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Opposite Degree Algorithm and Its Applications

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Abstract. The opposite (Opposite Degree, referred to as OD) algorithm is an intelligent algorithm proposed by Yue Xiaoguang et al. Opposite degree algorithm is mainly based on the concept of opposite degree, combined with the idea of design of neural network and genetic algorithm and clustering analysis algorithm. The OD algorithm is divided into two sub algorithms, namely: opposite degree - numerical computation (OD-NC) algorithm and opposite degree - Classification computation (OD-CC) algorithm.

Introduction

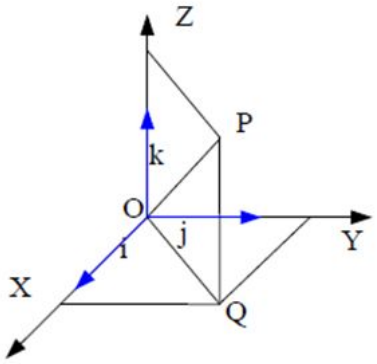
In general, a priori value is A, a posteriori value is B, called B A with respect to the opposite degree, referred to as the opposite degree, denoted by O (A, B), can get the formula:,

$$O(A,B)=\frac{B-A}{A}=\begin{cases} negative, for B<A \\ 0,\ for A=B \\ positive,\ for B>A \end{cases}$$

From the definition of opposite degree, the calculation can be further extended to the opposite degree of space, as shown in the following formula:

$$O(A,B)=\begin{pmatrix} O_1(A_1,B_1) \\ O_2(A_2,B_2) \\ \cdots \\ O_m(A_m,B_m) \end{pmatrix}$$

Through the opposite degree vector calculation, numerical prediction or classification can be done.



Its Applications

The opposite numerical algorithm can be used for numerical prediction, has been successfully applied in some engineering fields, such as metal wear safety prediction [1], the settlement of soft soil foundation prediction [2].

The opposite degree classification calculation algorithm can be used for classification, also in some engineering applications, such as the gas safety prediction of coal and gas outburst [3-4].

Conclusion

In short, opposite degree algorithm is a new algorithm, it can be used for prediction. According to the current research results, its prediction results are good and stable.

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