Abstract

Geometrical dilution of precision (GDOP) concept is a powerful and widespread quantify for determining the errors resulting from satellite configuration geometry. GDOP computation is based on the complicated transformation and inversion of measurement matrices that has a time and power burden. Also, basic back propagation neural network (BPNN) is easy to fall into local minima. To overcome this problem, in this study we propose an approach based on neural network (NN) and evolutionary algorithms (EAs) for GPS GDOP classification. In this article we use a number of EAs such as genetic algorithm (GA), particle swarm optimization (PSO), new PSO (NPSO), and imperialist competitive algorithm (ICA) to train an NN. Simulation results illustrate that the proposed methods have superiority performance.

References

Artificial Intelligence Approaches for GPS GDOP Classification

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Index Terms

Computer Science

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GPS GDOP classification, neural network (NN), genetic algorithm (GA), particle swarm optimization (PSO), new PSO (NPSO), and imperialist competitive algorithm (ICA).