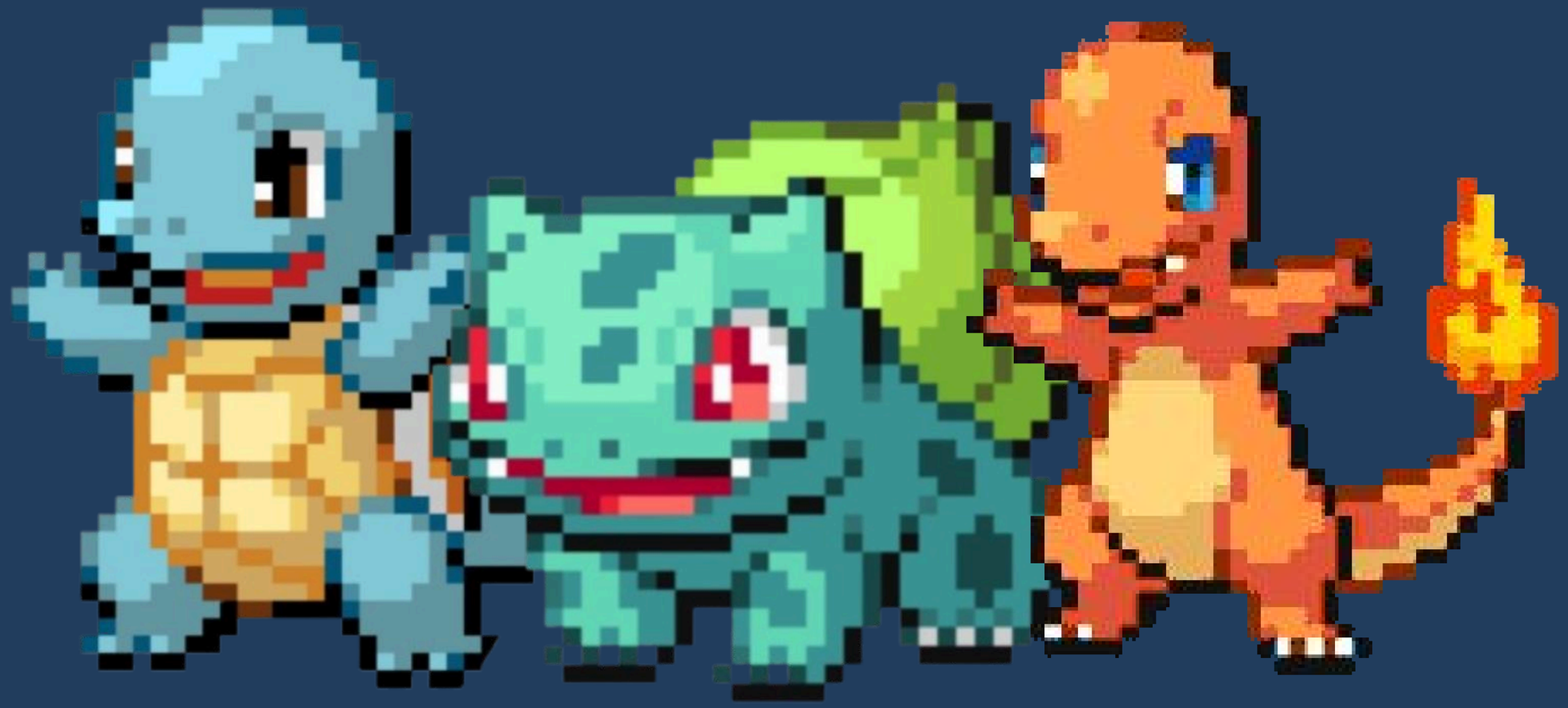
gotta catch em all

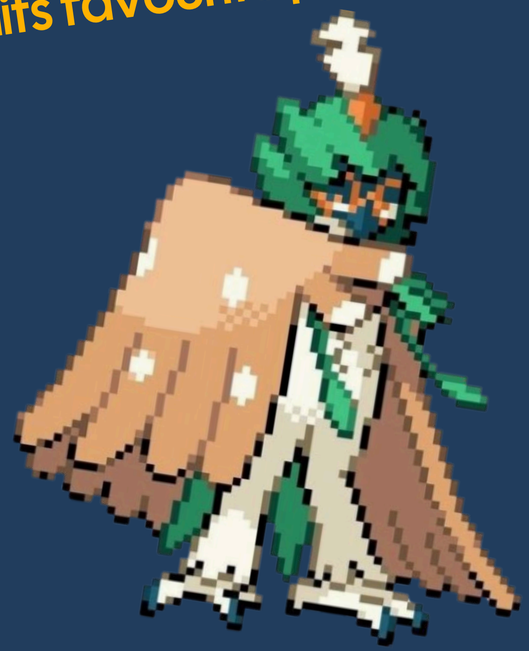
sachit and tanays ODT summative 1



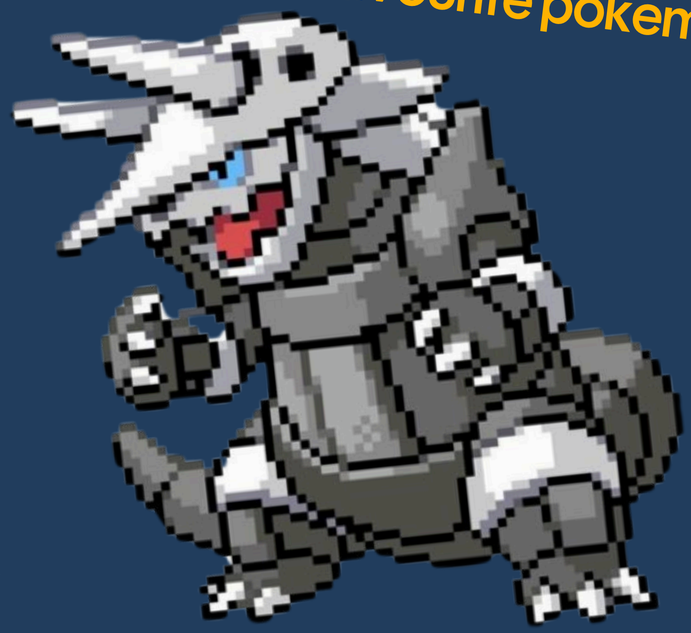
why pokemon ?

We wanted to make paper Pokémon models and assign different values to them that could be read using a sensor (like capacitive touch). Since we both love Pokémon, it was an easy theme to go with plus, the 30th anniversary of Pokémon is in just two days.

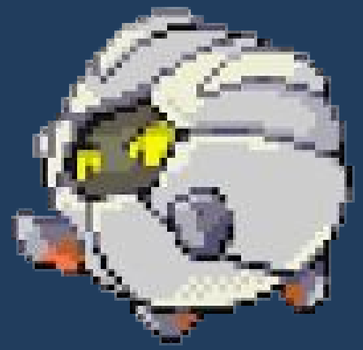
Sachits favourite pokemon



Tanays favourite pokemon



how it works ?



