

Reverse Engineering Challenge: What's Inside a Samsung Galaxy Cellphone

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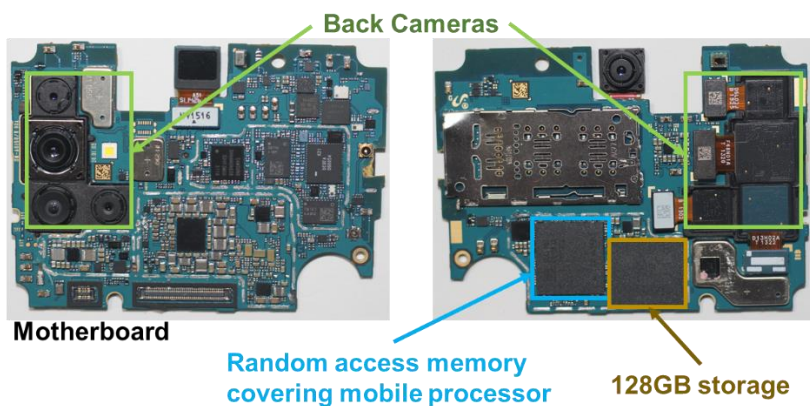
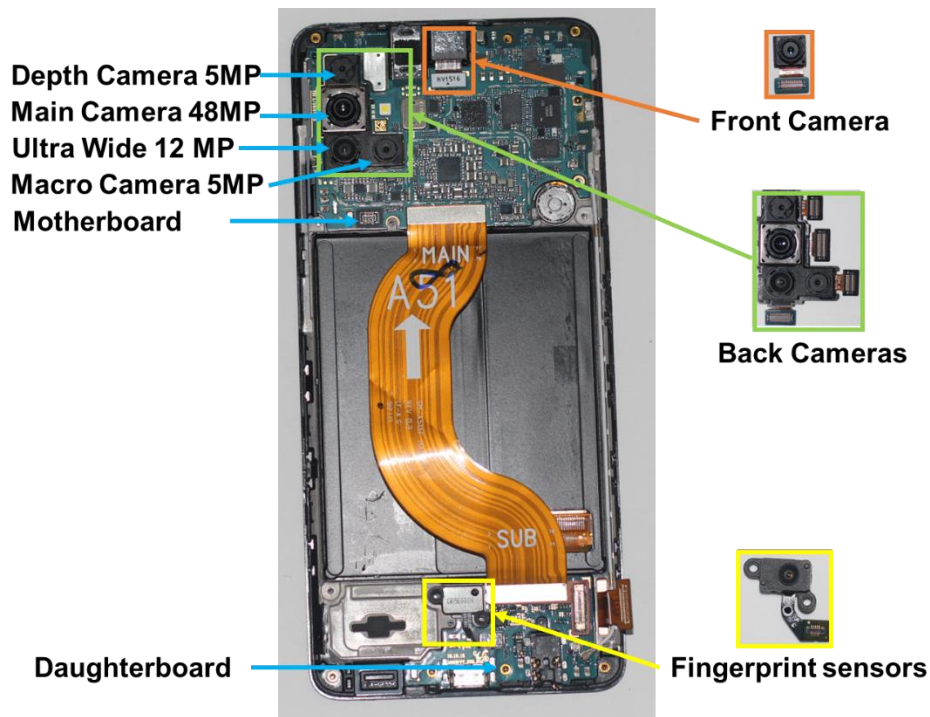
We decided to reverse engineer a Samsung Galaxy A51 cell phone in our project. Cell phones are very useful in our daily lives and have changed how we communicate and access information. They can do more than just make calls and send texts, such as checking email, using maps, and mobile payments. We wanted to learn more about how cell phones work, so, we opened one up to study it.

To reverse-engineer the phone, we did the following:

1. Gathered the necessary tools such as a plastic pry tool and Phillips head screwdriver.
2. Turned off the phone and removed any cases or other accessories.
3. Located and removed any screws along the edges or on the back of the phone.
4. Carefully lifted off the back cover using a plastic pry tool.
5. Once the back cover was removed, we were able to see the motherboard, battery, and other internal components. We removed any additional screws or connectors to access these parts.

During the reverse-engineering process, we found several components inside the phone, including a display screen, memory and processor, several cameras, and sensors. The main **motherboard** contained the **mobile processor** (Exynos 9611) and other important chips and components, while the **daughterboard** held additional chips and components. The mobile processor enables the phone to perform various functions such as making calls, sending texts, and accessing the internet. The phone also had a 32 MP **front camera** for taking selfies and **four back cameras** arranged in an "L" shape in the corner with a rectangular protrusion. It had a **RAM** (Micron 32 Gbit) for fast data storage and processing, and a **storage drive** (KLUDG4U1EA-B0C1 128GB) for storing larger amounts of data such as documents, music, and photos. The phone also had an optical in-display **fingerprint scanner** located near the daughterboard, which allowed the user to unlock the phone using their fingerprint. The daughterboard also had a **USB-C** plug, a 3.5 mm **audio jack**, and a **magnet** for the speaker. The phone had a 6.5-inch **touch screen**, and the plastic frame contained an **antenna** for transmitting or receiving radio signals.

We learned a lot from reverse engineering a cell phone. It was fun and we learned how it works and how its parts work together. We also learned about electronics, engineering, and computer science. This has helped us develop problem-solving and critical thinking skills as we analyze and understand the device's design and operation.



References:

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 - a. <https://www.digikey.com/en/products/detail/micron-technology-inc/MT53D1024M32D4BD-046-WT-D/10515242>