Project Name:

Smart Elevator Access Project (AAEP)

Big Idea:

AI for Equal Urban Accessibility

Essential Question:

How can we ensure public infrastructure serves those who need it most?

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The Broken Promise

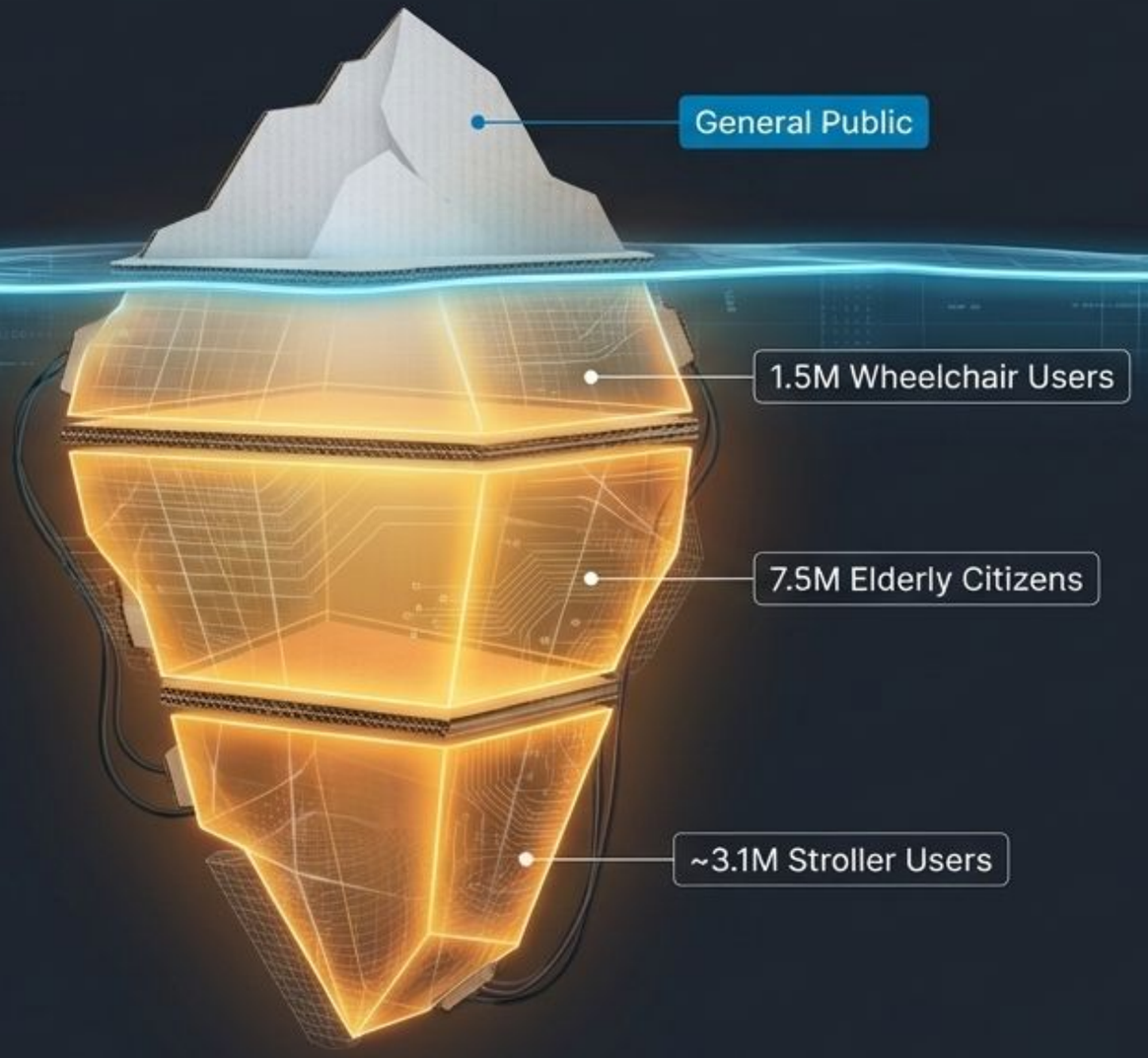
Overpass elevators are built for those who need them. But misuse by the general public leaves them broken, abandoned, and inaccessible.

