Applied Computational Intelligence and Soft Computing

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Special Issue on

Computational Intelligence for Unmanned Systems

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An unmanned system (US) is a machine or device that is equipped with necessary data processing units, sensors, automatic control, and communications systems and is capable of performing missions autonomously without human intervention. Unmanned systems include unmanned aircraft, ground robots, underwater explorers, satellites, and other unconventional structures. Computational Intelligence (CI) includes classical evolutionary computation, neural computation, fuzzy systems, swarm intelligence (particle swarm optimization, ant colony optimization, etc.), and other new CI methods such as bee colony optimization algorithms, biogeography based optimization, firefly algorithms, or hybridization of CI approaches. CI is mainly used for solving the problems of optimization in different fields of engineering.

This special issue aims to cover subjects of unmanned systems related to the development of automatic machine systems based on CI, which mainly focus on navigation, SLAM, path planning, computer vision systems, sensing and information processing, and innovative application case studies in unmanned hardware platforms such as aerial, ground, underwater, and unconventional platforms. It tries to encourage advanced CI technologies and new neural-like computing such as deep learning to solve some key problems in US, such as autonomous SLAM for indoor robots.

Potential topics include but are not limited to the following:

- Biologically inspired optimization algorithm computing for US
- CI for SLAM and motion planning of unmanned aircraft, ground robots, and underwater explorers
- CI for navigation, mapping and localization of unmanned aircraft, ground robots, and underwater explorers
- CI for image processing of unmanned aircraft, ground robots, and underwater explorers
- Deep learning for indoor robot SLAM and navigation
- Deep learning and CI for vision systems of indoor robot navigation
- Deep learning for environment sensing and information processing of unmanned aircraft, ground robots, and underwater explorers
- Swarm intelligence technologies for unmanned aircraft, ground robots, underwater explorers, and other unconventional systems

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