



REVERSE ENGINEERING CHALLENGE

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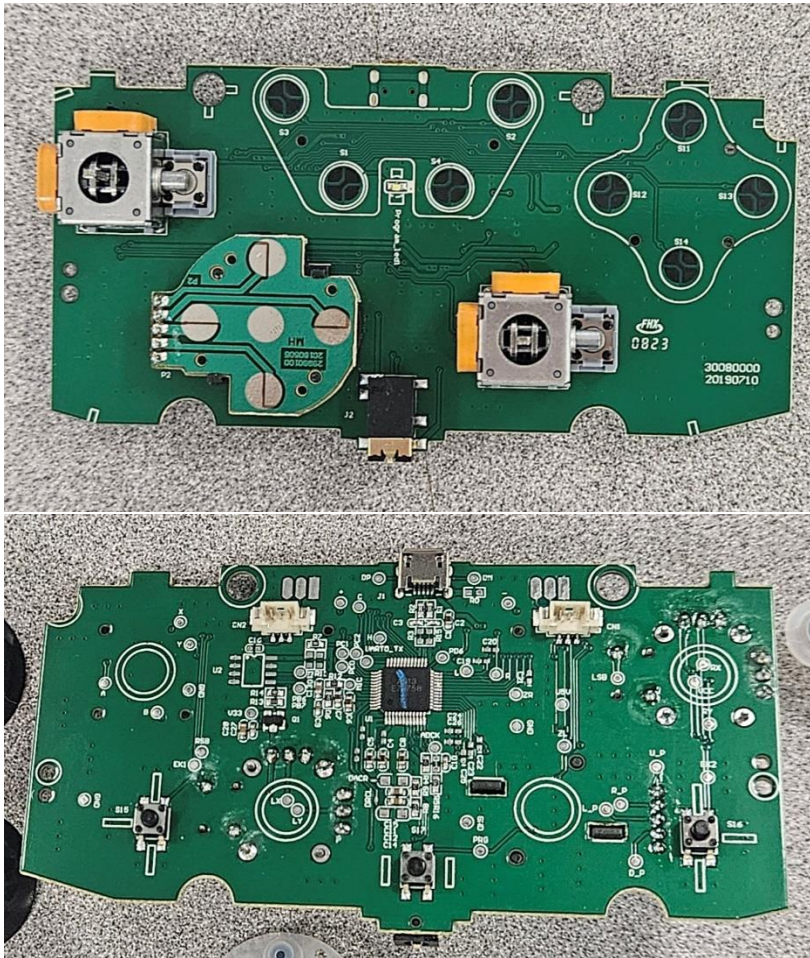
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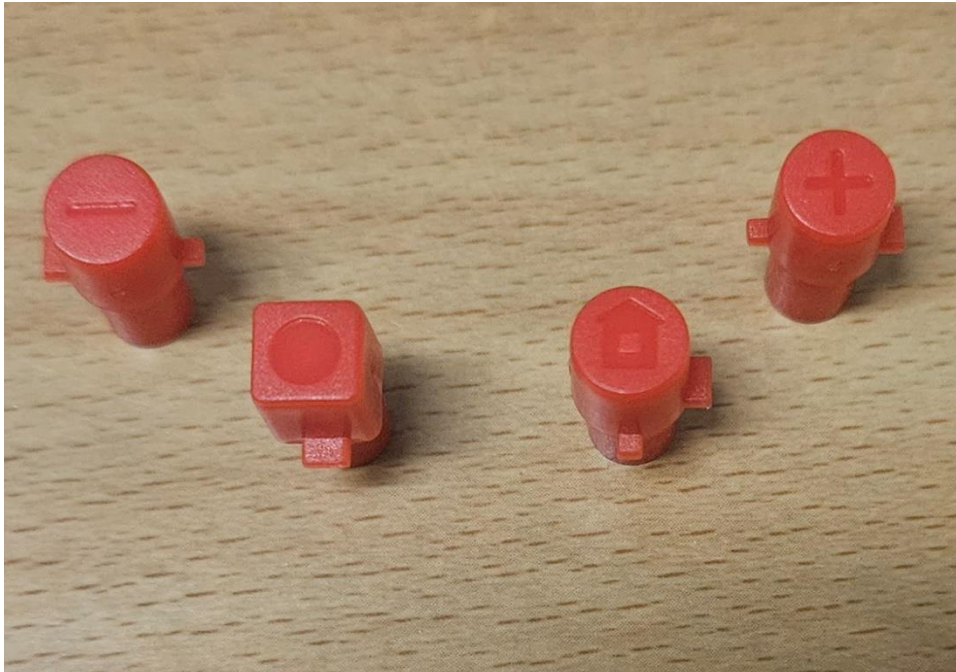
Power An Enhanced Wired Controller for Nintendo Switch - Mario Punch

The first video game controller, a dial and button, debuted in 1958 for Tennis for Two. Controllers are vital handheld devices connected to gaming consoles/computers via wires for stable connections. They feature buttons, triggers, and joysticks, their design varying by brand/model. Despite wireless popularity, wired controllers remain favored for reliability and reduced input delay, crucial for immersive gaming experiences.

We used a gaming controller because it was cost efficient and simple to breakdown.



