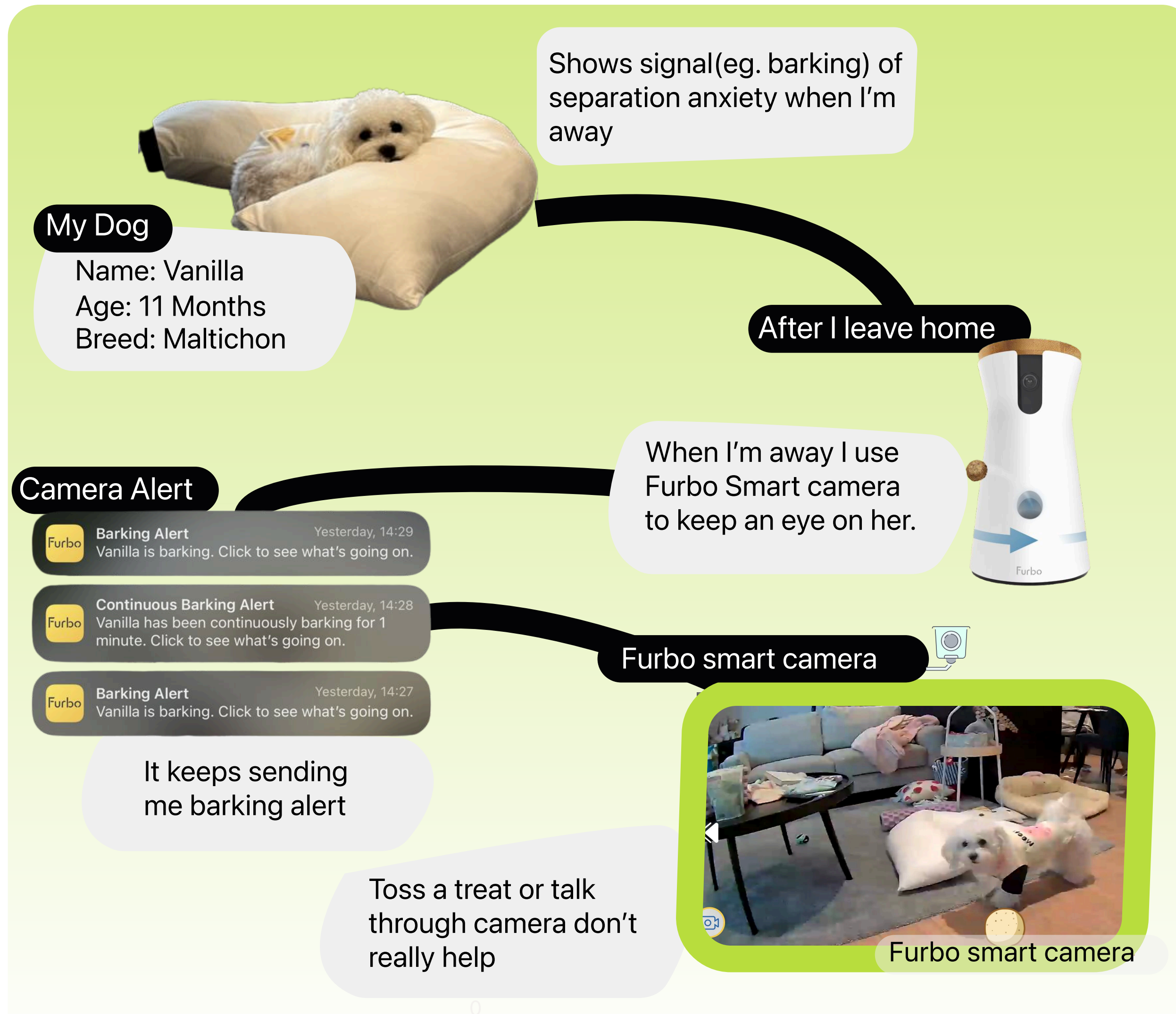


I Inspiration



Why do I want to make this project?

Seeing Vanilla struggle with anxiety every time I leave made me realise how hard separation can be for dogs. Most tools, like cameras, **only monitor the problem but don't help**. This inspired me to think of a solution not just for my dog, but for others too—something interactive and adaptive to comfort dogs and ease their anxiety, while giving owners peace of mind.

Five Pain Points you need to know

1

Dogs show early signs of anxiety that go unnoticed.

2

Owners can't always respond when their dog is distressed.

3

Owners feel unsure about what to do or whether progress is made

4

Dogs lose interest in toys quickly.

5

Dogs have different preferences, but most toys aren't tailored to individual needs

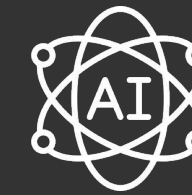


My Solutions



Emotion Detection

Real-time emotion tracking triggers calming toy responses.



Autonomous Support

System works independently without owner input.



Multi-Sensory Toys

Multi-sensory toys maintain interest over time.



Adaptive Learning

Learns from behaviour to improve future responses.



Owner Guidance

App provides insights and care suggestions for owners.

WHY THESE FEATURES WORK

After outlining how HappiPaws meets the design goals, I wanted to evaluate whether these features would truly be effective. The table below explains what each feature addresses and why it is expected to work, based on user insights, behavioural understanding, and academic references.

Intelligent App System

Emotion Tracking (AI)

Detects stress signs like pacing or barking in real time, helping avoid missed early indicators of anxiety.

Why it works: Early response prevents escalation to barking or destructive behaviour (Horowitz, 2009)

Behaviour-Based Personalisation

Solves the “one-size-fits-all” problem by learning which toys calm your dog most effectively over time.

Why it works: AI selects toys based on past success, improving effectiveness over time

App Feedback & Suggestions

Supports owners who feel unsure what to do by giving simple emotional summaries and actionable guidance.

Why it works: Clear summaries reduce owner uncertainty and support more timely, confident decisions

Calming Tools & Interaction

Calming Ball Set (Sniff / Tactile / Motion)

Addresses different stress behaviours—using scent, touch, or motion to soothe, distract, or comfort when needed.

Why it works: Different calming methods address a wider range of behaviours—scent, touch, and play

Auto-triggered Intervention

Solves the issue of owner absence by activating the right calming toy as soon as stress levels rise.

Why it works: Timely support reduces reliance on owners and maintains emotional consistency for the dog

Trainer Recommendation

If your dog’s stress level remains elevated, the app recommends seeking help and connects you with trusted trainers.

Why it works: Refers owners to expert help when anxiety persists, ensuring the dog gets the right support

EXPERT COMMENTARY: VALIDATING THE SYSTEM'S EFFECTIVENESS

Interview with Lisa Lai, Level 5 diploma Canine behaviourist.



Key Insights

This interview explored whether HappiPaws' key functions like emotion tracking, calming toys, and owner feedback are aligned with real canine behaviour and effective in practice. Based on the expert's responses, I gained these following insights.

- Early signs of anxiety often go unnoticed by owners
- Early-stage intervention is key
- Sensory stimuli often trigger deep emotional memories in dogs
- No one-size-fits-all: personalisation matters
- Consistency builds trust and safety

Q1: What are some of the most common early signs of separation anxiety in dogs?

A1: "Common early indicators include pacing, excessive sniffing around doors, vocalisation like whining or barking, and changes in posture."

Q2: Is it important to respond to these early signs?

A2: "The earlier you can catch the stress signals, the better. Once a dog starts pacing or sniffing repeatedly, that's the time to act, not when they're already barking or destroying things."

Q3: In your experience, how effective are sensory-based interventions like scent, sound, or touch in calming dogs?

A3: "Scent tends to be the most effective, especially familiar or natural calming smells. Sound can help if it's low and consistent, but not all dogs respond the same. Light vibration or gentle motion can interest dogs sometime"

Q4: Why calming methods like scent or motion work for anxious dogs?

