining them.

Machine vision is the imaging-based automated inspection and analysis technology and methods used in industry for applications such as automatic inspection, process control, and robot guidance. Machine vision covers a broad variety of technology, including software and hardware, integrated structures, behavior, processes, and skills. Machine vision, as a branch of systems engineering, is different from computer vision, which is a branch of computer science. It seeks to merge current technologies in innovative ways and apply them to real-world problems.

The term is most widely used for these functions in industrial automation environments, but it is also used in other settings such as security and safety. The overall computer vision process involves preparing the specifications and project in detail, followed by designing a solution. During run-time, the process begins with imaging, then goes on to automated image processing and information extraction.

a concept that applies to a number of technologies that minimise the need for humans to participate in processes. Predetermining decision requirements, subprocess relationships, and associated actions — and encoding such predeterminations in machines — eliminates human involvement.

Correspondence to: Evanjali Pradhan. Department of Microbiology, Utkal University, India, E-mail: eva.sikha008@gmail.com

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