A Study of Sound Signal Tracking

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ABSTRACT

This study is composed of three main parts. The first is to use the piezoel-electric element to make a set of four-direction sound-drawing sensors. It is used to make samples from analog signal information that we get, and samples will be transformed into digital signals for the computer to analyze, compute and handle ; in the mean time, we can acquire the characteristic values of signal sources.

The second is to use the advantages of the gray system theory to make analyses and decisions of the characteristic values about gray relational grade, so that we can figure out sixteen-direction sound source targets.

Final is to use the PID controller and Fuzzy controller and Genetic Alogorithms to make output control(motor)of the target object and thereturning back of the location sensor. Finally, through serial information of the three parts ’ processes, we can get a signal-tracingsystem which is fast, highly accurate and disturbance-proof.

Keywords : piezoel-electric element、gray system theory、PID controller、Fuzzy controller、Genetic Alogorithms

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