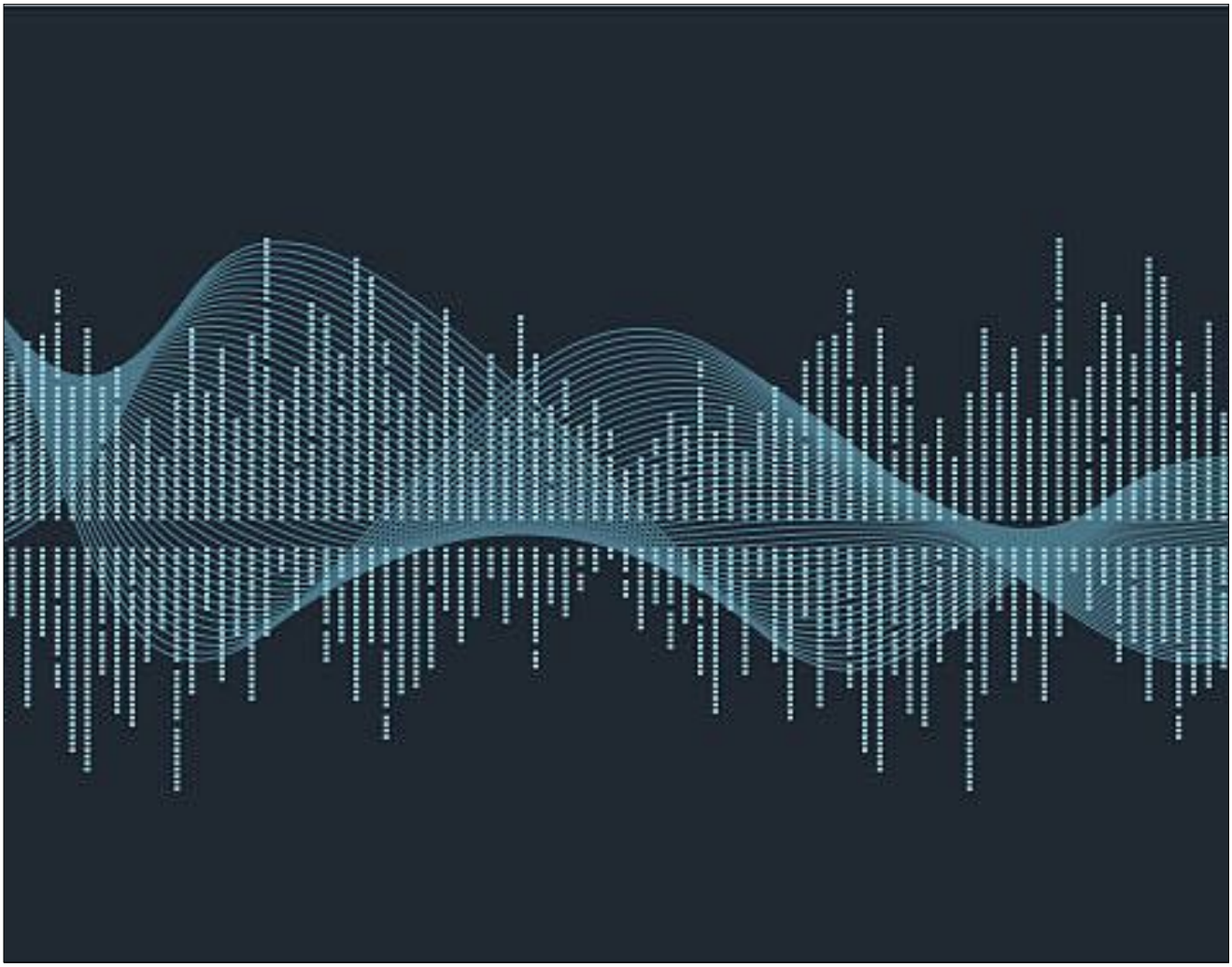

Something Doesn't Sound Right

Prepared by: David Guidos, Senior Consultant, Researcher

December 7, 2017

SYSTEM OVERVIEW

Description

The Something Doesn't Sound Right (SDSR) system, uses inexpensive and readily available microcomputer hardware to monitor the sounds in an environment for deviations from "normal" sound frequencies and levels. When an anomaly is detected, the system immediately sends notifications using email or SMS to alert someone.

Operations

The sensors are typically placed in locations in proximity to the environment to be monitored. The program creates a sound profile by listening to the environment for a short time and analyzing the sound to create a sonogram of the normal frequencies and sound levels. This profile can be saved and used with other profiles to create a time-based schedule of profiles in the event that the sounds change throughout the day. This is useful for production environments which change set up configurations that alter the environmental sounds.

Sound Profile Specifications

The profiles are created by capturing sound data from microphones at a sampling rate of ~44 kHz with a sample size of 2048 data points per packet. The frequencies and their power levels for each sample are determined using an FFT and the resulting data are aggregated into a profile created from multiple packets. The sound sampling duration (number of packets) can be optimized based on the conditions of the environment being monitored.

PHOTOS