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Editorial

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This issue presents two papers. The first paper presents an important application about planning of Solid Waste Management [1]. It will be part of the smart city concept where it has great impact to reduce greenhouse gases and other environmental aspects.

The second paper presents a novel protocol for stability-aware load balancing to manage the growing usage of the Internet-of-Things in a reliable and effective way [2].

The first paper presents the features that are public available and can be collected from a certain city area. The features are mainly based on social indicators such as education level, gender, age, income etc. and climate indicators such as temperature and rain fall. Based on the information have been forecasted the expected amount of waste. Two models were used for the prediction and compared. The first model is based on regression and the second model is based on artificial neural networks. The results show that the neural networks-based model shows higher prediction accuracy than the regression model. The study has been well done and considers different aspects. It studies the influence of correlated features and looks also for the features that have been used for prediction and which features have the biggest impact on prediction. This analysis helps to understand how waste generation is done and can give new and/or formerly unseen insights for planners and policy formulators.

The second paper presents a Routing Protocol (RPL) for Low power and Lossy Networks LLN. This new protocol should achieve reliable and energy efficient routing. Most IoT devices typically have tight resource constraints, such as limited battery. They may quickly exhaust their energy, causing the entire network to disconnect, and result in packet loss and delay. Therefore, load balancing is a critical function for RPL. To address this problem, almost all of the previous works focus on designing new metrics to select parents in a balanced way. Although many load balancing methods have been proposed, it is still difficult to utilize the proposed methods to achieve load balancing, especially for heterogeneous IoT networks when using congestion-aware routing metrics to implement load balancing. Frequent parent switching, or parent oscillation, may occur. The paper investigates the extent to which the frequent parent changes being observed when different load balancing methods are used. The standard RPL and some existing load balancing solutions can cause a large number of parent changes. The different influences on the IoT network are studied. The findings are reported and a stability-aware load balancing for RPL, which is

called SL-RPL, is proposed that can achieve load balancing among nodes while preserving network stability. The proposed mechanism with RPL protocol is implemented in Contiki OS. The simulation results indicate that SL-RPL can significantly reduce the occurrence of frequent parent changes and improve the performance of IoT networks in terms of packet losses and energy consumption.

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References

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