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Effect of a Gap Between Electrodes by Using the Coplanar Copper Plate in Capacitive Sensing

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Abstract:
Capacitive sensing is a technology that can detect and measure anything that has a dielectric property different from its surrounding by measuring the capacitance between the electrodes. The use of this technology enables better solution in measurement such as detecting the height of liquids, finding properties of composite materials, acting as human machine interface and many more. The gap between the electrodes plays a major role in detection and measurement. In this work, a capacitive water level sensor has been fabricated and tested to evaluate the effect of the gap between electrodes by using a coplanar copper plate. The sensor measurement has been done on four different gaps of the electrodes which are divided into 15, 35, 55 and 75 mm gap. Arduino Mega 2560 is used to capture the voltage reading from the sensor. The results from the sensor reading show that the voltage is proportional to the gap between electrodes. The bigger the gap between electrodes, the smaller is voltage reading. The results were also supported by analysis of variance for better reliability.