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2021 Electronics Online Challenge Sponsored by Texas Instruments

iPhone 6S Plus - Disassembly

For the 2020-2021 Robotics Texas Instruments online challenge, I decided to disassemble the iPhone 6S Plus. This device was chosen because I was familiar with the phone and it had a lot of cracks that reached underneath the touchscreen. Thus, it was not accessible to the usage of a phone. This essay will cover each component of the phone, its purpose, and what I learned from this experience.

After the disassembly process, I identified fifteen parts inside the iPhone 6S Plus. The first part is the touch screen segment and the second component was the home button or fingerprint sensor. There are two PCBs connected to the top of the phone. The first PCB is the secondary camera module. The last PCB is the ambient light sensor which can be used as the microphone. Lastly, is the receiver and loudspeaker devices.

The second section of the iPhone 6S Plus is the main enclosure, which includes nine components. The first part is the battery, which is attached with gum-like adhesive. The primary camera module is connected to the main PCB. On the right side of the main enclosure are the camera flash and power off/on button PCB. Below that is the SIM card tray and the loudspeaker assembly. On the bottom is the taptic engine assembly and the main audio jack PCB. The last component is the volume up/down and the silent PCB.

The touchscreen module hides all the mechanics underneath the phone, as an input/output device. The fingerprint sensor allows the user to do various things. The secondary camera module is to take selfies. The ambient light sensor and microphone PCB is used to detect light,

and to pick up sound from the user's videos. The loudspeaker assembly plays a call's audio through the device's speaker. The receiver accumulates information from multiple satellites to locate the device. The battery is used to power the electronics. "The central PCB is the main capacitor that stores data, consists of high-power transmitters, and senses the velocity and acceleration of an object." (Cited Text) The camera acts as a flashlight. The power off/on button shuts off the device. The SIM card that stores data from the phone. The taptic engine assembly is a subsystem which is a haptic user interface feedback. The main audio jack allows sound to play. The volume off/on button increases/decreases the volume. The silence button turns off all notifications until turned back on.

This experience was very inspiring. I learned many new topics, such as what goes behind the screen when a user is inputting something. I also learned what each component does and why it is needed. I am comfortable in the field of programming, but I am not afraid to open up to the different sides of computer science and engineering. Therefore, I am elated that I took the time and opportunity to disassemble an iPhone 6S Plus.

Parts List:

Main Enclosure:

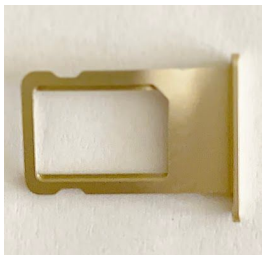
This is the main enclosure, in short, this is where the functionality of the iPhone 6S Plus comes from.

Main PSB:

This component is the main capacitor or “motherboard” of the phone.

SIM Tray

This tray holds the sim card which stores all the data of your phone.



Loudspeaker Assembly:

This plays audio through to the user.

Battery:

This powers every mechanism of the iPhone 6S Plus.

Main Camera:

This is the front camera.

Home Button:

This is the fingerprint sensor which allows the user to do various things on the device.

Display:

This is the back of the touchscreen module.

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