Title: Resource Allocation for Uplink M2M Communication in Multi-tier Network

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Abstract: Machine-to-Machine (M2M) communication in heterogeneous cellular networks (HCNs) is “ONE OF THE DRIVERS” for the future Internet of Things (IoT). Coverage areas of HCNs cells may vary and the capabilities to handle users may vary also. To support massive numbers of machines connected in uplink in HCNs, one of the challenging issues of M2M communication is the possibility of huge traffic that can cause overload problem for specific tier/tiers. Increase the capacity of the network and avoid overload condition for BSs, machines will need to be pushed to the less loaded BSs even they offered a lower instantaneous SINR than the nearest BS. To push the machine to less loaded BS, biasing is introduced to enhance the coverage of the machine or group of machines. This paper proposes the solution of resource allocation in uplink by using cooperative game theory approach by introducing a biasing factor to enhance the overall system performance with fair utilization of radio resources.