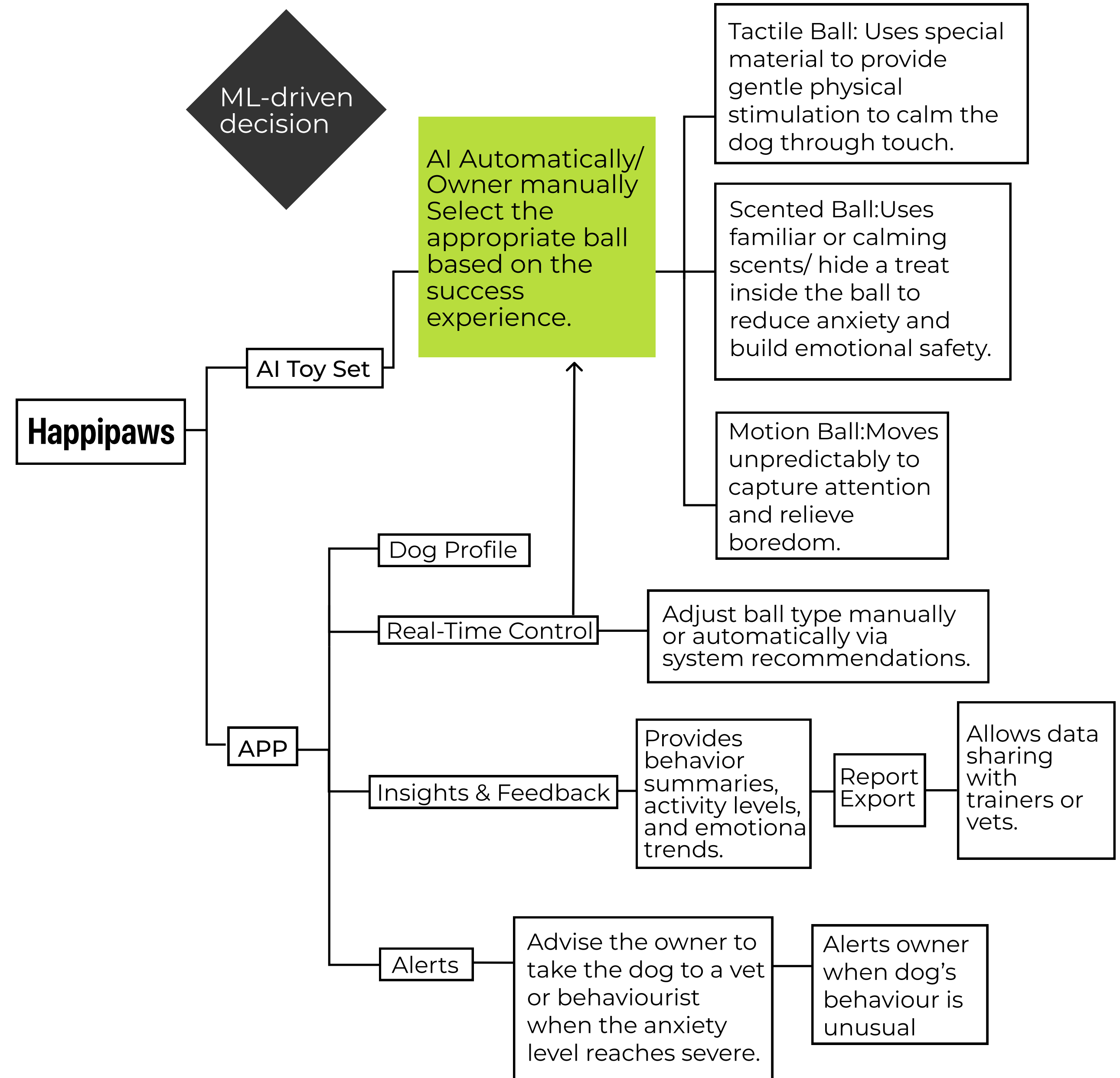
A4: "It's about predictability and association. If a dog consistently receives a calming stimulus when they feel uneasy, over time they associate that stimulus with safety. Scent, in particular, activates deep emotional memory in dogs"

Q5: What matters most for a system like this to really work in terms of the dog's behaviour?

A5: "For a system like this to work, it needs to be consistent, gentle, and respond to each dog's behaviour. Dogs feel safe when the same calming feedback happens every time they're anxious."

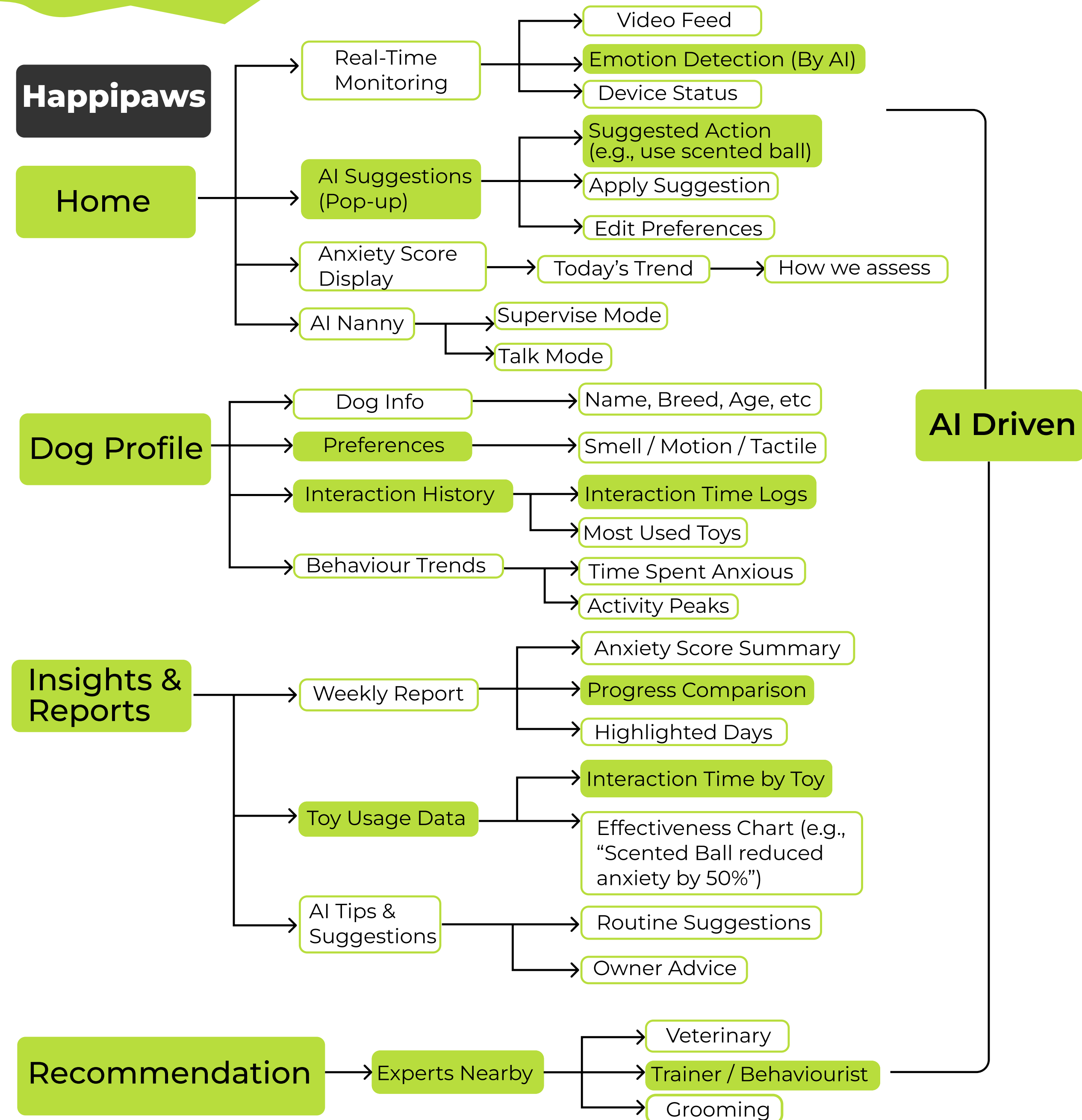
HAPPIPAWS'S INFORMATION ARCHITECTURE

After speaking with an expert and combining those insights with earlier findings, I designed the following system architecture to bring the core features of HappiPaws together into a cohesive support system for anxious dogs and their owners.



HAPPIPAWS'S APP DESIGN

.To make sure the app responds clearly to both the dog's behaviour and the owner's needs, I also designed its structure based on insights from research and expert feedback.



