Ant colony optimization is a metaheuristic which has been successfully applied to a wide range of combinatorial optimization problems. The author describes this metaheuristic and studies its efficiency for solving some hard combinatorial problems, with a specific focus on constraint programming. The text is organized into three parts.

The first part introduces constraint programming, which provides high level features to declaratively model problems by means of constraints. It describes the main existing approaches for solving constraint satisfaction problems, including complete tree search approaches and metaheuristics, and shows how they can be integrated within constraint programming languages.

The second part describes the ant colony optimization metaheuristic and illustrates its capabilities on different constraint satisfaction problems.

The third part shows how the ant colony may be integrated within a constraint programming language, thus combining the expressive power of constraint programming languages, to describe problems in a declarative way, and the solving power of ant colony optimization to efficiently solve these problems.
ABOUT THE AUTHOR

Christine Solnon is Associate Professor at the University of Lyon 1 and a member of the LIRIS laboratory. She is Vice-President of the AFPC; the French association for constraint programming.

For additional product details, please visit https://www.wiley.com/en-us