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| **Title:** | Performance Analysis of the AVR Using An Artificial Neural Network and Genetic Algorithm Optimization Technique | | |
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| **Abstract:** |  |
| The Automatic Voltage Regulator (AVR) is required to maintain a steady output voltage from the generator, and it relies heavily on the Proportional Integral Derivative (PID) controller. For the function of controlling industrial loops, a controller known as the PID controller is frequently used on account of its straightforward architecture, uncomplicated implementation, and excellent dependability. Traditional approaches to tuning the PID controller have their limits, but those limits may be overcome by incorporating more sophisticated tuning approaches. The main aim of this study is to provide the ideal design for tuning a PID controller using a Genetic Algorithm (GA) and an Artificial Neural Network (ANN) in order to further improve the PID-based AVR system. The performance of the suggested approach is afterward compared with one another. The results of a simulation carried out in MATLAB show that GA tuning techniques give better performance. | |