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GUEST EDITORIAL

AGNT SI: agents and multiagent systems for social good

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This special issue is devoted to the theme of agents and multiagent systems for social good. It collects research contributions that lead to benefits to concrete societal problems. The four articles cover various areas within this theme, ranging from task allocation in law enforcement to electric vehicle management to traffic signal design to electric load shedding in developing countries.

The articles are briefly discussed as follows: The first article by Oluwasuji et al. on "Solving the Fair Electric Load Shedding Problem in Developing Countries" provides a new formulation of the electric load shedding problem while taking into account fairness. Lack of electricity supply is a problem faced by multiple developing countries as the power stations' generation capacity is limited. Thus, they often take a proactive approach of load shedding and frequently resort to disconnecting large parts of the power grid from the supply. Fairness during the load shedding process is crucial but has not been fully investigated. This article tackles the challenge and proposes two Mixed Integer Programming (MIP)-based solutions. This article also provides a set of benchmarks for fair load shedding schemes, and provide insights for designing fair allocation solutions for other scarce resources.

In "A Collaborative Agent-Based Traffic Signal System For Highly Dynamic Traffic Conditions", Torabi et al. present a distributed, collaborative multi-agent traffic signal timing system (TST) for highly dynamic traffic conditions. The model used is based on a real-world TST system and it will be deployed with minimal changes to the infrastructure. The system has been validated by traffic engineers as well as through extensive simulation of the City of Richardson's traffic network.

The third article, "Electric Vehicle Charging Strategy Study and the Application on Charging Station Placement" by Xiong et al., focuses on electric vehicle (EV) drivers' charging strategy, which plays an important role in deciding the charging stations' performance. The article analyzes the factors impacting EV drivers' choice among charging stations and proposes a behavior model to capture the decision making of the drivers. The authors design a set of user studies to simulate charging scenarios and collect data from human players to learn the parameters of different behavior models. Furthermore, based on the learned drivers' behavior model, the paper presents an optimal charging station placement model to reduce congestion in charging stations suffered by all EV drivers.

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In "Towards Addressing Dynamic Multi-Agent Task Allocation in Law Enforcement", Tkach and Amador tackle how the tasks should be allocated to police officers to improve the overall response time to reported incidents. The officers need to take into account the importance of the tasks and the associated workload. They compare three methods including one based on fisher market, one based on swarm intelligence and one based on simulated annealing. Their results show that the fisher market-based method significantly outperform the other two and can lead to a much higher team utility for the police officers.

The articles have undergone rigorous peer-review according to the journal's high standards. Collectively, these four articles showcase the potential benefit that research in agents and multiagent systems can bring to society. They also show many technical and practical challenges shared by research under this theme. For example, data collection may be difficult and may require innovative methods and validations, e.g., through user studies, or collaboration with government and non-government organizations.