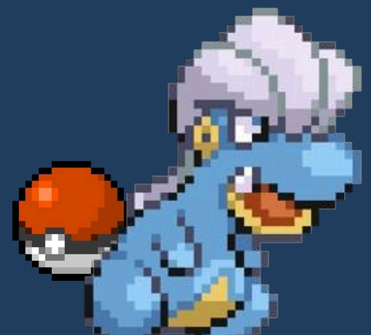
1. IR sensor reads a Pokemon near it

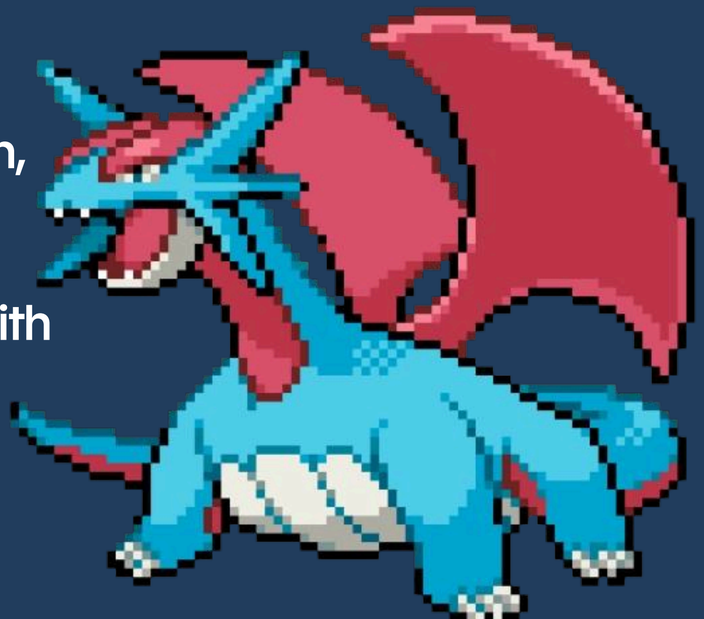
2. Signals to the neopixel that a Pokemon is detected causing it to flash red and display text

3. Pressing a button then starts the scanning process where the neopixel lights up green in sequencce

4. Using capacitive touch, each Pokemon is assigned a material with different ranges.

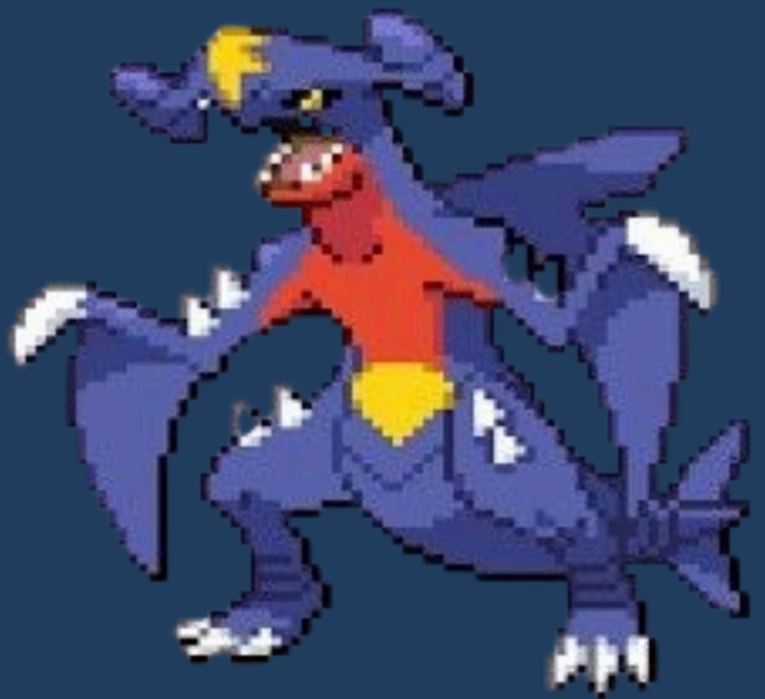
5. 1 of 3 value ranges is sensed and based on the range, a defined colour is displayed on the neopixel





technical feasability

All the elements we used here are things we've worked with before, so we already knew how to handle them. We explored capacitive touch a bit more to understand the different ranges and how the components interact.



how it works ? Circuit 2

IR sensor detects when a Pokémon is physically near the device.

A button turns the Pokédex ON and OFF, when OFF, all NeoPixels stay dark and no sensing happens.

When the Pokédex is ON, the IR sensor lights all NeoPixels red and prints “Pokemon found!” whenever something comes close.

capacitive touch pad reads different value ranges based on the material each Pokémon is associated with (bulbasaur= eraser charmander= allumnium foil squirtle= human touch)

- Bulbasaur range → first half of the ring glows green, second half purple.
- Charmander range → whole ring glows orange.
- Squirtle range → whole ring glows blue.