APP'S WIREFRAME

1 Real-Time Detection and Monitoring

2 AI Suggestion Pop-up

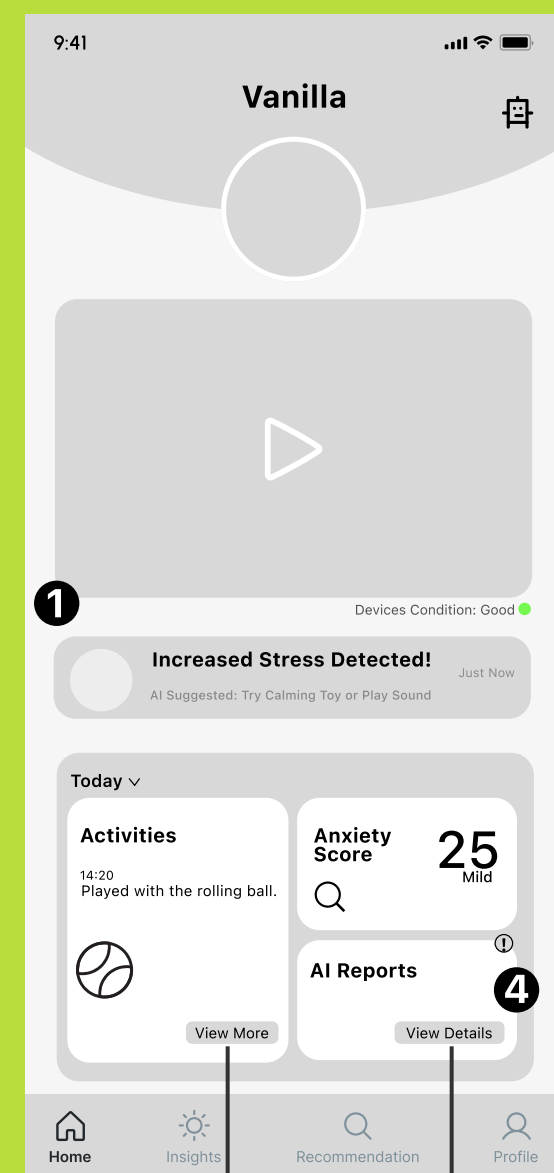
3 AI Nanny Mode

4 AI Reports and Insights

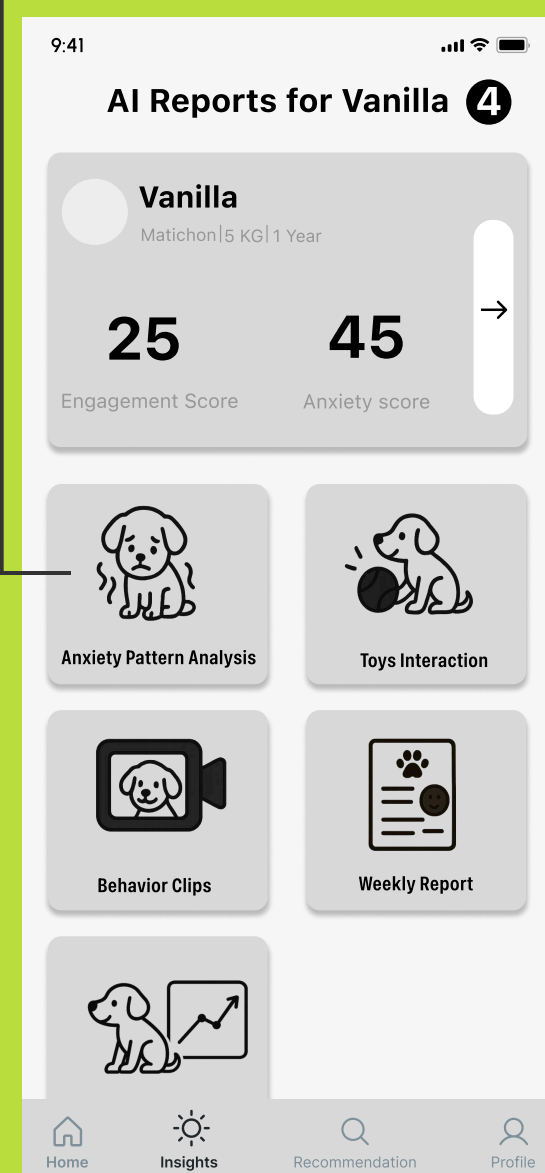
5 Expert Recommendation

6 Manual/Auto Control

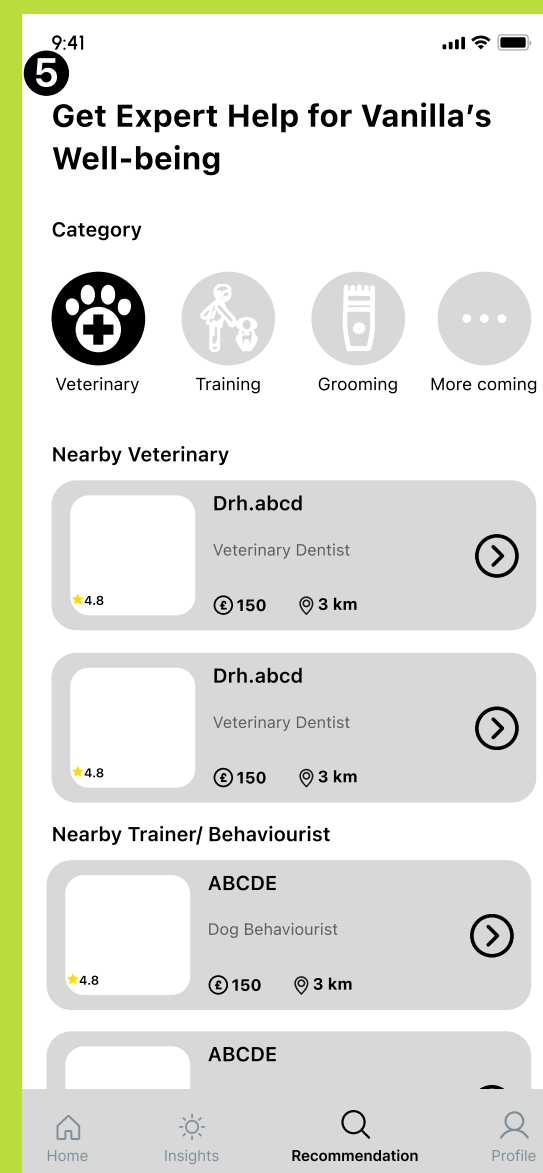
Home Page



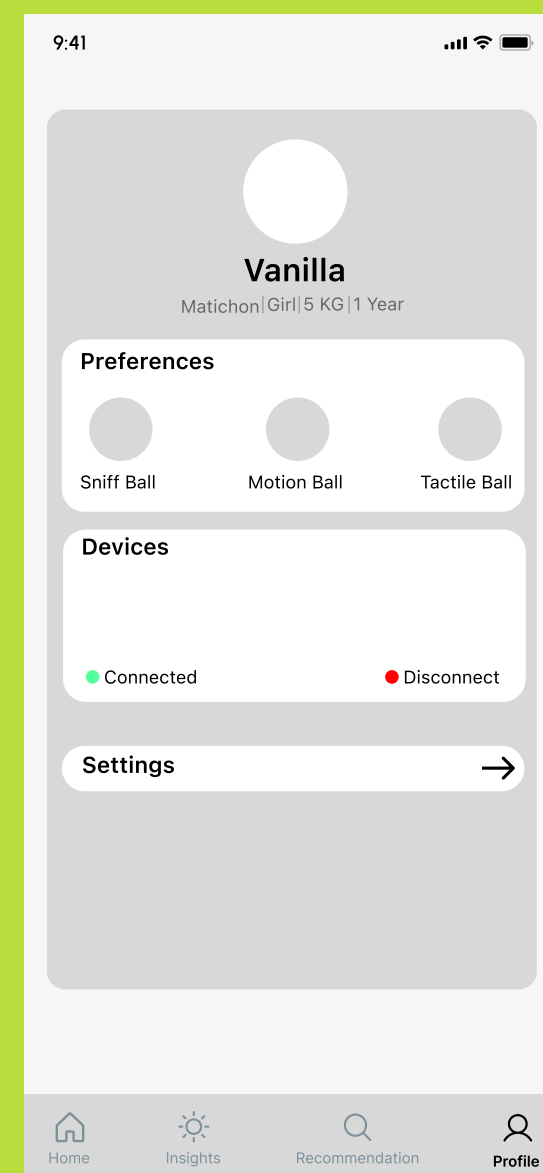
Insights Page