Empathizing with the Friction

A minor inconvenience for us. An insurmountable wall for them.

The Scale of the Invisible Need

In Türkiye



Over 10.5% of the population is left behind by failing infrastructure.

The Accessibility Trap

Vulnerable Users Stranded
(Target demographic loses access)

Healthy User Misuse
(Elevators treated as conveniences)

Accelerated Wear & Tear
(Frequent breakdowns and high municipal maintenance costs)

CHALLANGE

How do we stop elevator misuse without adding physical barriers for those who truly need access?

[The answer: We remove the buttons.]

Investigating the Solution: An AI Ecosystem

Replacing physical keys with Artificial Intelligence.

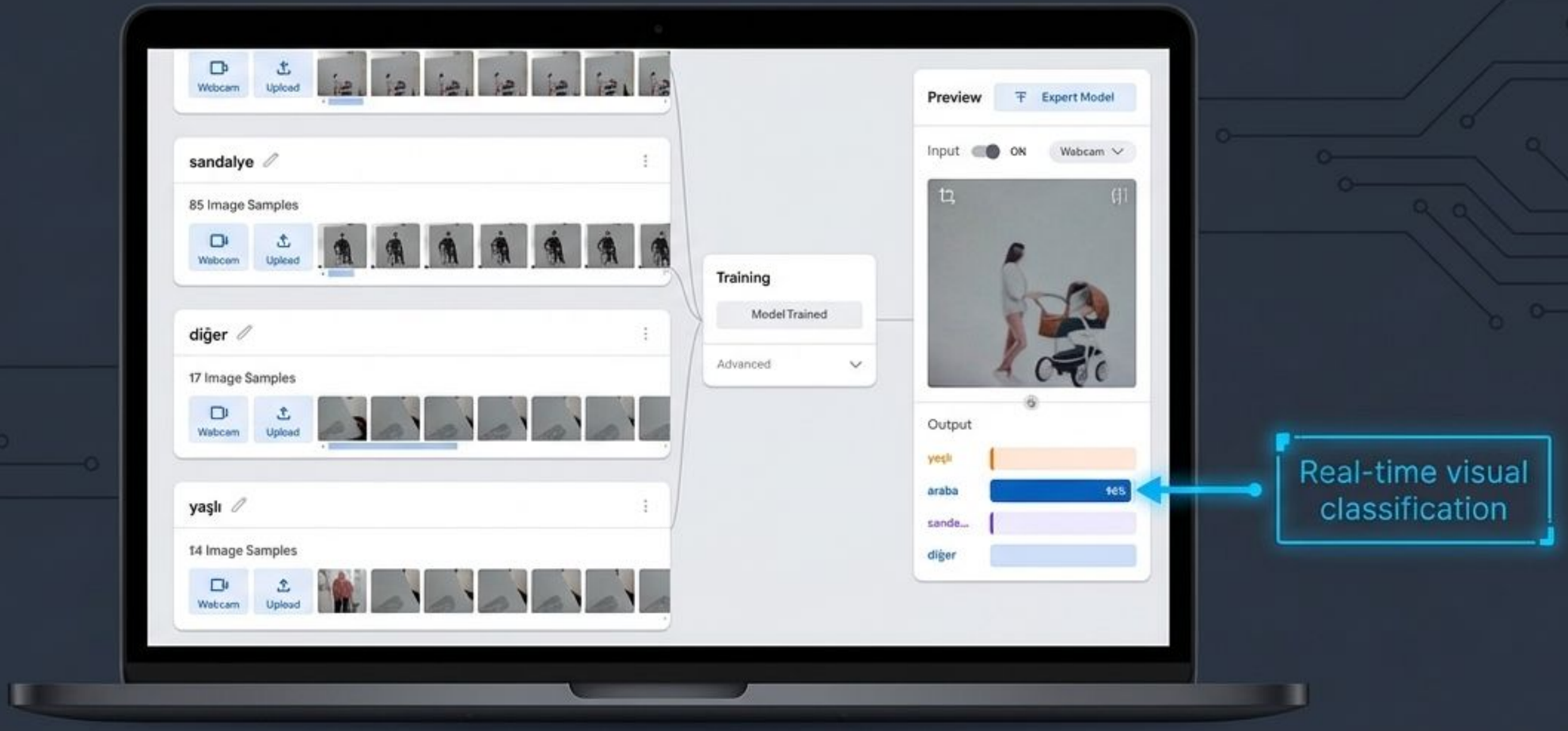
The Eye
(Input)

