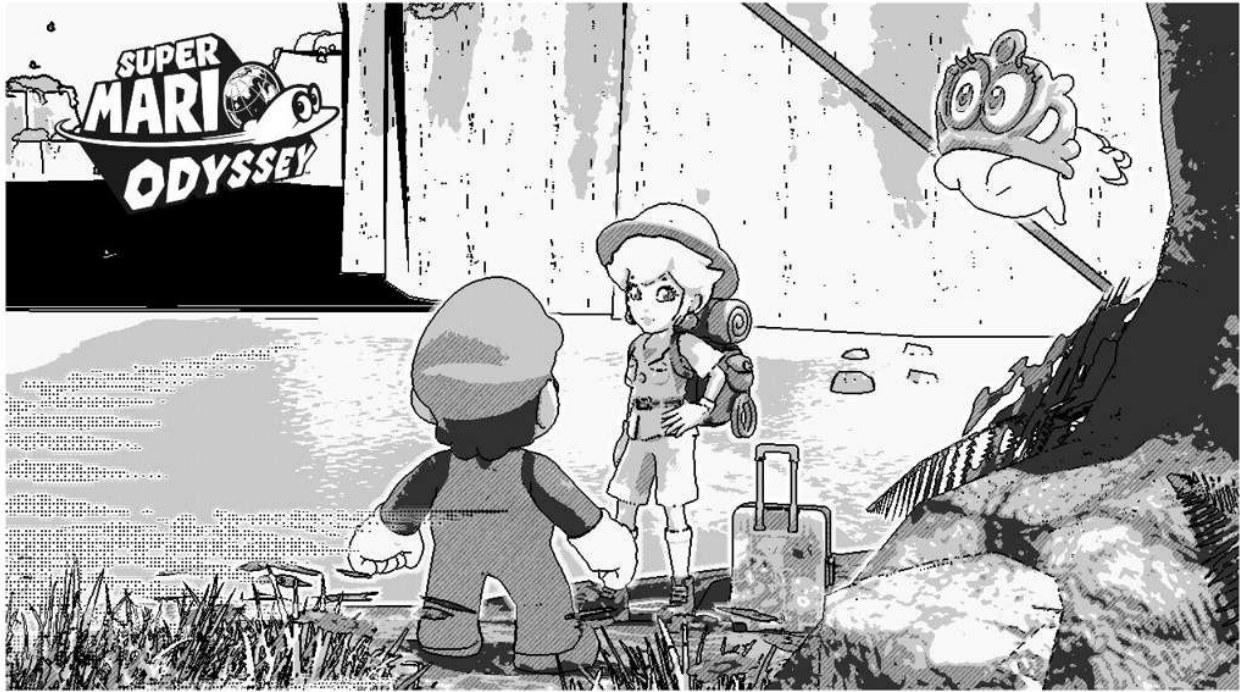


D. Discuss a Visual Effect: *Mario Odyssey* Snapshot Mode Sketch Filter



I like this camera effect in *Super Mario Odyssey*'s Snapshot Mode that makes the scene look like a comic. It doesn't always look great because of the way it's implemented (discussed below), but I like it because many smartphone photo editing apps have the same effects, and it's interesting to see that applied in real time to a video game.

Like every camera filter in Snapshot Mode, this is a post-processing effect applied to the game's camera view. There are two separate effects in the filter that create the overall "comic" aesthetic. The first is a simple effect that calculates the value (as in lightness) of each pixel, then displays a texture with a similar value by choosing one within a certain threshold, not unlike a toon shader. There is a solid white, a solid grey, and a solid black texture, and several other textures with the white/grey/black in various hatched patterns.

The second effect is an application of an edge detection algorithm. For each pixel on the screen, the edge detection algorithm checks the neighboring pixels for differences in colors. If the difference is above a certain threshold, the pixel is colored black. The edge detection most likely happens after the texture sampling, but references the original screen colors.

The biggest reason why I like this effect is that I can see myself implementing it fairly simply since I have already created a toon shader, an edge detection shader, and a shader that swaps textures depending on a certain threshold. By combining those effects, it would be very easy to recreate this effect for my own use.