**CONCLUSION**

This paper proposes CoCoWa as a collaborative contact-based watchdog to reduce the time and improve the effectiveness of detecting selfish nodes, reducing the harmful effect of false positives, false negatives and malicious nodes. CoCoWa is based on the diffusion of the known positive and negative detections. When a contact occurs between two collaborative nodes, the diffusion module transmits and processes the positive (and negative) detections. Analytical and experimental results show that CoCoWa can reduce the overall detection time with respect to the original detection time when no collaboration scheme is used, with a reduced overhead (message cost). This reduction is very significant, ranging from 20 percent for very low degree of collaboration to 99 percent for higher degrees of collaboration. Regarding the overall precision we show how by selecting a factor for the diffusion of negative detections the harmful impact of both false negatives and false positives is diminished. Finally, using CoCoWa we can reduce the effect of malicious or collusive nodes. If malicious nodes spread false negatives or false positives in the network CoCoWa is able to reduce the effect of these malicious nodes quickly and effectively. Additionally, we have shown that CoCoWa is also effective in opportunistic networks and DTNs, where contacts are sporadic and have short durations, and where the effectiveness of using only local watchdogs can be very limited.

In short, the combined effect of collaboration and reputation of our approach can reduce the detection time while increasing the global accuracy using a moderate local precision watchdog.