The Brain
(Processing)

The Muscle
(Action)

The Brain: Machine Learning

We investigated Pictoblox to train a custom computer vision model. By feeding it data, the AI learned to "see" and classify wheelchairs, the elderly, and strollers in real-time.



The Muscle: Microcontrollers in Tech Blue

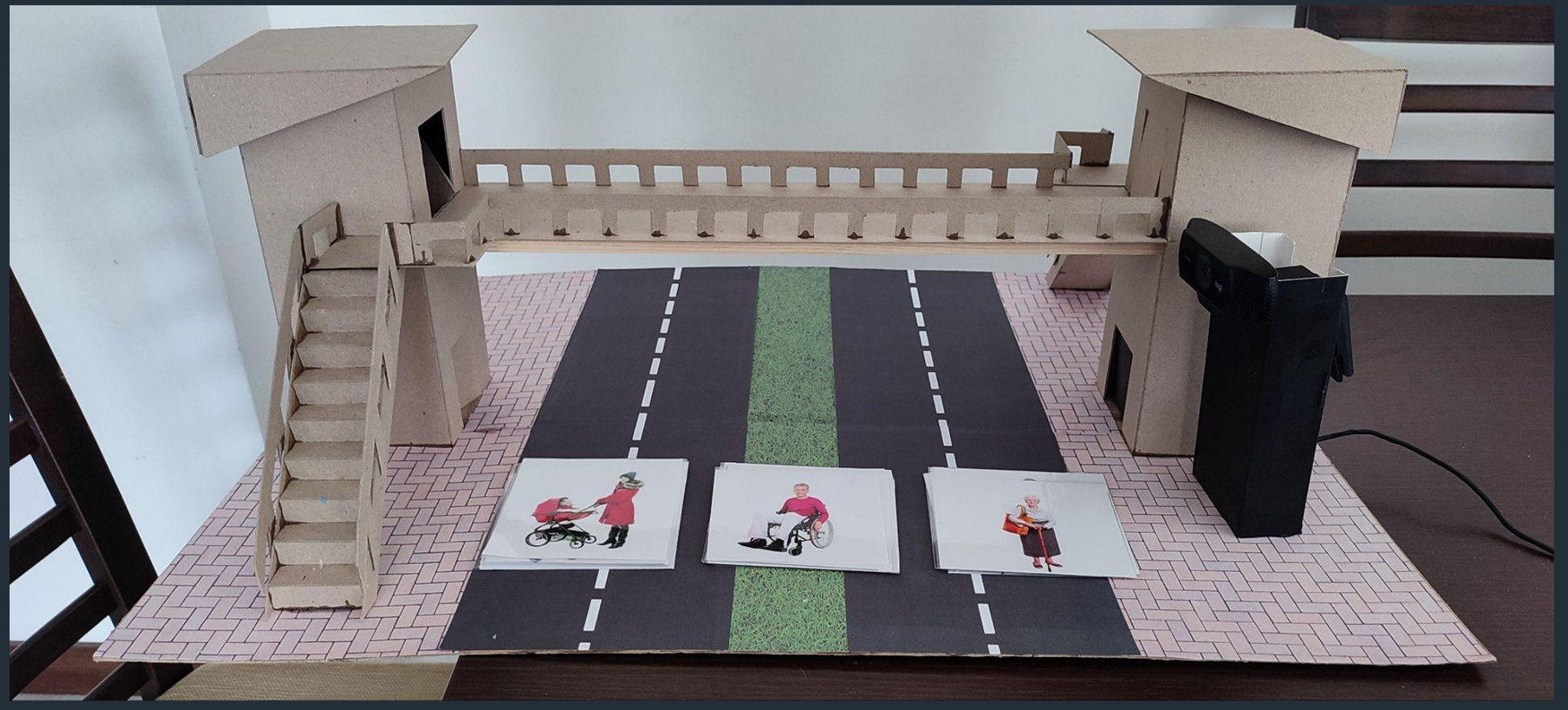
We learned how to use the Arduino Uno to translate digital AI decisions into physical, mechanical action—triggering a 180-degree servo motor to unlock and open doors.

