**Project Title:** Braille display enabled-Personal Assistant Device - “Braille-PAD”.  
  
**Project Category:** Engineering.  
  
**Project Objective :** The “Braille-PAD” is a smartphone aimed to make the life of the visually impaired easier. This gadget promises to help them in day to day activities. From reading books to using the maps. The device enables them to use most of the utility apps. With the help of inbuilt assistant this device will change the lifestyles of the blind.   
  
**Project Synopsis :**To help visually impaired persons in a society predominantly developed around sighted population, many assistive technologies have been developed to provide them with access to visual text and graphics. These technologies generally employ auditory and/or tactile feedback as a substitute for vision. Auditory assistance such as a synthesised voice screen reader can efficiently transfer text to speech. However, when it comes to information with a spatial dimension, such as mathematics expressions, illustrations, diagrams, and maps, visual layout and hierarchy are often lost, or would be tedious to articulate verbally. We demonstrate how to convey spatial information through the BRAILLE PAD.  
  
          The braille pad works on the principal of solenoid valves used in electrical water purifiers. The tactile pin is held between the coils with the support of the spring. There are several sets of pins each containing 6 pins in order to denote the letters, numbers etc. the device will be programmed in such a way that it will be able to read the websites, maps, contacts, documents, and then arrange the pins of each and every set accordingly by supplying programmed power to the electromagnetic setup for the tactile pin. As the pin rises the person can feel them and understand what it signifies. If it’s a kind of button then the person can also press it to make it function accordingly. The device will also have a proper designed personal assistant to make the device more efficient.  
  
          For the time being we have used Arduino for programming the whole setup but finally we are going to imply in it the android software and use highend chipsets for smooth functioning of the device.    
  
   
  
**Materials and Methods**: The materials used in the prototype are- Arduino UNO-for programming the device, insulated copper wires-for making the solenoid , Jumper cables-for connecting Arduino to the device, Soft Iron pins-for the tactile pins.  
  
   
  
**Results/Observation/Findings :** The programmed LED’s work perfectly, by replacing them by the solenoid valves we can fulfil the basic objective of the innovation. arranging the 3X2 matrix as a unit cell we can form a tactile display showing the actual screen.    
  
The device will help every visually impaired person to access most of the features of a smartphone which a normal person can. The device will improve the life style of the differently abled person helping them in using almost all utility apps.   
  
**Conclusion :** Thus, this Device delivers interactive and a better life to the blind at a very low cost. This will completely change the blind people lead lives. The people can use the device to read books, use various social media websites, see maps use the navigation, listen to music, use almost all the utility applications. With the addition of a virtual assistant this gadget equips the blind people with all facilities making them no less than common people.    
  
   
  
**Innovation :** In this project, we have linked a very common appliance – electric water purifier to a smart phone for the blind by using its concept of solenoid valves Innovation here is in the lifestyle of the blind.