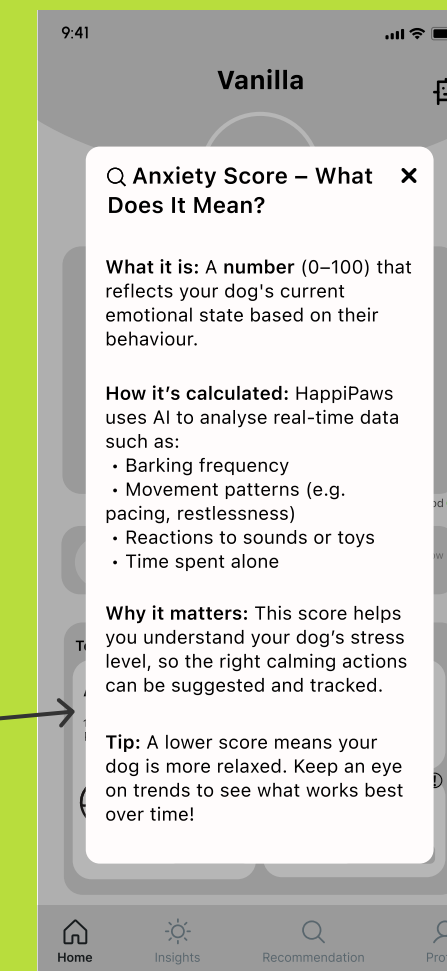
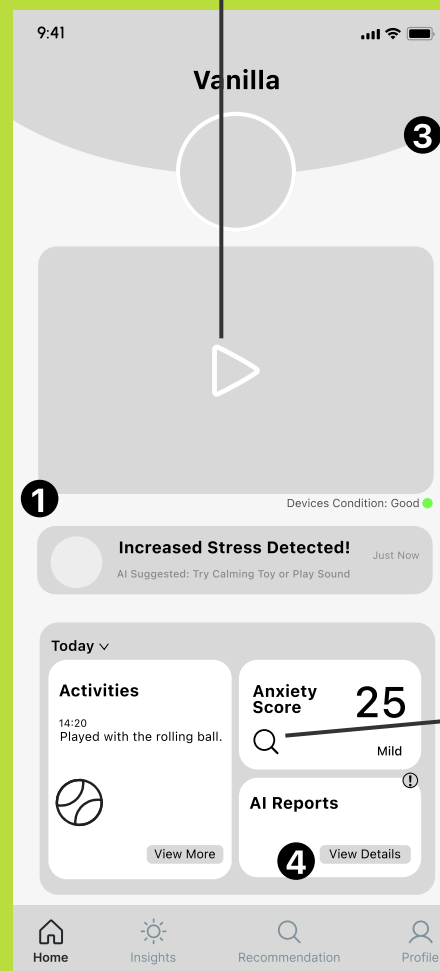
Recommendation Page



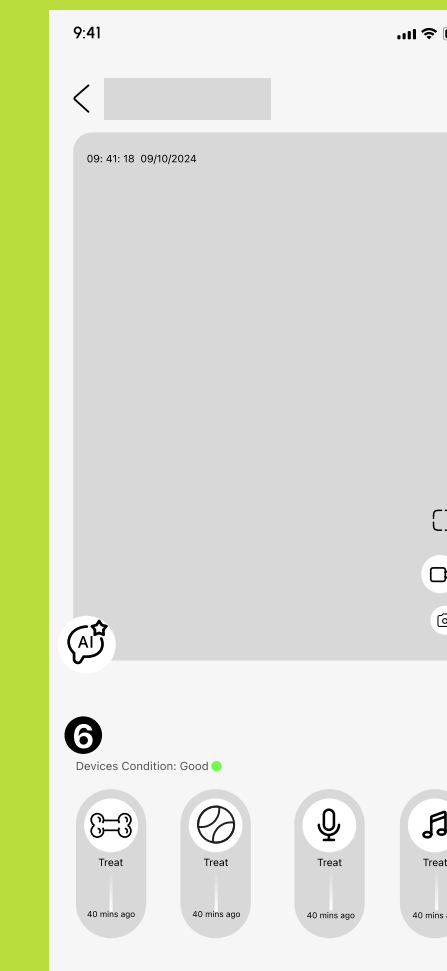
Profile Page



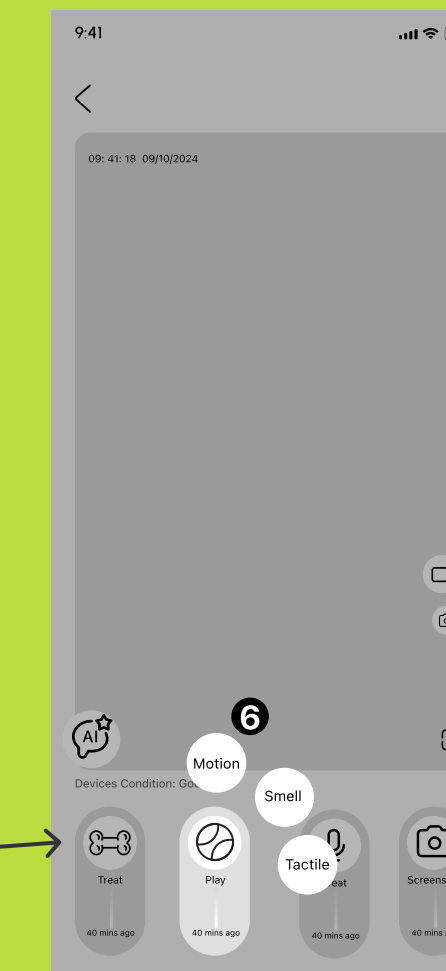
Anxiety Score Explanation



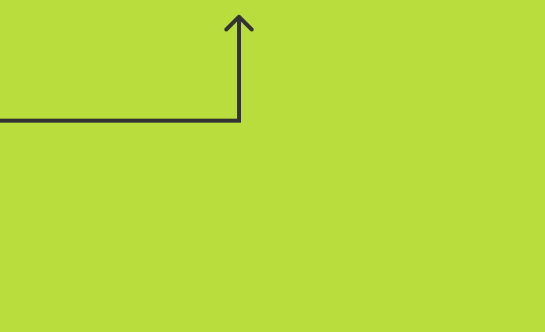
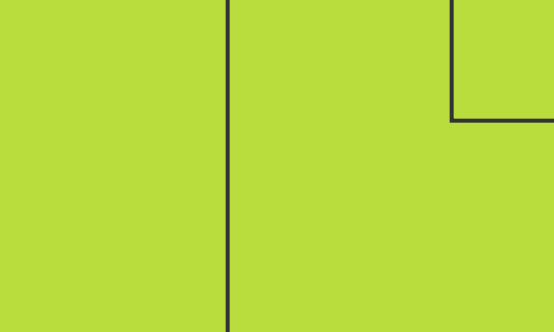
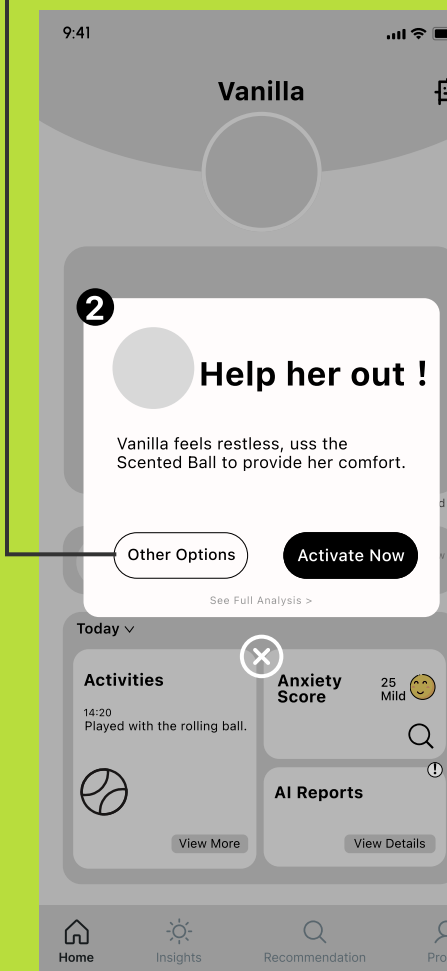
Real Time Monitoring