Old Paradigm vs. Smart Paradigm

	Current State	Smart AI State
Access Method	Standard Push-Button (Open to all)	**AI-Vision** (Restricted to verified users)
Misuse Rate	High (Convenience usage)	**Zero** (System ignores unauthorized users)
Availability	Frequently Broken	**Always Available & Low Maintenance**

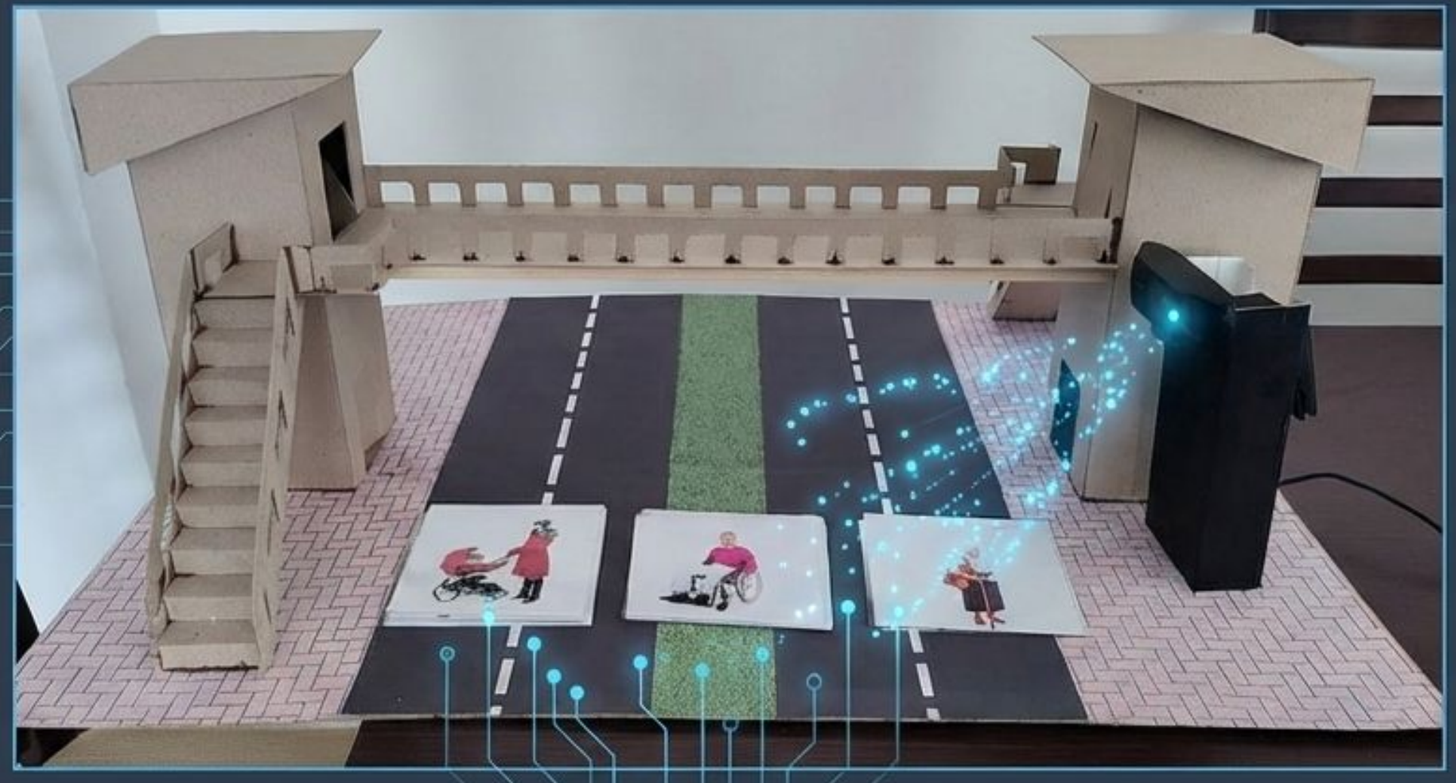
Action Step 1: The Physical Build

We scaled down the city to cardboard. Our prototype features a functioning camera mount and a motorized elevator door system.



