



GOOAL: A ROUTINE BASED ON GENETIC ALGORITHMS TO TRACK HARMONICS IN ELECTRIC POWER SYSTEMS

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ABSTRACT—Voltage and current waveforms of a distribution or transmission power system are not pure sinusoids. There are distortions in these waveforms that can be represented as a combination of the fundamental frequency, harmonics and high frequency transients. This paper presents a novel approach to identifying harmonics in power system distorted waveforms. The proposed method is based on Genetic Algorithms, which is an optimization technique inspired by genetics and natural evolution. GOOAL, a specially designed intelligent algorithm for optimization problems, was successfully implemented and tested. Two kinds of representations concerning chromosomes are utilized: binary and real. The results show that the proposed method is more precise than the traditional Fourier Transform, especially considering the real representation of the chromosomes.

Key Words: Genetic algorithms, Harmonic analysis, Power systems