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Modeling and optimizing mechanical properties of FSW thick pure copper plates utilizing artificial intelligent techniques

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This investigation is undertaken to develop a model to predict the microstructure and mechanical properties of Friction Stir Welded (FSW) thick pure copper plates using Artificial Neural Networks (ANN) and optimize it utilizing Ring Probabilistic Logic Neurons (RPLN) and Genetic Algorithms (GA). This paper introduces Ring Probabilistic Logic Neuron (RPLN) as a time efficient and accurate algorithm to deal with RNP. Performance of the RPLN is compared with evolutionary Genetic Algorithm (GA). The simulation results show that performance of the RPLN algorithm compared to GA's is more reliable to deal with optimizing problems, and it is capable of achieving a solution in fewer convergence time steps with better accuracy.

Biography

Aydin Azizi is a Professor in the German University of Technology. Also he is the Research Focal Point of the Research Council of Oman (TRC). His research area is Mechatronics focusing on developing and investigating different artificial intelligent techniques to model, predict and control nonlinear systems.

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