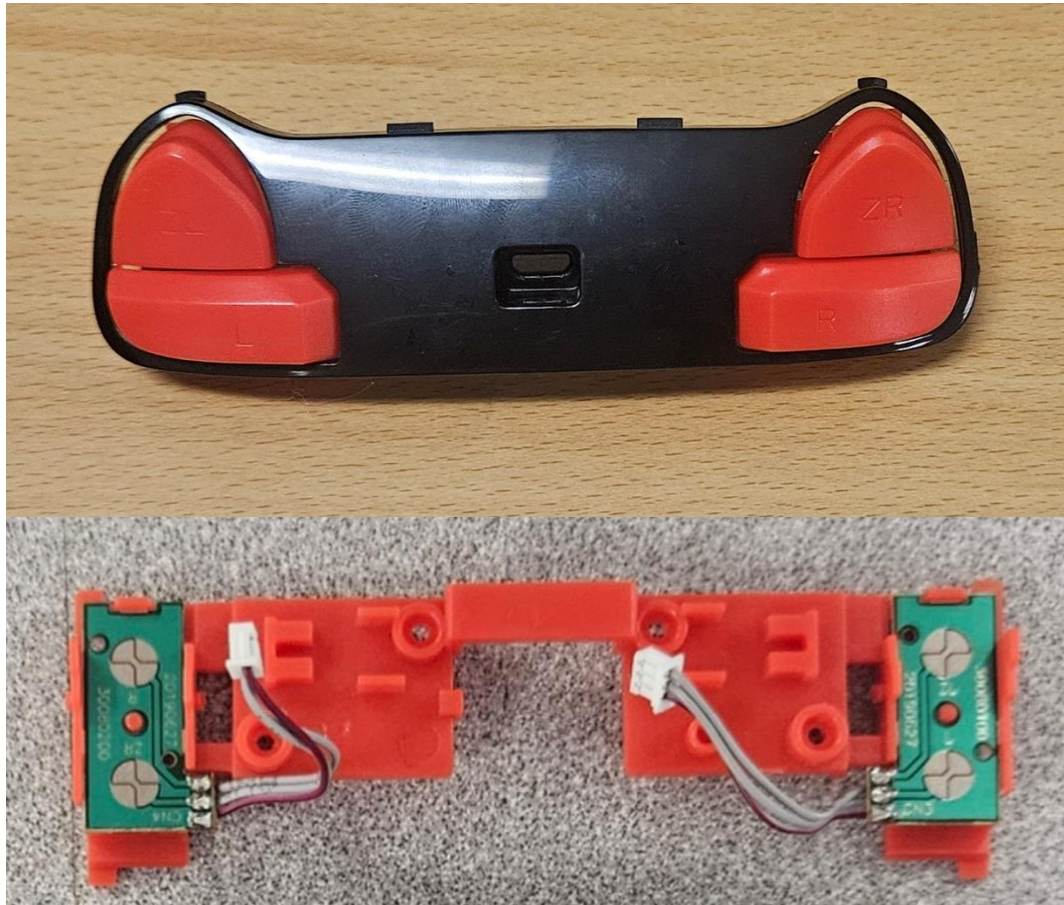
Circuit boards, or PCBs (Printed Circuit Board), are essential in electronics, connecting components via traces. They facilitate device functionality, ensuring insulation and power distribution. Circuit boards integrate electronic components, including CPUs, memory, and peripherals, in a compact space, indispensable for modern electronics.



Buttons are primary inputs on controllers, triggering actions like jumping or attacking. When pressed, conductive pads bridge gaps, closing circuits for electricity flow, interpreted by microcontrollers for USB connections.



Joysticks, also known as **thumb sticks** or **analog sticks**, control character/object movement in games, connected to potentiometers for X/Y axes. They translate hand movements into electrical signals for computer interpretation, allowing precise control for various game genres.



Triggers, often on controller tops/backs, offer nuanced control for actions like accelerating or aiming, reacting to pressure levels. They enhance gaming experiences, detecting varying pressure levels for precise actions.



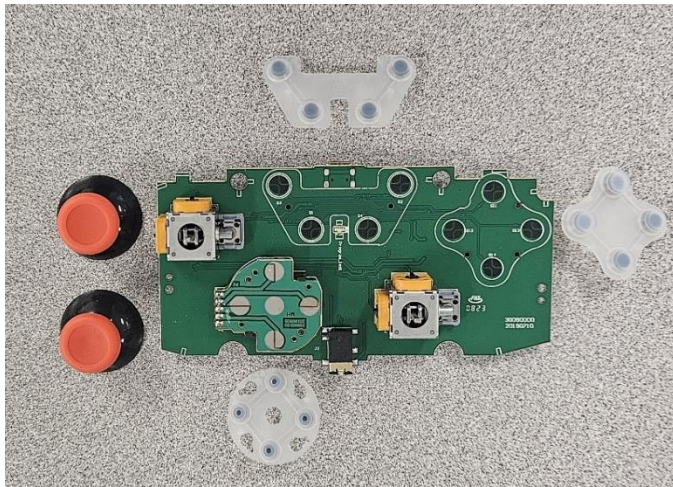
Directional Pads (D-Pads) on the left side of controllers provide alternative directional inputs to joysticks. Initially used for character movement and menu navigation, D-Pads now serve various functions in different game genres, remaining essential for precision control.



Conductive rubber pads, or **button gaskets**, register button presses, completing electrical circuits when pressed. Placed under buttons, they ensure proper controller functionality, translating physical presses into electrical signals for console/computer interaction.



Controller shells (front & back plates) protect circuit boards from water, sweat, and damage, ensuring durability and player grip. Button shells contribute to player comfort and support during gameplay.



Conclusion

We are grateful for this exceptional opportunity that has broadened our understanding of the inner workings of a gaming controller. It has allowed us to appreciate the remarkable efforts of those who create the intricate and amazing items we use daily, but often overlook.