

## **INFRASONIC SIGNAL DETECTION VIA THE HOUGH TRANSFORM**

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The Hough-Transform is a mathematical device that allows for the retrieval of parametric curve information from binary-pixelated data in the presence of noise. Originally used by particle-physicists to retrieve particle track information from cloud-chamber records, the Hough Transform has found wide use in pattern recognition problems. The Hough Transform maps points in the image space,  $S$ , into straight lines in parameter space,  $P$ . It has the very useful property that all points in  $S$  that lie on the same straight line, map to the same number of continuous straight lines in  $P$  with a common intersection point. The problem of extended straight line detection becomes one of local peak finding, a problem that may be substantially more tractable. It is shown here that the Hough Transform can be used to reliably detect the points of constant measured backazimuth associated with propagating acoustic signals in IMS infrasonic array data provided an estimate of the backazimuth can be made at short regular discrete time intervals. A feature of the detection algorithm is the ability to accomodate full three-dimensional array geometry.