



Wireless Engineering Research and Education Center

Ad-hoc Cooperative Computation in Wireless Networks Using Ant like Agents

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Abstract

The shrinking size and increasing density of wireless devices are bound to have profound implications on the future of wireless communications. Today's laptops and wireless phones may soon be outnumbered by ubiquitous computing devices such as smart dust, micro sensors and micro robots. The future generations of wireless networks are therefore expected to have a huge number of heterogeneous mobile computing devices that are dynamically inter connected over wireless links.

Because of their size limitations however, a large number of these devices are likely to have severe restrictions on their processing power, storage space, available memory as well as battery capacity. Unfortunately such rigorous resource limitations in computing devices prevent any meaningful utilization of mobile applications in real life scenarios. To overcome this problem, we propose a new distributed computing model for wireless ad-hoc networks called the Ant Based Computing (ABC) model. ABC is a biologically inspired computing model in which a set of heterogeneous computing systems form a cooperative system on the fly and whenever a resource limited computing device in such a system has a resource consuming application to be run, it uses resources of other devices to surmount its own limitations.

Bio

Santosh Kulkarni is a Graduate Research Assistant at Dr. Prathima Agrawal's Wireless Research Laboratory in Auburn University. He received his MS from Auburn University in May 2009 and is currently pursuing his doctoral degree at the Department of Computer Science and Software Engineering. His academic advisor is Dr. Prathima Agrawal and his current research interests include Wireless LANs, Distributed Computing and Cooperative Networks.

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