

Title : FINE-TUNING OF SOLAR TRACKING SYSTEM
USING GENETIC ALGORITHMS

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Abstract

High-concentration solar requires the sun to be tracked with great accuracy for maximum output voltage. The current trend in solar concentrator tracking system is to use an open-loop local controller that computes the direction of the solar vector based on geographical location and time. But it is not enough accuracy because it has error from computing the sun's position, mechanical, controller systems and installation.

The genetic algorithms (GA) are one technique for optimization problems. In this research, GA is used to increase accuracy of solar tracking system by always fine-tuning the position based on wolf's theory that receives maximum solar radiation, so the system becomes on-line. The system will control machine to positions of each answer population from an initial set of random solutions and evaluate by measure voltage from sensor, then create the next generation by using crossover operator, mutation operator and selection. In the experimental, statistical method is used to find the best parameters of GA. The result of experiment shows that the performance increases about 7.084%.