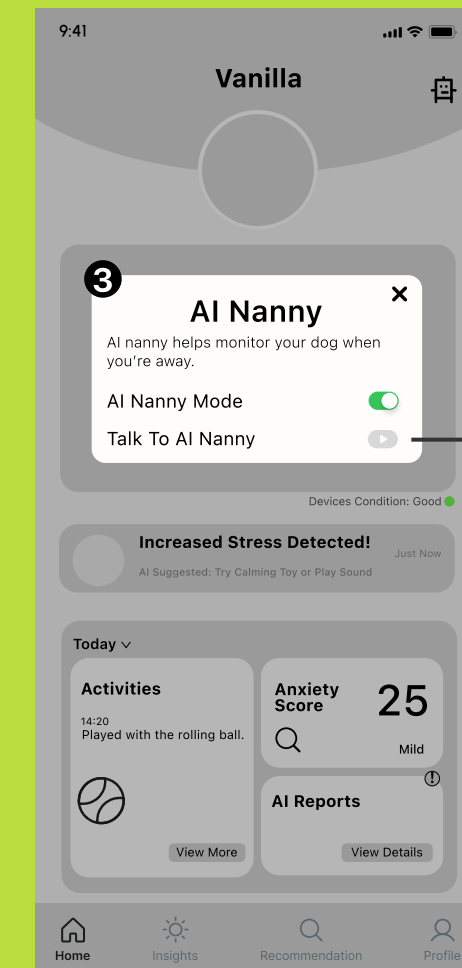
AI Suggestion Pop-up



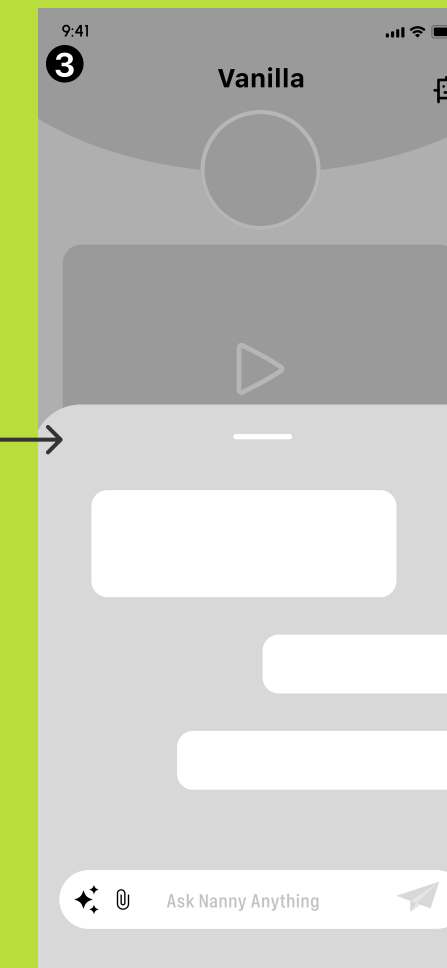
AI Suggestion Pop-up



AI Nanny Mode



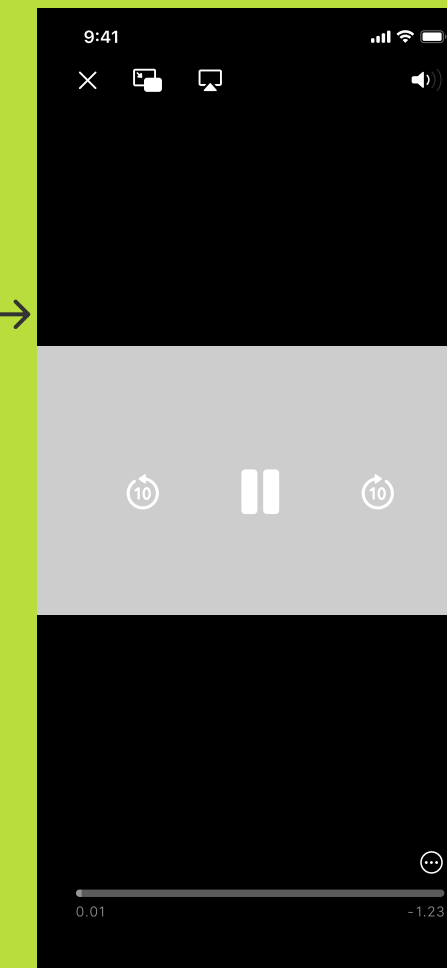
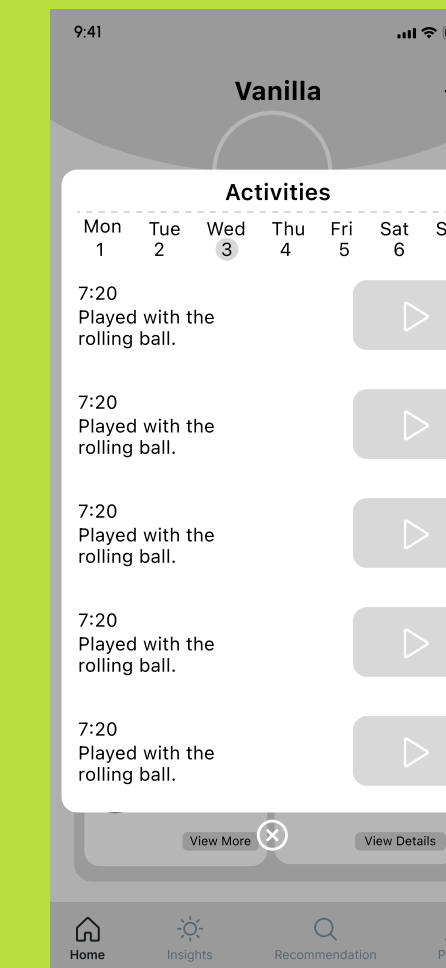
Talk With AI Nanny



AI Reports



Daily Record

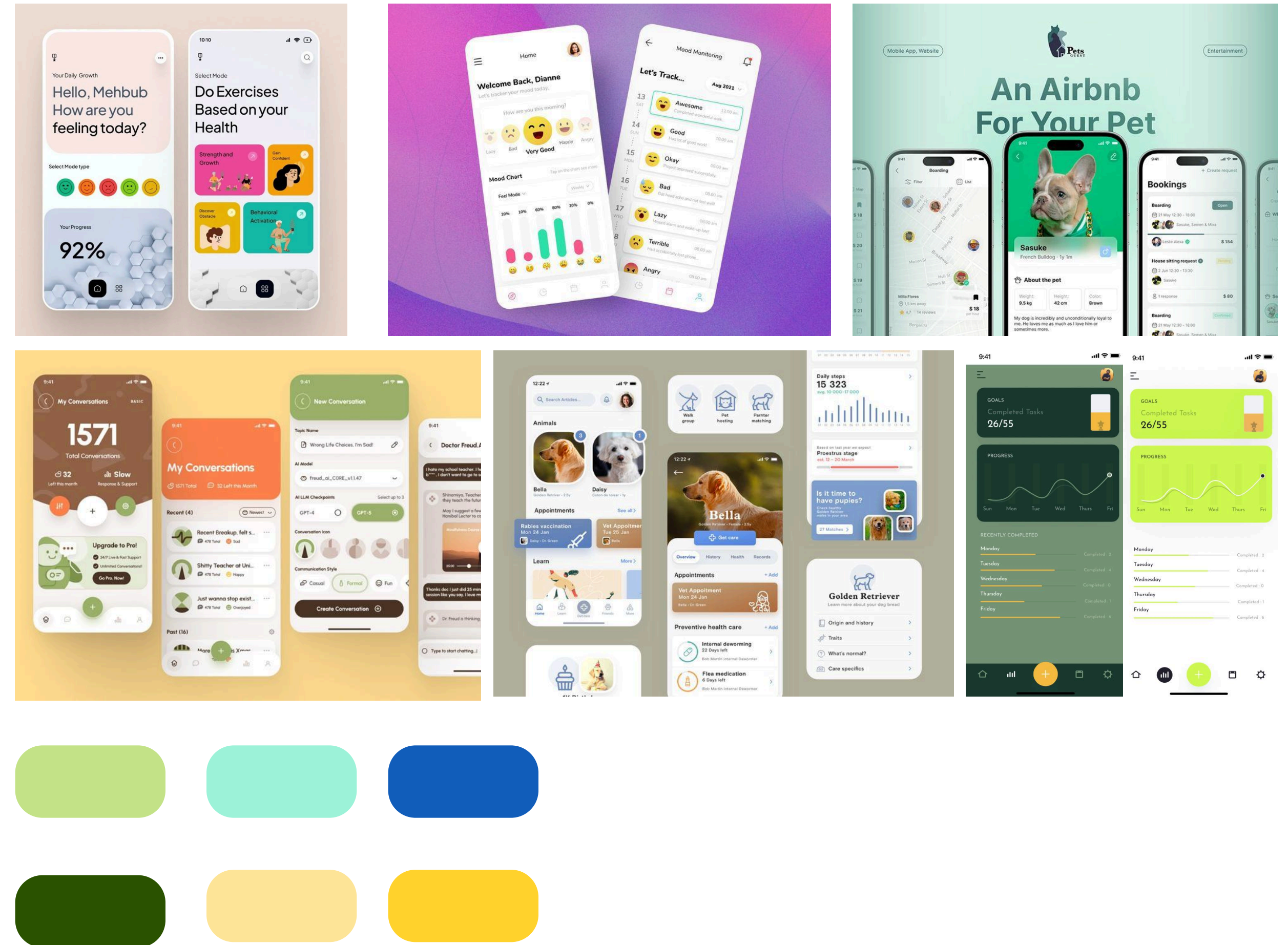


HAPPIPAWS'S VISUAL RESEARCH

To guide the visual tone of HappiPaws, I explored existing design styles across emotional health apps, pet care interfaces, and calming interaction systems.

