

The background of the slide is a light blue gradient with several abstract, 3D-rendered bubbles in various shades of blue and purple. These bubbles are of different sizes and shapes, some appearing as simple spheres and others as more complex, organic forms. They are scattered across the slide, with a larger cluster of bubbles on the right side and smaller ones on the left and bottom.

Automated Pet Feeder

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Stakeholders

1. PETS (END-USER)
2. PET OWNERS (COMMUNITY)
3. ONLINE RETAILERS

Project Challenge

Challenge Area: Managing various food types for many pets

Pet owners face following challenges:

- Ensure pets are fed on time
- Managing different food types (cat, dog, etc.)

Current manual feeders or basic automated ones are:

- Not versatile
- Cannot differentiate different foods
- Lack cloud-based features ensuring feeder is always stocked

How might IoT address this challenge?



Automation and remote management is enabled by IoT by connecting the feeder to the internet.



Ultrasonic and RFID sensors detect and identify the pet's presence.



IoT technology facilitates the ordering of the pet food through cloud integration.

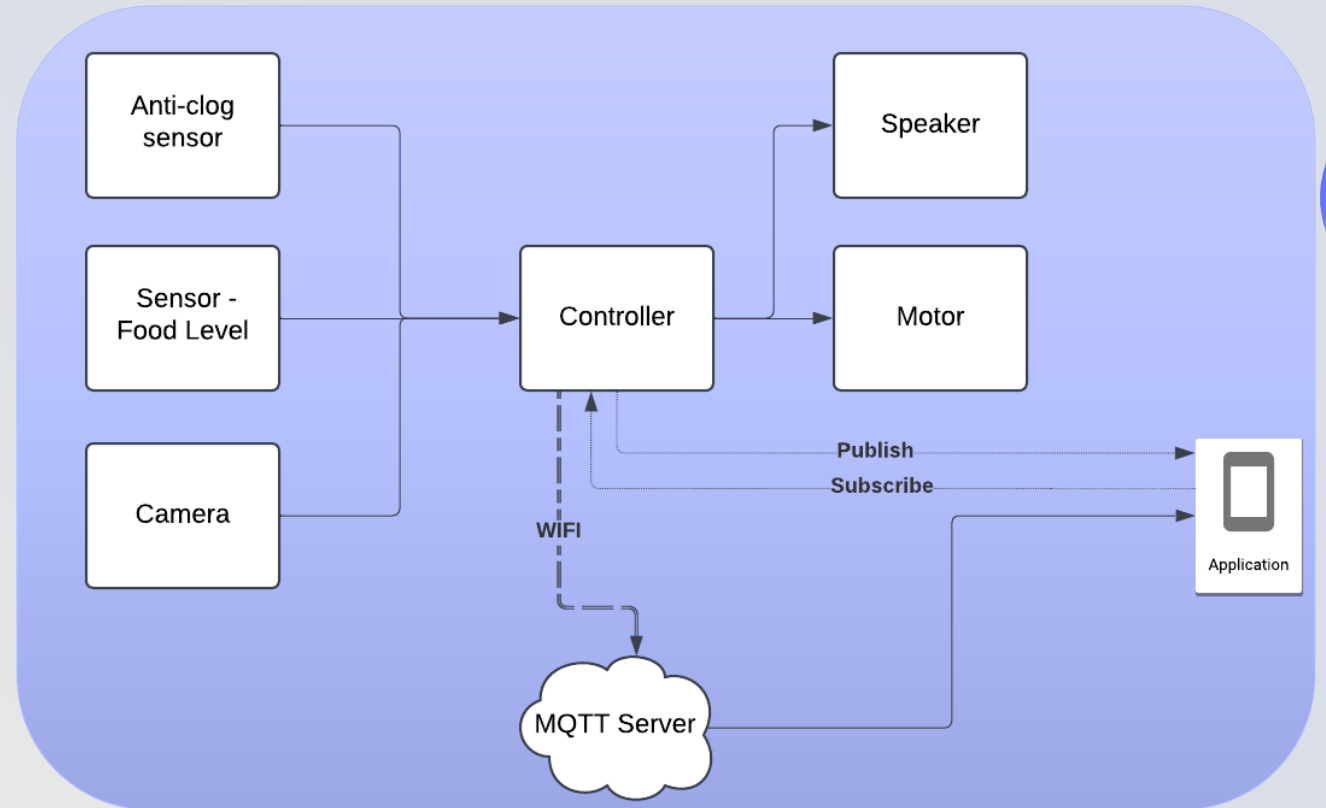
Professional Articulation – Part A

Current Solution

- Portion Management + Meal Scheduling
- Pet Monitoring
- Usage History
- Application Software