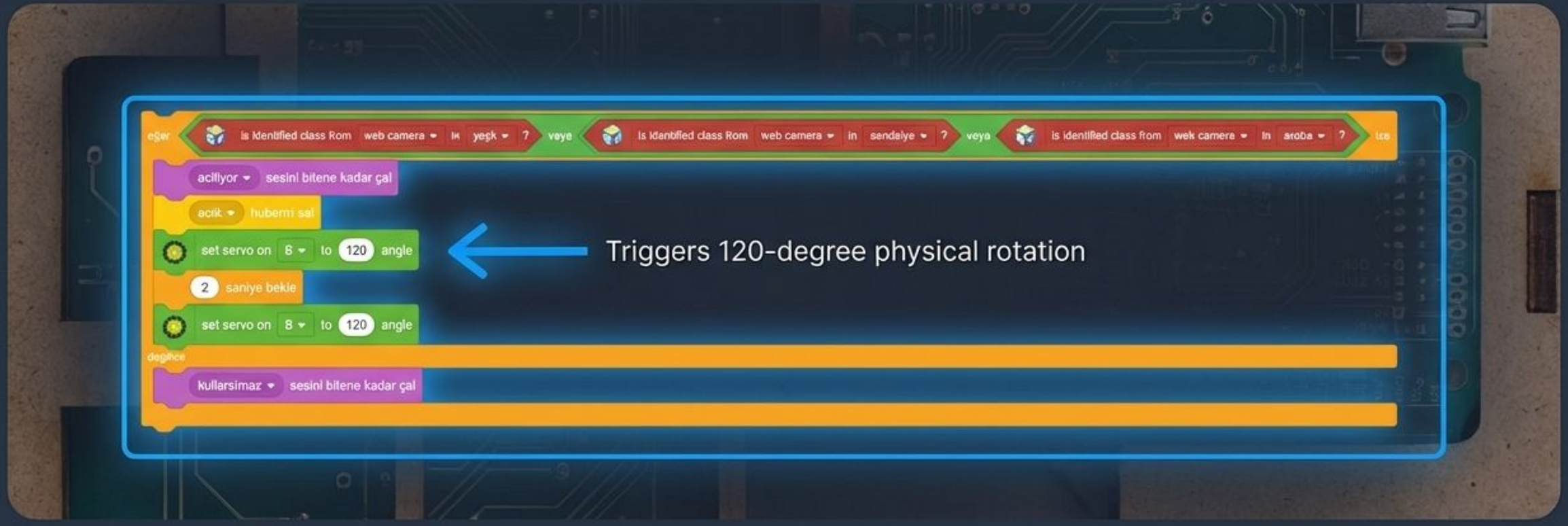
Action Step 2: Training the AI

We fed hundreds of image samples into our Pictoblox model. The AI rigorously learned to differentiate our target users from the general public with high accuracy.



Action Step 3: Writing the Logic

Bridging software and hardware. If the AI detects a verified user, the script commands the Arduino to rotate the servo, instantly opening the door.



