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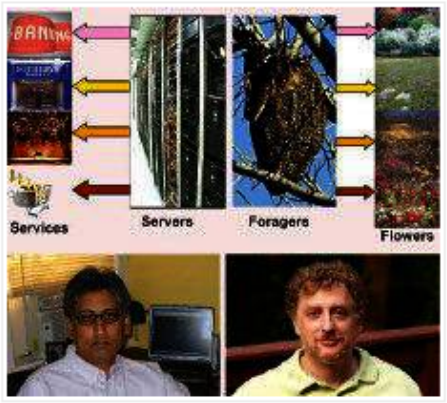
Ask the bees how to improve Internet servers!



Bee Analogy: Net servers hosting Web services and honeybees gathering nectar face similar challenges. Sunil Nakrani (left) and Craig Tovey have proposed an algorithm — inspired by bees — to improve server efficiency.

Anand Parthasarathy

New algorithm is based on 'dance' of foraging honeybees

Bangalore: Internet servers — those large computers that drive multiple Web applications — are frequently overwhelmed by spurts in demand that make it difficult to allocate resources. Bee colonies manage to maintain a steady honey-making operation, even though the supply of nectar might vary drastically. So may be we should ask the bees how they do it?

Researchers presently at the Georgia Institute of Technology in the U.S., have developed a new algorithm or communication system to improve Internet server efficiency — closely modelled on how honeybee colonies organise themselves.

Sunil Nakrani, a post doctoral fellow in the School of Industrial and Systems Engineering at Georgia Tech has joined Craig Tovey, professor in the same school to suggest how the swarm intelligence of highly organised bees might serve as a model for Net server operations.

Their honey-bee inspired algorithm is detailed in a paper in the latest issue of The Journal of Bio inspiration and Biomimetics entitled "From Honeybees to Internet Servers: Biomimicry for distributed management of Internet Management centres."

Bees too have a 'resource allocation' problem and this is how they tackle it: 'scouts' leave the hive looking for nectar.

When they have located the suitable flowers, they return to the hive and do a little 'dance' — which contains a coded message: The direction of the dance tells the other forager bees which way to go; the number of 'waggles' or turns, indicates the distance to the patch of flowers and length of each waggle suggests the quality of the nectar.

When one nectar source is depleted, the scouts locate another patch and 'update' the forager bees in 'real time' with a revised waggle dance.

In an emailed communication to The Hindu on Tuesday, Dr. Nakrani writes that Professor Tovey and he are exploring the possibility of starting a company to develop their bee-inspired server organisation technology.

He also plans to return to India to work at the Tata Research Development and Design Centre in Pune.