The visual direction prioritises warmth, clarity, and emotional reassurance—ensuring both dogs and their owners feel supported at every stage.

I focused on using soft gradients, rounded icons, and low-saturation colours to create a calm and friendly environment. UI references also helped establish a layout that balances real-time feedback, owner instructions, and emotional summaries without overwhelming the user.





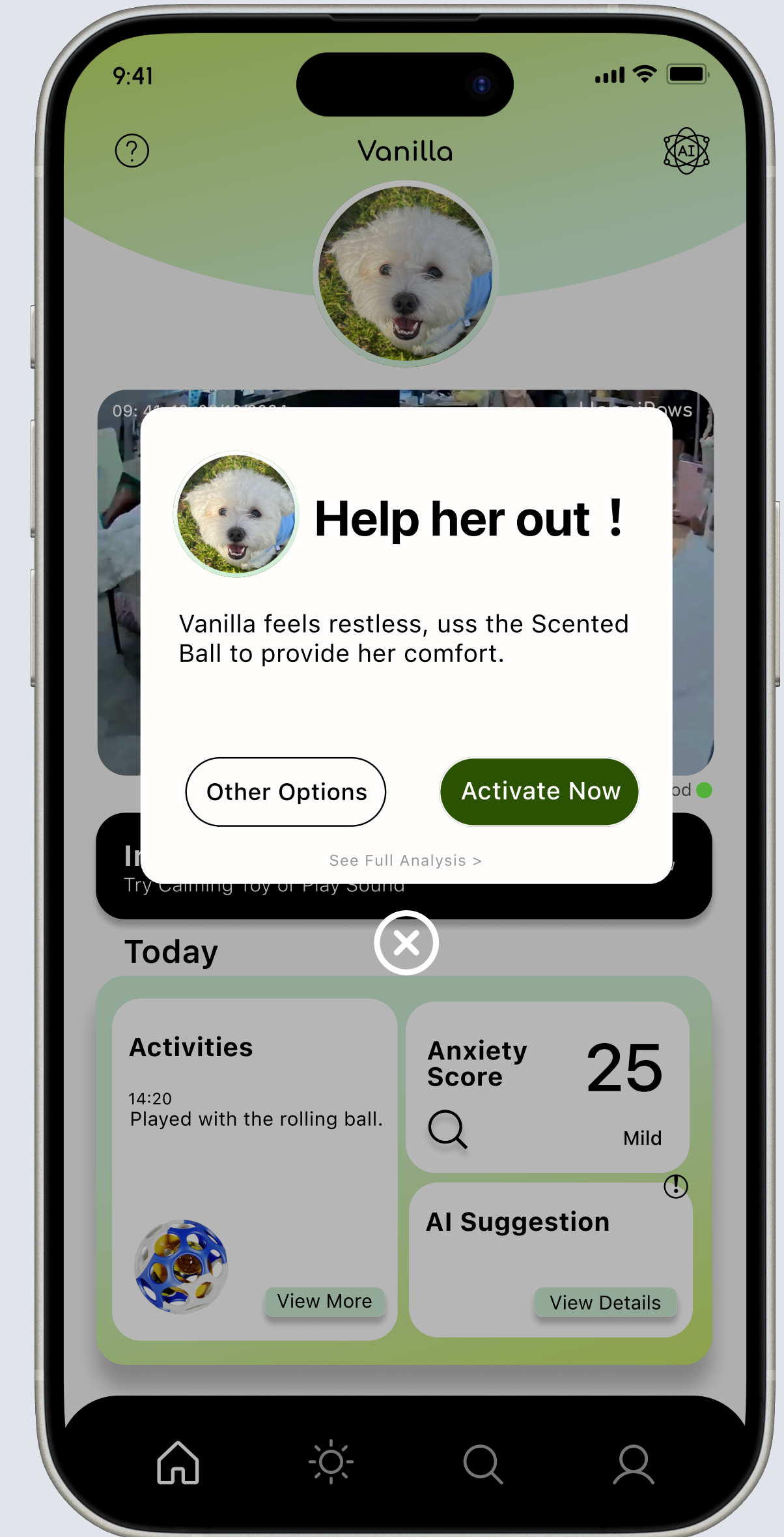
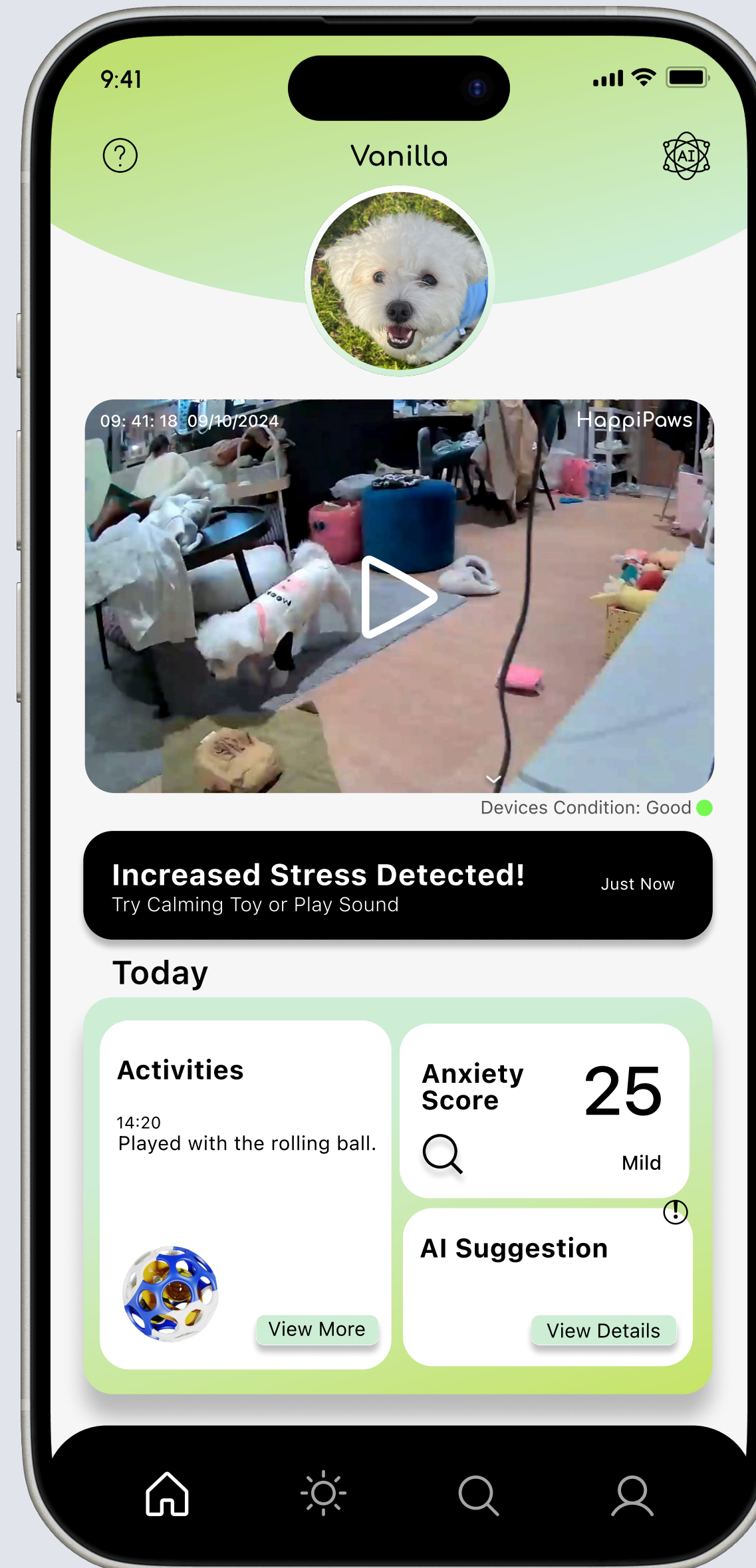
Hi-Fi Design

After completing the wireframe design and visual research, I created these high-fidelity interfaces to ensure the app is intuitive, emotionally supportive, and easy to use.

