Journal of Ergonomics Research

Commentary A SCITECHNOL JOURNAL

The Strategic Impacts of Intelligent Automation for Knowledge and Service Work

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Received date: 06 July, 2021; **Accepted date:** 21 July, 2021; **Published date:** 28 July, 2021

Introduction

Usually, automation is used to attenuate labor or to substitute humans within the most menial or repetitive tasks. Automation is present in virtually all verticals and niches, although it's more prevalent in manufacturing, utilities, transportation, and security. For instance, most manufacturing plants make use of some automated process within the sort of robotic assembly lines. Human input is required only to define the processes and supervise them, while the assembling of the varied components is left to the machines, which automatically convert raw materials into finished goods. Within the technology domain, the impact of automation is increasing rapidly, both within the software/hardware and machine layer. The implementation of latest AI and Machine Learning (ML) technologies is currently sky rocketing the evolution of this field. In the information technology domain, a software script can test a software package and produce a report. There also are various software tools available within the market which may generate code for an application. The users only got to configure the tool and define the method. Advanced business intelligence in applications is another new sort of high-quality automation. In other industries, automation has greatly improved productivity within the last decades, saving time and cutting costs. From the only to the foremost complex application, automation is present in many forms in our lifestyle. Common examples include household thermostats controlling boilers, the earliest automatic telephone switchboards, electronic navigation systems, or the foremost advanced algorithms behind self-driving cars.

Automation describes a good range of technologies that reduce human intervention in processes. Human intervention is reduced by predetermining decision criteria, sub process relationships, and related actions and embodying those predeterminations in machines. Automation, includes the utilization of varied control systems for operating equipment like machinery, processes in factories, boilers, and heat-treating ovens, switching on telephone networks, steering, and stabilization of ships, aircraft, and other applications and vehicles with reduced human intervention. Automation covers applications starting from a household thermostat controlling a boiler, to an outsized industrial system with tens of thousands of input measurements and output control signals. Automation has also found space within the banking sector. On top of things complexity, it can range from simple on-off control to multi-variable high-level algorithms.

Automation has been achieved by various means including mechanical, hydraulic, pneumatic, electrical, electronic devices, and computers, usually together. Complicated systems, like modern factories, airplanes, and ships typically use of these combined techniques. The advantage of automation includes labor savings, reducing waste, savings in electricity costs, savings in material costs, and enhancements to quality, accuracy, and precision. The planet Bank's World Development Report 2019 shows evidence that the new industries and jobs within the technology sector outweigh the economic effects of workers being displaced by automation.

Fundamentally, there are two sorts of control loop; open-loop control, and closed-loop feedback control. In open-loop control, the control action from the controller is independent of the "process output". An honest example of this is often a heating system boiler controlled only by a timer, in order that heat is applied for a continuing time, no matter the temperature of the building. In closed-loop control, the control action from the controller depends on the method output. within the case of the boiler analogy, this is able to include a temperature sensor to watch the building temperature, and thereby feed a sign back to the controller to make sure it maintains the building at the temperature assail the thermostat. A closed-loop controller, therefore, features a feedback circuit that ensures the controller exerts an impact action to offer a process output adequate to the "Reference input" or "set point". For this reason, closed-loop controllers also are called feedback controllers.

he definition of a closed-loop system consistent with British Standard Institution is 'a system possessing monitoring feedback, the deviation signal formed as a results of this feedback getting used to regulate the action of a final control element in such how on tend to scale back the deviation to zero. 'Likewise, a Feedback system may be a system that tends to take care of a prescribed relationship of 1 system variable to a different by comparing functions of those variables and using the difference as a way of control. The advanced sort of automation that revolutionized manufacturing, aircraft, communications, and other industries, is feedback control, which is typically continuous and involves taking measurements employing a sensor and making calculated adjustments to stay the measured variable within a group range. The theoretical basis of closed-loop automation is control theory.

Citation: *Jieun Lee(2021) The Strategic Impacts of Intelligent Automation for Knowledge and Service Work. J Ergon Res 4:4.*