

Traffic Signal Control Using Citizens' Knowledge through the Wisdom of the Crowd

Authors : Aleksandar Jovanovic, Katarina Kukic, Ana Uzelac, Dusan Teodorovic

Abstract : Wisdom of the Crowd (WoC) is a decentralized method that uses the collective intelligence of humans. Individual guesses may be far from the target, but when considered as a group, they converge on optimal solutions for a given problem. We will utilize WoC to address the challenge of controlling traffic lights within intersections from the streets of Kragujevac, Serbia. The problem at hand falls within the category of NP-hard problems. We will employ an algorithm that leverages the swarm intelligence of bees: Bee Colony Optimization (BCO). Data regarding traffic signal timing at a single intersection will be gathered from citizens through a survey. Results obtained in that manner will be compared to the BCO results for different traffic scenarios. We will use Vissim traffic simulation software as a tool to compare the performance of bees' and humans' collective intelligence.

Keywords : wisdom of the crowd, traffic signal control, combinatorial optimization, bee colony optimization

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