V1

Behind the scene:

analog Read (A0) ⟶ Receiver's O/P

voltage to number conversation of IR value in Arduino:

$$\text{IR value} = \frac{\text{Voltage}}{5\ V} \times 1023$$

(∵ 1023 → 5 V, IR 0 → 0 V)

Detection of wrinkles or smoothness:

. Distance (Ultrasonic sensor)

$$\text{Distance} = \frac{\text{Duration}(\mu s) \times 0.034\left(\frac{cm}{\mu s}\right)}{2}\ cm$$

Based on V1 of project, we are just making probability that is wrinkled and smooth either not.

V2

in V2, we detect object is either smooth or wrinkled. based on Logic

IR Fluctuation Formula:

IR Range = max IR (Reading) - min IR Reading

If Range > 50 ⟹ wrinkled

Ultrasonic distance fluctiation

Distance Range = max distⁿ - min distⁿ

Range > 1.5 cm ⟹ uneven surface
⟹ wrinkled

Logic used:

Wrinkled = (IR Range > 50) OR (Distⁿ Range > 1.5)

~~OR else~~