



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Roshn Marwah	Project Number J0914
Project Title Stop My iPod from Drowning	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project was to come up with a solution that will help prevent electronic or other personal items being washed in a washing machine. I came up with this idea after my mom washed three iPods at home.</p> <p>Methods/Materials I choose RFID as it provided the best solution to this problem. RFID contains two parts, interrogators and tags. Passive tags get all their power from the signal sent by the interrogator. The RFID tags were stuck on two electronic devices an iPod and cell phone. An RFID reader was set up near the washing machine and connected to a laptop computer with a USB cable. A buzzer was connected to the RFID board to set of an alarm if the reader found a tag. I have also written a small program to play a music file on the computer when a passive tag was within reading distance of the RFID reader. The tags were chosen because they are thin, without batteries and easy to stick on an iPod or cell phone. Also they do not look bad or make the iPod/cell phone hard to carry. Electronic devices were put in various types of clothes and brought near the RFID reader, various combinations were tried; with the electronic devices turned off and on, with the washing machine off and on, different kinds of clothes and with a radio playing music in same room.</p> <p>Results My results were that within the range of the reader (about 4 inches) I was able to detect the tags and set off an alarm irrespective of the room's environmental conditions. Therefore, my conclusion is that my project was a success. I have found a low cost solution using passive RFID (Radio Frequency Identification) tags that are light and durable can be used for the detection of electronic and other objects near a washing machine. However, to make this useful and easy to use by most people the range of the reader needs to be increased and the connection between the computer and RFID reader made wireless. The reader could also be built into the washing machine.</p> <p>Conclusions/Discussion I considered five different options i.e. Plastic covers, Magnets, Infrared communication, Blue tooth communication, and RFID. I choose RFID as it provided the best solution to this problem. RFID contains two parts, interrogators and tags. Passive tags get all their power from the signal sent by the interrogator. The RFID tags were stuck on two electronic devices an iPod and cell phone. The project was a success but needs some improvements for general use.</p>	
Summary Statement Determine whether a solution is possible for the detection of electronic objects near a washing machine and set of an alarm if required.	
Help Received Mrs. Makhijani (Science Teacher); Jim at Radio Shack; Kishor to help with program; Parents for funding and other advice	