The Prototype in Action

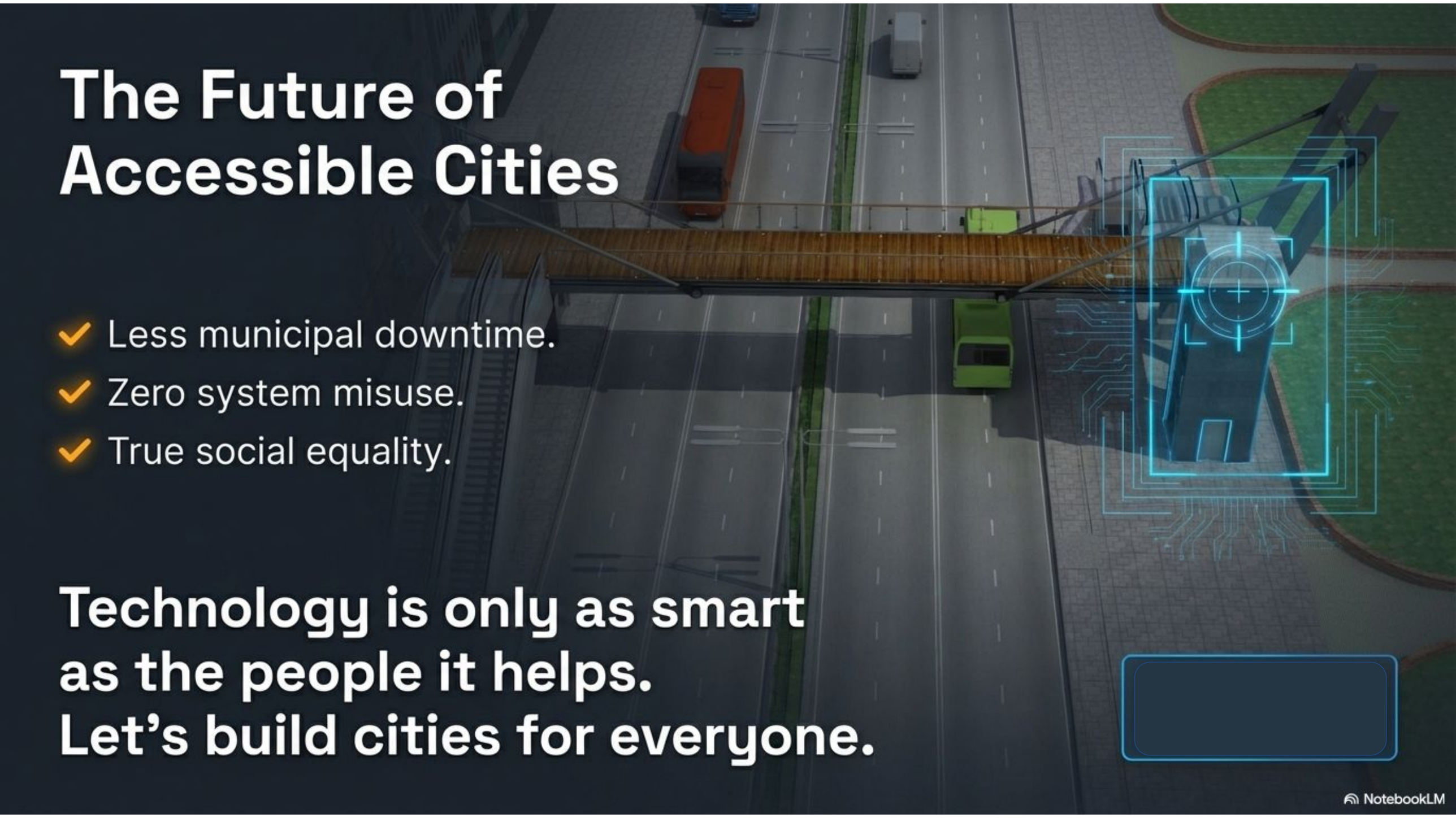
Digital intelligence meets physical accessibility.
The door only opens for those who truly need it.

STEP 1
INPUT

STEP 2
PROCESS

STEP 3
OUTPUT

The Future of Accessible Cities



- Less municipal downtime.
- Zero system misuse.
- True social equality.

Technology is only as smart as the people it helps. Let’s build cities for everyone.