The following pages introduce the interface screens in detail, showing how each feature works to support dogs with separation anxiety and guide their owners effectively.

Real-Time Monitoring & Immediate Suggestions

When the system detects early signs of anxiety (e.g. pacing or barking), it instantly provides calming recommendations—such as activating the sniff ball—without waiting for owner input. This ensures timely support during critical stress moments.

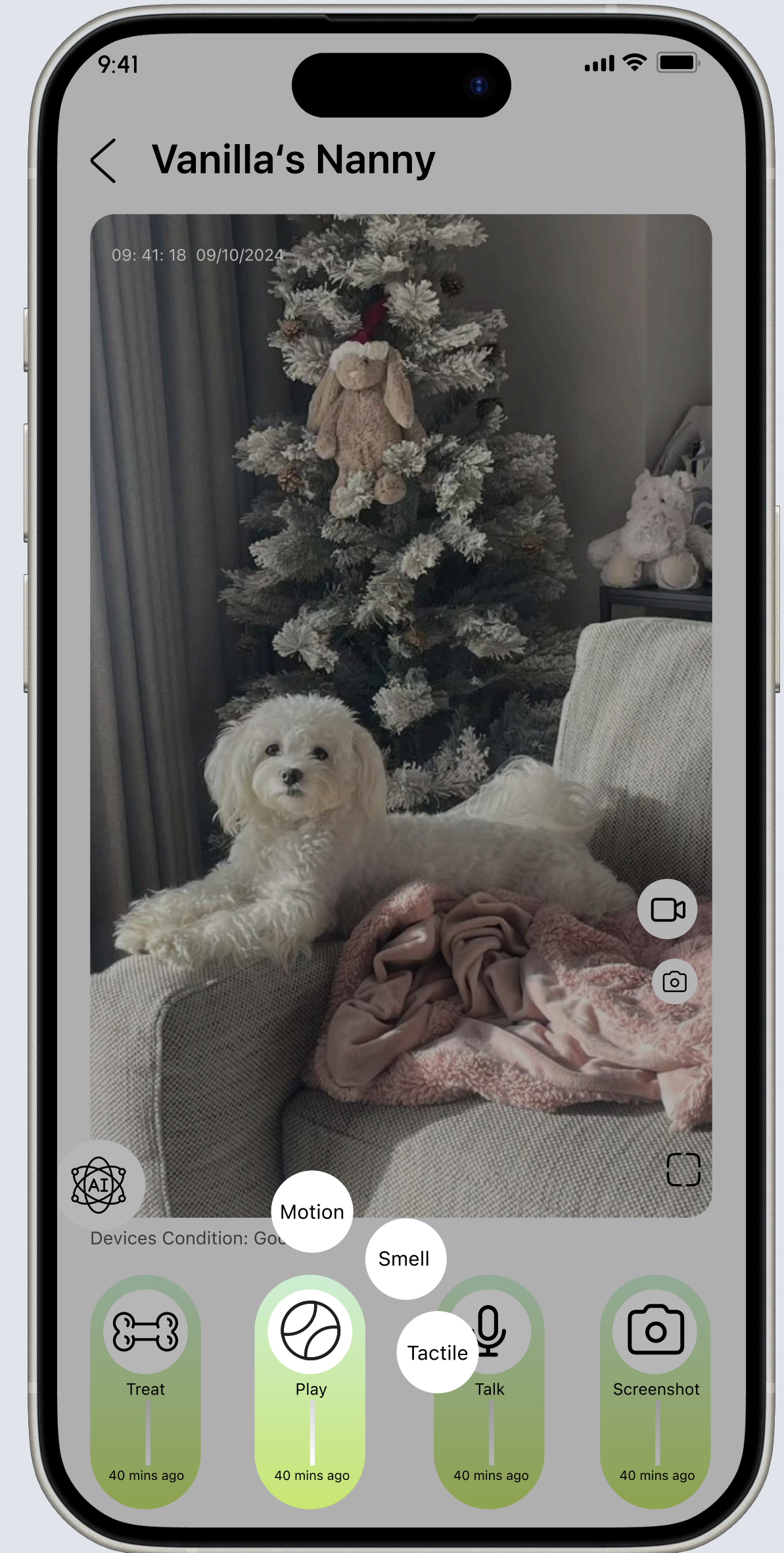
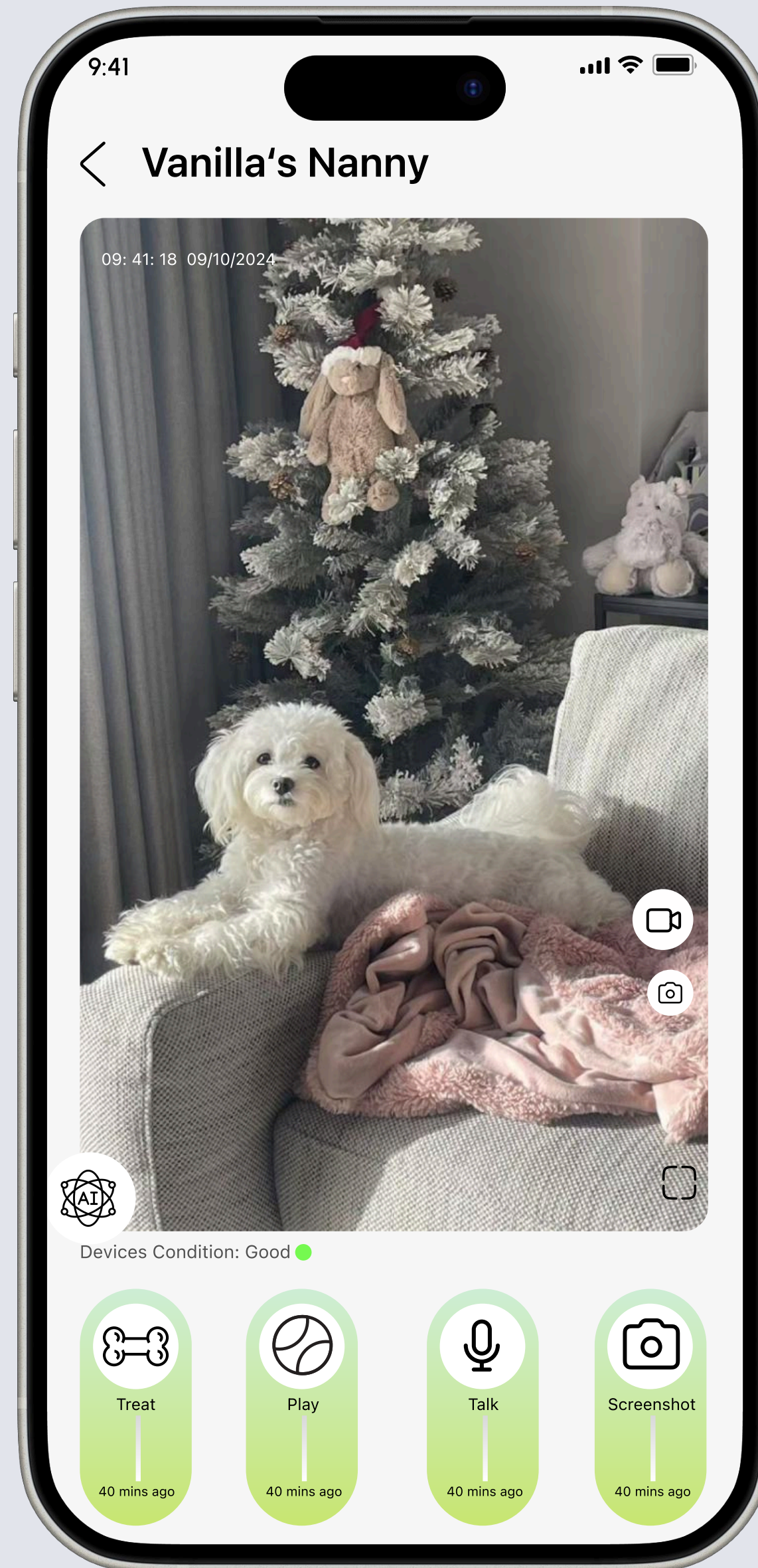


Respond in Real Time with Manual or AI Support

This interface shows how HappiPaws monitors the dog in real time and suggests calming actions when anxiety is detected.