Shortfalls

- Only dispenses food
- Only dispenses one type of food
- Manually purchase food to restock
- Costly



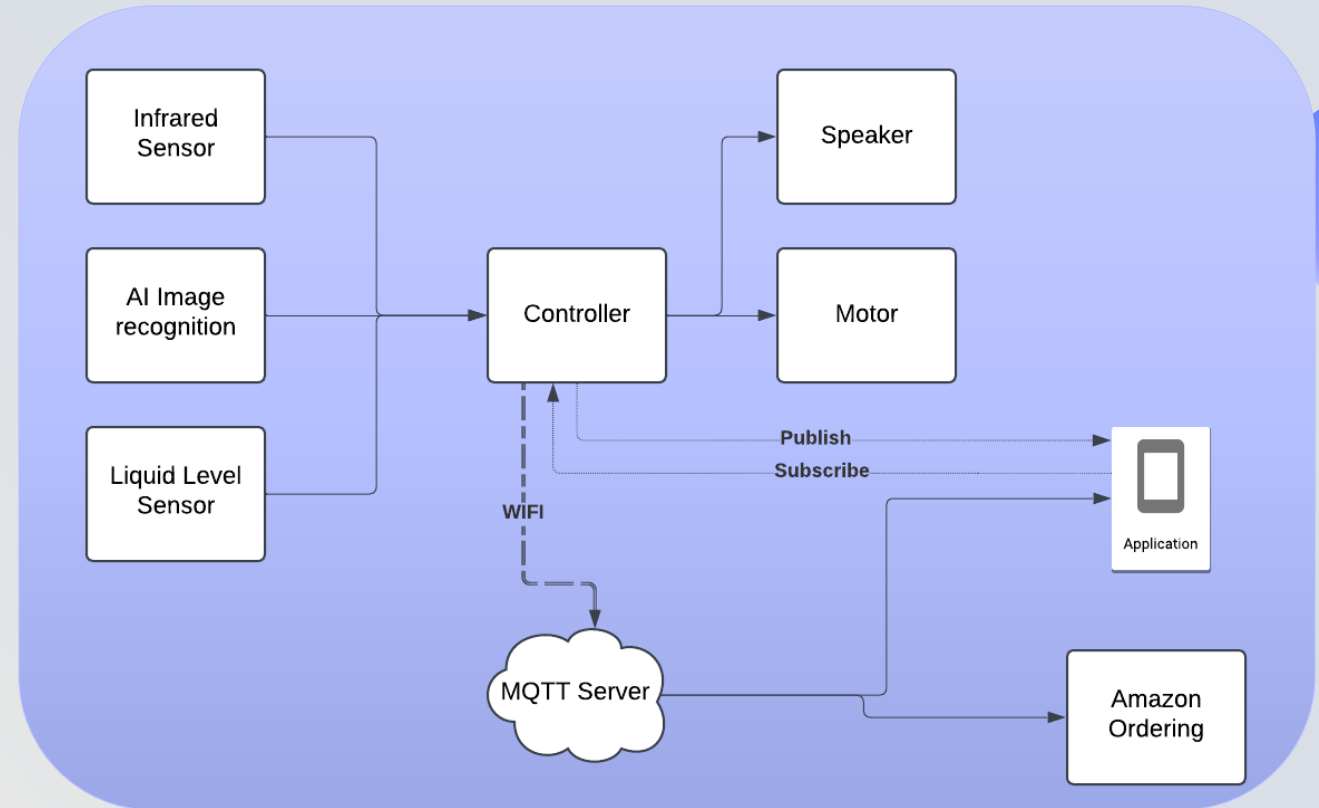
Professional Articulation – Part B

Project Description

- AI Image recognition to detect presence + identify type of pet
- Infrared sensors measures levels of food
- Liquid level sensors measures water level
- Real-time control + Monitoring via Application

Overcome The Shortfalls

- Cloud integration ensures timely restocking.
- Feeds more than one pet
- Dispenses food and water
- Cost effective



Proof of Concept

Animal Recognition

- **Using RFID tags** multiple pets can access their food on a timely basis
- **Unique ID's** will dispense their respective foods – which can be customized

