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RISK ASSESSMENT FOR INCOHERENT DATA

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Abstract

The apriori knowledge and its efficient handling are compulsory for modern, proactive strategy in managing real-life situations. Knowing how a specific system would behave when input data might be incoherent may help choosing among them, in order to better deal with real-world problems.

The quality of data collections is fundamental in making correct and on time decisions. From the risk management point of view, the coherence and the integrity of the handled data affect the decision value. If the data are biased, the applications that assist the manager may provide poor decision support. In this paper we have studied the influence of incoherent input data to efficiently solve an optimization problem. As an application, we approach the well-known *Travelling Salesman Problem* in its standard form and a dynamic variant. These versions are solved using a biologically-inspired metaheuristic method. The adaptation and the resilience of natural systems (Darwinian evolution and colony behaviour) suggest the same performance for the derived solving methods. We used a natural incoherence measure and compared the results of the applications on both correct and incoherent data. We extended our numerical experiments by coupling a new imperfection dimension: the uncertainty. The applications behaviour does not have a pattern: we observed stable, unstable, even catastrophic effects of the input data incoherence.

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