

Cardiff's bees calculation sets industry buzzing

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Researchers at Cardiff University's Manufacturing Engineering Centre (MEC) developed the procedure, or algorithm, after observing the "waggle dance" of bees foraging for nectar. The algorithm enables companies to maximise results by changing basic elements of their processes.

When a bee finds a source of nectar, it returns to the hive and performs a dance to show other bees the direction and distance of the flower patch and how plentiful it is. The other workers then decide how many of them will fly off to find the new source, depending on its distance and quality.

The MEC team's Bees Algorithm mimics this behaviour. A computer can be set up to calculate the results of different settings on a manufacturing process. More computing power is then devoted to searching around the most successful settings, in the same way as more bees are sent to the most promising flower patches.

The Algorithm has been shown to cope with up to 3,000 variables and is faster than existing calculations. By entering basic data about all or part of a company, or even just one machine, the MEC team can calculate the best outcome for a wide range of business processes. They have already used the Bees Algorithm to work out the most efficient settings on welding systems and for the design of springs.

The Algorithm was unveiled by PhD student Afshin Ghanbarzadeh and his team at the recent internet-based Innovative Production and

Machines Conference hosted by MEC as part of its work with the EU-funded Network of Excellence in this field. The team's research was one of 110 papers presented to 4,000 delegates from 73 countries at the conference, which was held entirely on-line.

MEC director Professor D T Pham OBE said: "We had some highly imaginative ideas at the conference and this is one of the most innovative. This Algorithm can help business work out the most effective way to set up their machines, and save them a lot of money through running their processes as efficiently as possible."

Source: Cardiff University

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