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Abstract:

In this work, we present Dribble a learn-based timer scheme selector to
manage topology changes caused by mobility in the Internet of Things (IoT)
context. IoT has turned smart devices part of our everyday lives. They are in
everywhere with many shapes, sizes, and capabilities. For IoT to become even
more ubiquitous, it is necessary to overcome the challenges posed by mobility.
One of them is the management of topology changes, especially at the network
layer. Currently, routing protocols check the topology through an advertisement
timer scheme. Such schemes face a basic trade-off between being fast to find
topology problems and concurrently be energy and overhead control saver.
Although there are timer schemes designed to mobile context, all devices are
governed by the same one, which is a hard assumption since IoT is
heterogeneous and naturally, devices have different behaviors. Thus, Dribble
learns the devices' mobility pattern and then it assigns a custom-made timer
scheme conveniently for each device. Our results show that personalized timer
schemes present better performance than single traditional timer schemes such
as Trickle Timer (TT) and Reverse Trickle Timer (RevTT).

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I. Introduction

Smart devices have begun to be part of our daily routine. They can be attached to infrastructures, wearable, and be moving by itself. When those devices are networked and connected to the Internet, they form the so-called Internet of Things (IoT). Nonetheless, they introduce new challenges from the network lens, because they are heterogeneous (e.g., TVs, smartphones, vehicles, etc.) and have different degrees of freedom concerning mobility. Thus, manageability and scalability are examples of key issues that ask for solutions, especially when the mobility factor is present. Until recently, most of IoT's proposed solutions were for static networks [1]. Only a few attempts took the mobile context into consideration [2], [3]. In the mobile and wireless environment, the routing protocol is a key component to enable mobility to the IoT. Mostly of routing protocols for mobile IoT have one timer scheme that governs the communication structure construction and maintenance by triggering from time to time control advertisements.

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