Special issue on "Current progress of intelligent technologies for manufacturing society"

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Artificial intelligence and related technologies are now dominant in most of the research areas mainly on manufacturing industry. Current research is enormously growing especially on meta-heuristics. There are huge volume of research results on manufacturing provided in the literature. That is one of the main reason for most of the papers submitted to this special issue cover meta-heuristic based studies. The progress not only on meta heuristics but also on all other AI related technologies points out both theoretical and applicational outcomes. It is now very clear to manufacturing society as well all others that the studies on intelligent systems provide alternative methodologies on how to increase the level of technology and to make it more effective for the benefit of the society. These studies opens the technological progress and research highway along with the following capabilities.

- Ability to learn abut the events as much autonomy as possible and responde accordingly,
- Ability to extract and comprehend knowledge which is some how difficult t access using standard and traditional AI technologies,
- Ability to interpret not only the even-related knowledge but also the respective behaviour styles,
- Ability to gather and utilize corporate entellectual capacity for the benefit of enterprise units, and
- Ability to support human life quality in various aspects.

Creating smart and intelligent systems has found its place in industry for some time. It could be possible to even for see a scientific maturation on some areas withing the next decade.

However the level of auotnomy, cooperation and coordination of intelligent entities such as agents, totally unmanned systems and social interactions of those seem to be keeping their place at the top of the research agenda for some time. Keeping this in mind, this special issue aimed at creating a knowledge forum for bringing the recent progress on intelligent systems for the benefit of manufacturing society. It was hoped that the papers presented in this issue will be the main source of knowledge supporting future research on respective areas. In "International Symposium on Intelligent Systems" which was held in Turkey, various well-organized research papers were presented. Among them 42 are selected to be published under this special issue. After a vigorous and rigorous effort and assessment by international refrees only 14 of them are found to be published. The special issue covers various aspects of intelligent technologies. However most of the papers are on meta heauristics as expected. The issue covers an extensive literature survey on intelligent system including meta heursitic applications for job shop scheduling problems. This may highlight possible research directions along this line. Similarly, a paper which introduces a hybrid system based on genetic algorithm and tabu search providing joint diversified global search and intensified local search capabilities to solve NP-har nature of scheduling problems is included. Another study along this line provided a Genetic Algorithm (GA) based machine-cells formation model utilizing three different selection and crossover operators. A paper on utilizing Bee Colony algorithm for smoothly swing up robot gymnast (Robogymnast) from the downward (stable) position to the upright (unstable) configuration by finding optimum values of the parameters that regulate the amplitudes and frequencies of the sinusoidal signals applied to the two DC motors which manipulates the basic movements provides an interesting view on bee-based modelling. Bee Colony Optimization seems to be attracting the research

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in different aspect of engineering problems. An example of this is also provided in this issue. The study presented an ABC algorithm to solve large scale optimization problems and applied to engineering design problems through an extending the basic ABC algorithm simply by adding a constraint handling technique into selection step in order to make selection of feasible regions in the entire search space easy. In an anther interesting study, an idea for coordinating metaheuristic agents in a swarm intelligence-based coordination framework utilizing simulated annealing agents collaborated with particle swarm optimization for multidimensional knapsack problem is introduced. A comparative performance analysis is also provided in order to show the goodness of the proposed approach. Not surprisingly, the special issue also covers some papers on fuzzy logic applications

including supplier selection, selection of a 3-D measuring machine suit as well as some other interesting topics such as the introduction of a fuzzy logic controller system for DC-DC converter, an agent based change management model, pattern based genetic algorithm for multi-robot path planning, support vector machine for sensor fusion based condition monitoring. The issue also includes an interesting paper on application of intelligent simulation technologies for on-line consumer behaviour which seems to be at the edge of scope. But the methodology implemented can be utilized for on-line behaviour assessment of various functionalities.

The issue presents the papers in a well organized and informative manner for not only AI experienced readers, but also new comers to the respective areas of research.