

Trends in Embedded Mechatronic Systems for Smart Manufacturing

As the manufacturing industry evolves, smart manufacturing quickly emerges as one of the most important trends to watch. This trend has been enabled by advances in technology that have allowed it to collect and analyze enormous amounts of data in real-time to make more informed decisions. Smart manufacturing is a method that uses a combination of automation, data exchange, and manufacturing techniques to optimize production output. In this technology, the software that controls production lines, the sensors that monitor equipment or products, and the computers used to manage operations are integrated into a single operational platform via common networks.

Embedded mechatronics is the designing and implementing intelligent, integrated systems. The technology is used to create products, such as automotive engines and automobiles that use embedded monitoring and control systems. It also supports the Internet of Things (IoT) technologies for manufacturing, making them ideal for smart manufacturing environments. It uses information technology, computer technology, communications technology, automation controls, and other advanced technologies to improve the performance of mechanical equipment adapt to modern manufacturing needs. Smart manufacturing is an element of the manufacturing sector that focuses on integrating modern technology into the production processes, such as advanced machinery and information technology. Embedded mechatronics plays a significant role in smart manufacturing, providing high efficiency, safety, and accuracy.

The Mechatronics group applies mechanical and electronic engineering. The areas include robotics, machine planning and programming, computer numerical control machines, and the application of computer vision technology to automate assembly processes. Also, Sensor fusion, control of electrohydraulic actuators, and real-time embedded systems are just a few technologies applied in mechatronics to make products smarter than ever quickly. Industrial applications primarily drive smart manufacturing development. As embedded mechatronics technology has matured in the past decade, smart manufacturing technologies are also becoming increasingly mature. Embedded mechatronics for smart manufacturing lies in its interdisciplinary characteristics and strong capability to implement cyber-physical systems and services. It mainly concerns the seamless integration between control and information technology, which calls for mutual collaboration between control engineers and informatics engineers. The advantages of embedded mechatronics in smart manufacturing are that it can generate more efficient, less cost-intensive, and more reliable products, processes, and production systems and enable higher levels of flexibility. However, embedded mechatronic faces challenges in implementing smart manufacturing technology such as high-frequency communications among non-traditional devices. Furthermore, the solution of various physical effects that contribute to the respective modal behavior and modeling aspects and detection and control approaches of the dynamic behavior with interactive components. Submissions are welcome for articles that examine scientific advice from various academic perspectives, including science and technology studies. Insights from practitioners and case studies are also welcome.

We solicit submissions from the following thematic areas:

- *Impact of Embedded Systems Infrastructure for Smart Manufacturing.*
- *Data-centric Manufacturing techniques.*
- *Human-Robot Interaction for the supply chain management.*
- *Implementation of the Industrial Internet of Things for increased monitoring.*
- *Mission Planning and Automation of the Flexible Manufacturing System.*
- *Current limiting electronics for human safety and collision avoidance.*
- *High-speed control of microelectromechanical systems in manufacturing environment.*
- *Large deformation mechanics and micro-assembly of large structures.*
- *Implementation and integration of the embedded mechatronic systems into networked production systems.*
- *Advances in Network-on-chip for smart manufacturing.*
- *Sensor and signal processing for industrial applications.*
- *Model predictive control of manufacturing processes and machines*

Important Dates:

Paper Submission Deadline : 20.08.2023

Author Notification : 10.09.2023

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