Improved System for Hazardous Gas and Heat Detection and an Alert System for Households

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With many fires happening daily in communities and homes the need for inexpensive, reliable, saleable warning systems, more than just a simple audible fire alarm that is currently used, is highly evident. The goal was to create a solution that met these needs all while being functional and affordable. The solution proposed is a unique alarm with multiple capabilities. Electronic microcontrollers were used in the main design and add-on sub systems were further developed including a gas sensing system and a communication system which all combine to form an overall ‘Meshing Alarm Module’. The module will siren once a threshold value has been exceeded, then communicate with nearby alarm modules warning the module owners of a possible nearby threat. The capability that the alarm can communicate or ‘mesh’ with other alarms is envisioned to save many lives as this feature is completely unique. The module was put through a series of tests for suitability and reliability in differing operating conditions. The tests included reaction times when the heat and gas source was moved further from the module, as well as communications reliability and sensitivity to differing conditions. The module performed well demonstrating reliability and functionality. For future research and improvement goals the module could be equipped with a GSM subsystem to extend communication range, as well as a solar power sub system in order to provide power for extended periods of time.

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