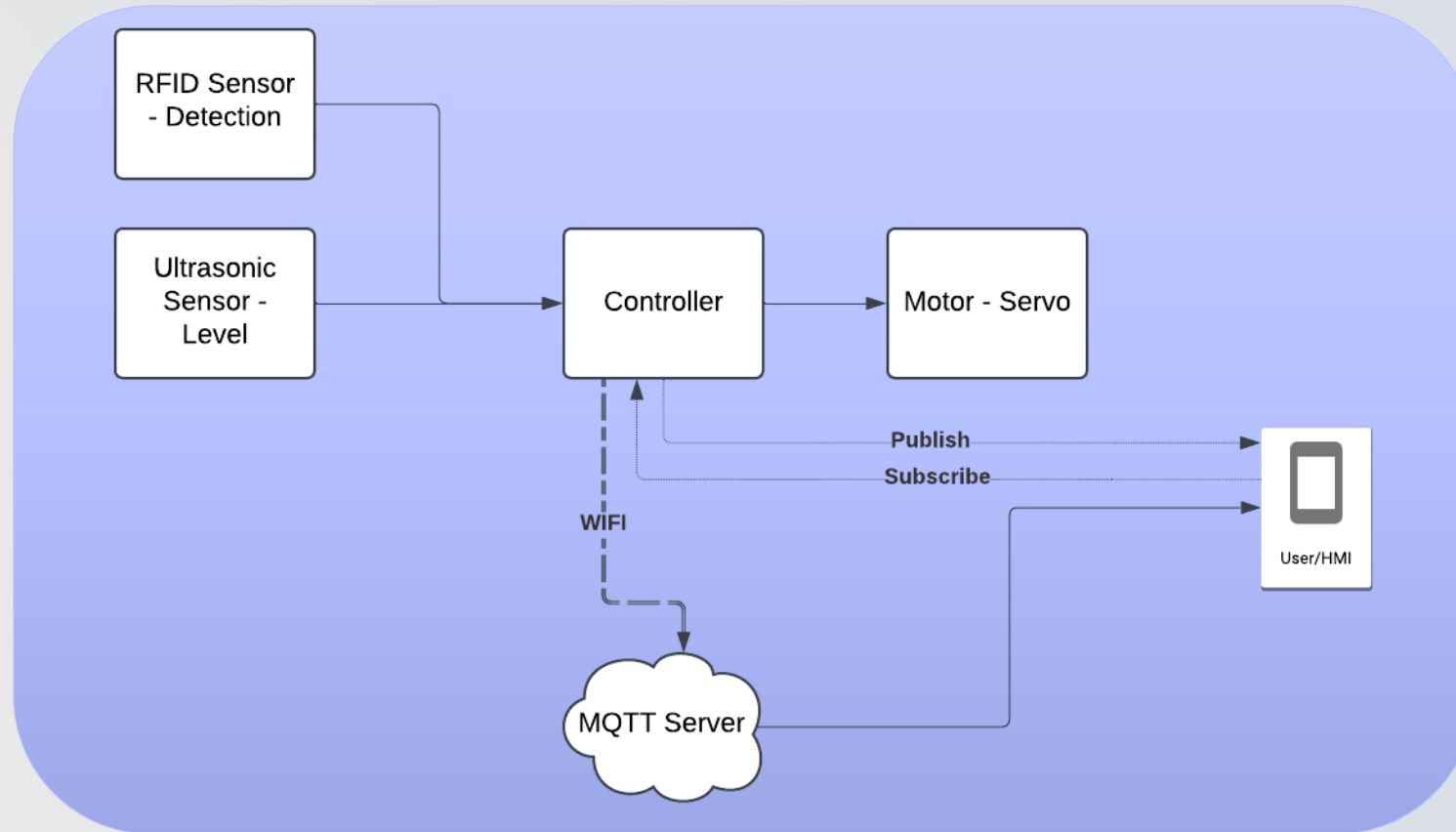
Remote Feeding

- **Using an MQTT protocol** users can dispense food manually or in a timed fashion
- **Emergency stop** to terminate dispensing

Inventory Management

- **Ultrasonic level sensors** will be used to monitor the food left in the reserve
- **Restocking through Amazon** can be customized to ensure food is always available

Proof of Concept – Block Diagram



Proof of Concept - Budget

Component	Quantity	Cost	Total
<u>Arduino Kit</u>	1	\$40	\$85
<u>Ultrasonic Sensor</u>	2	\$6	
<u>RFID Sensor</u>	1	\$5	
<u>Servo Motor</u>	1	\$15	
<u>3D Printed Components</u>	1	\$19	

Project Risks

**Sensor Malfunction
from pet
interference**

Mitigation Tactic

Use high-quality,
pet-proof
components

**IoT/Cloud integration
issues due to
network reliability**

Mitigation Tactic

Ensure fallback
mechanisms for
feeding if IoT fails

**Retailer
Dependence**

Mitigation Tactic

Maintain multiple
retailer partnerships
to always ensure
stock availability

The background features a light blue gradient with several 3D-rendered spheres in shades of blue and purple. On the right side, there are large, flowing, organic shapes in similar colors, creating a modern and artistic aesthetic.

Thank you for your time!

FROM TEAM **SLEY**