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Forecasting Optimal Production Program Using Profitability Optimization by Genetic Algorithm and Neural Network

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Abstract : In our business field today, one of the most important issues for any enterprises is cost minimization and profit maximization. Second issue is how to develop a strong and capable model that is able to give us desired forecasting of these two issues. Many researches deal with these issues using different methods. In this study, we developed a model for multi-criteria production program optimization, integrated with Artificial Neural Network. The prediction of the production cost and profit per unit of a product, dealing with two obverse functions at same time can be extremely difficult, especially if there is a great amount of conflict information about production parameters. Feed-Forward Neural Networks are suitable for generalization, which means that the network will generate a proper output as a result to input it has never seen. Therefore, with small set of examples the network will adjust its weight coefficients so the input will generate a proper output. This essential characteristic is of the most important abilities enabling this network to be used in variety of problems spreading from engineering to finance etc. From our results as we will see later, Feed-Forward Neural Networks has a strong ability and capability to map inputs into desired outputs.

Keywords : project profitability, multi-objective optimization, genetic algorithm, Pareto set, neural networks
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