Editorial

Special issue: Engineering Applications of Artificial Intelligence for Industry 4.0

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Creating this inaugural special issue on Engineering Applications of Artificial Intelligence (AI) is important due to the rapid technology advancement and the aim to reduce the manpower by incorporating Artificial Intelligence in various Industry 4.0 applications. As my research reflects the multi-disciplinarily of systems (consisting of mechanical, electrical, electronics, acoustical and marine engineering) from initial concepts to the modelling and AI simulation, creating graphical-user interface and their actual implementations and testing on sites. The special issue provides a good platform to share applied research results from different researchers around the world.

For example, the phase partition-based ensemble learning framework upon least squares supports vector regression (LSSVR) was used for soft sensor modeling to improve the prediction accuracy in chemical and biological processes. As a result, the robotic grasping based on improved Gaussian mixture model was also proposed using the virtual robot experimentation platform. The face image recognition algorithm based on two-dimensional (2D) Gabor wavelet transform and Local Binary Pattern (LBP) was presented. It provides a better classification performance in different scales and directions affected by illumination, gesture, expression, and other factor's variation. With more consciousness in cyber-security, the paper that used the Kalman filter-based attack detection model was proposed. The block withholding delay attack and the countermeasure were also proposed in a similar occasion. The well-known convolutional neural network (CNN) based approach was applied to detect the obstacle for the unmanned surface vehicle. Subsequently, an effective classifier based on the CNN and regularized extreme learning machine (ELM) was adopted to reduce the classification time in the training and testing.

In summary, this issue concluded with different engineering applications of AI. It is imperative that we continue to progress in our search for better engineering systems design and simulation using AI. The progress reported in this special issue suggests that achieving these aims is an attainable one. I hope that we can stay in contact and make this world a better place for a "deep" collaborative research.