

## Accuracy Analysis of Ultrasonic, Magnetic and Radar Sensors for Manhole Monitoring

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### Abstract

During the rainy season, heavy downpours are always a source of concern for the world. Flooding and heavy rains can devastate communities, disrupt agriculture, and contribute to traffic accidents. Weir and flow hall effect sensors are the conventional analytical methods for measuring flow rate; in this paper, we analyzed manhole flowrate statistics. The measurement of the flow rate of a notch/weir is a time-consuming task that necessitates continuous mathematical analysis. . We created three types of IoT sensors in this study: (HC-SR04 ultrasonic, YF-S201 magnetic, and HB100 radar), which take the sensor's real-time input signal and estimate the flow using a notch equation and a previously calibrated optimized coefficient of discharge. The proposed systems are cost-effective, but in terms of accuracy, we found that the HC-SR04 ultrasonic sensor is the best of the three systems

**Keywords :** Flowrate monitoring , IoT sensor, Manhole monitoring

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