Machine Learning Techniques for Optimizing process Flows in Industry

Artificial Intelligence (AI) and Machine Learning is a cognitive science that enables human to explore many intelligent ways to model our sensing and reasoning processes. A computer system is able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. Machine Learning (ML) can be explained as automating and improving the learning process of computers based on their experiences without being actually programmed i.e. without any human assistance.AI and ML has been used to develop and advance numerous fields and industries, including finance, healthcare, education, transportation, Agriculture and more.

In Existing IndustrialAI, The real-world implementation of Manufacturing 4.0 started with enhanced productivity, followed by improved flexibility, quality, and speed. Manufacturing flexibility can be achieved through machine-to-machine and human-machine interactions in order to form a dynamically changing on-demand production system. Quality improvement can be achieved through real-time plant monitoring and just-in-time maintenance. Degradation of manufacturing equipment and tools diminishes product quality and reduces productivity by increasing unplanned downtime. In Existing system used Manufacturing System-wide Balance Random Survival Forest (MBRSF), is a non-parametric machine learning approach provide a long term prognosis of machine breakdowns and which is used to reduce the prediction error at the time of automotive manufacturing without any parameters.

In fact, the survey pointed out a growing interest on applications related to green manufacturing and sustainable development, proving that AI/ML play an important role in increasing sustainability through the intelligent utilization of materials and energy consumption. Furthermore, it emerged that AI/ML algorithms present a wide array of applications that provide an opportunity for sustainable development, including inventory and supply chain management, predictive maintenance, and production.The main use of ML algorithms is to use as a tool for predictive analysis and consequently for data preprocessing, result interpretation, or evaluation in order to improve energy and resource management. It proposes an approach RSM and ANN for automatically preprocessing value series data to improve the quality of the process and products. It means that AI/ML techniques used to provide promising potential for improved quality control optimization in manufacturing systems.