how it works ? Circuit 2

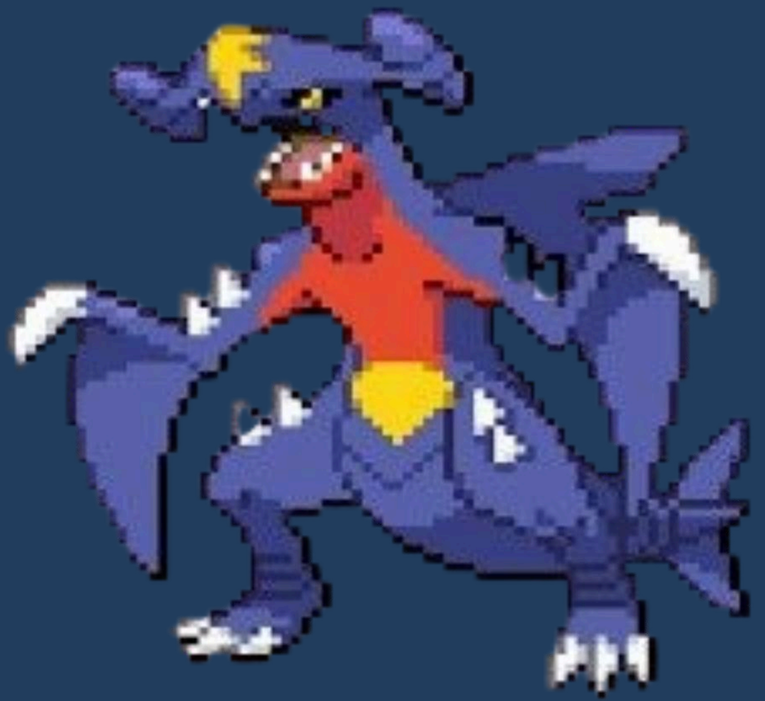
Once all three Pokémon have been detected at least once, the game_khatam state turns on.

n the win state, the NeoPixels celebrate by cycling through red, green, and blue across the whole ring and printing “Caught em all!”

technical feasability

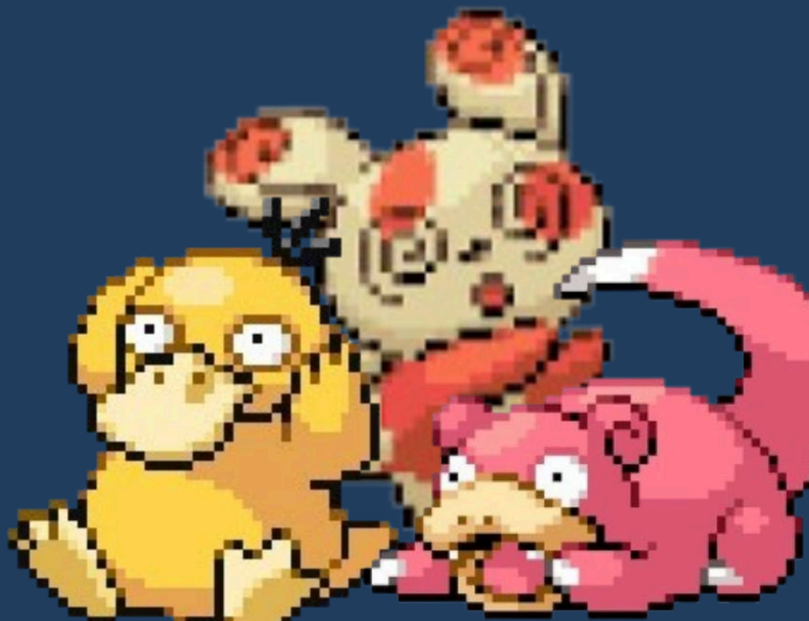
We built on the sensors and NeoPixel patterns we've used before, so those were familiar. The capacitive touch ranges took some experimentation to get the right values for each Pokémon material. Adding the counting system was trickier than expected, so we simplified by using two dedicated buttons (power toggle + reset) instead of complex long-press timing, making the code much cleaner and more reliable.

capacitive



pain points

Ooooooooh, let me tell you , capacitance is a mess! There's no object that has consistent capacitance except for the three we have.
We wanted to add a stepper motor to make a stand for the Pokémon models, but it didn't work out, so we couldn't include that part



Thank you

Bye now