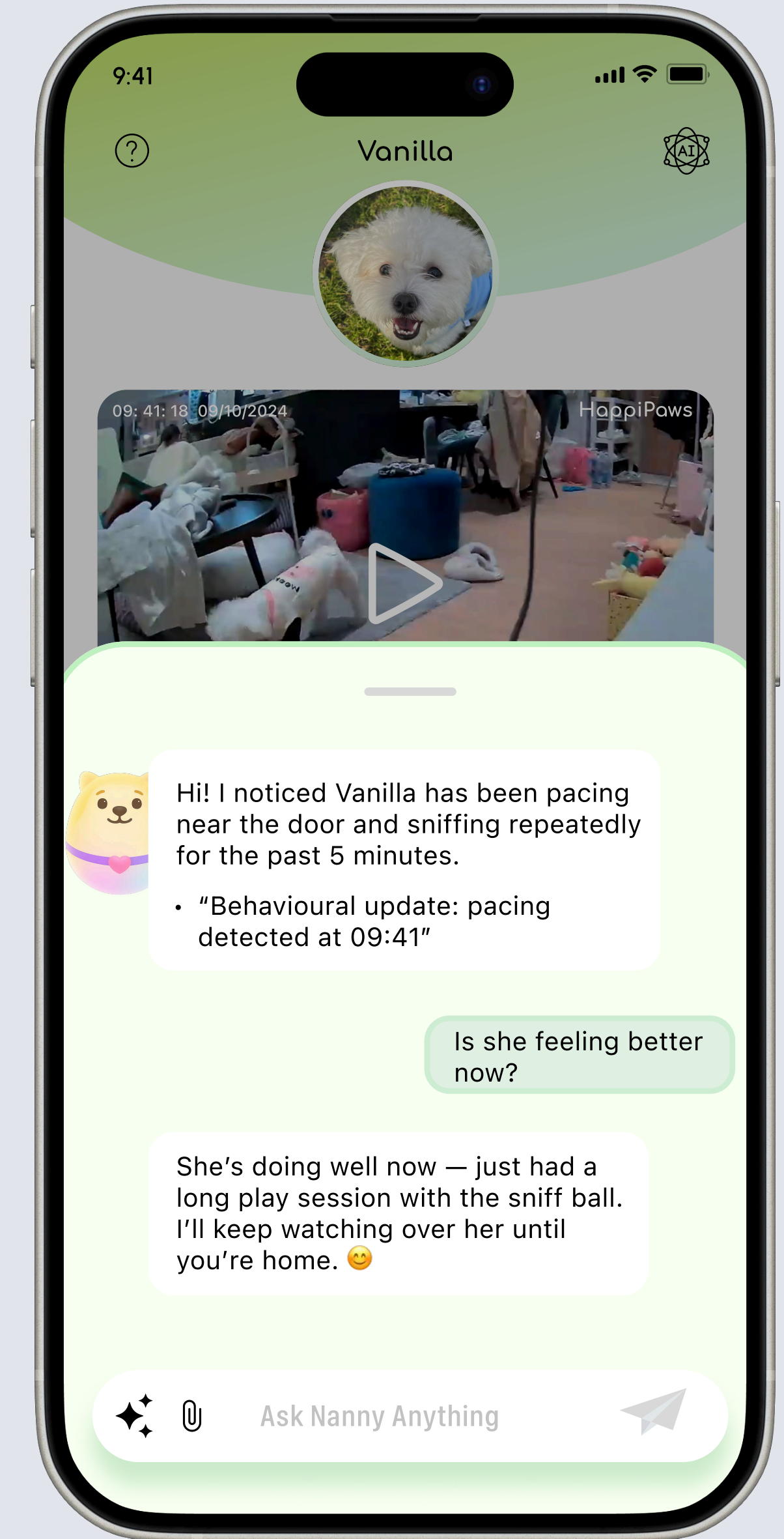
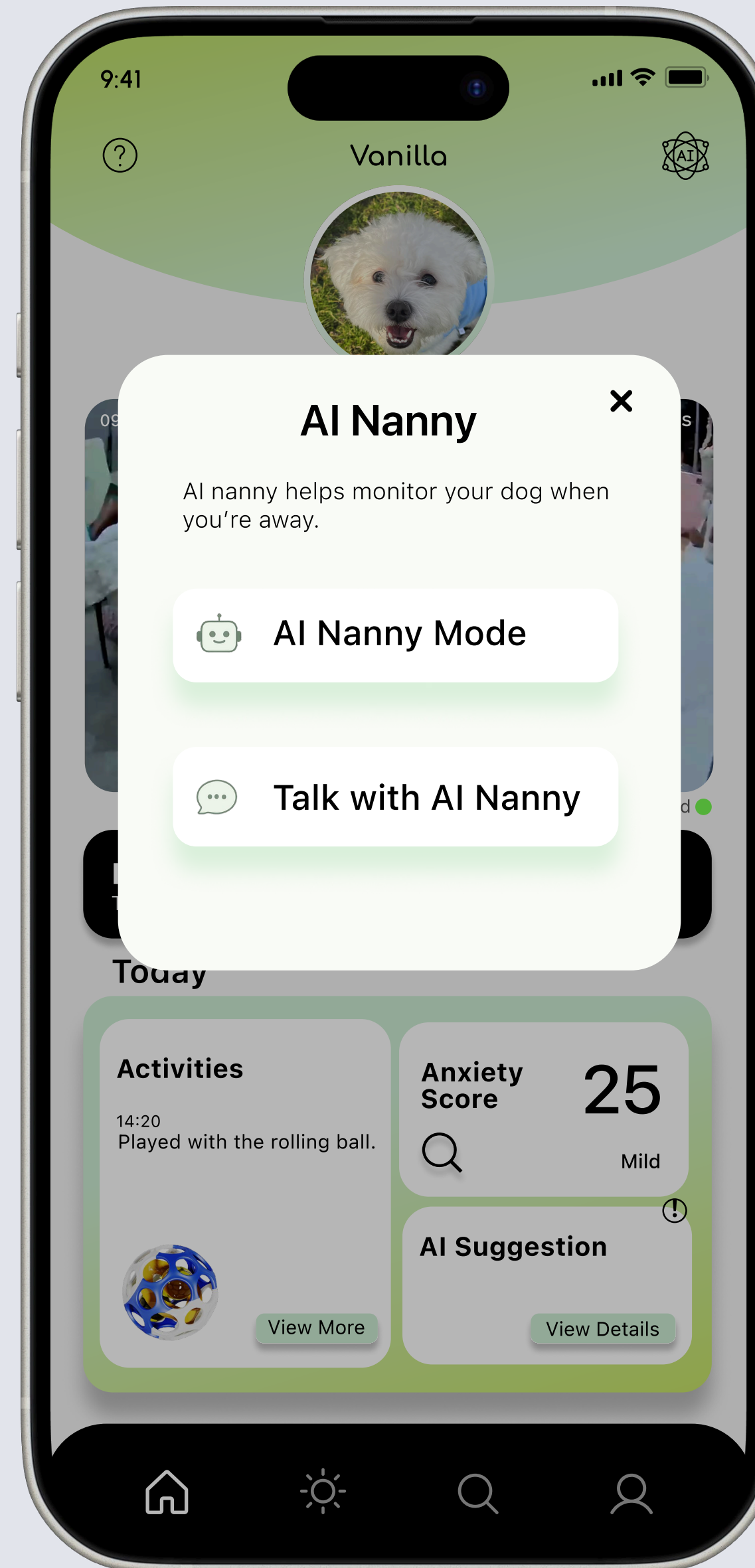
When needed, owners can take manual control by selecting from scent, tactile, or motion-based interventions. It empowers owners to respond based on context, especially when they notice subtle changes before the AI does.

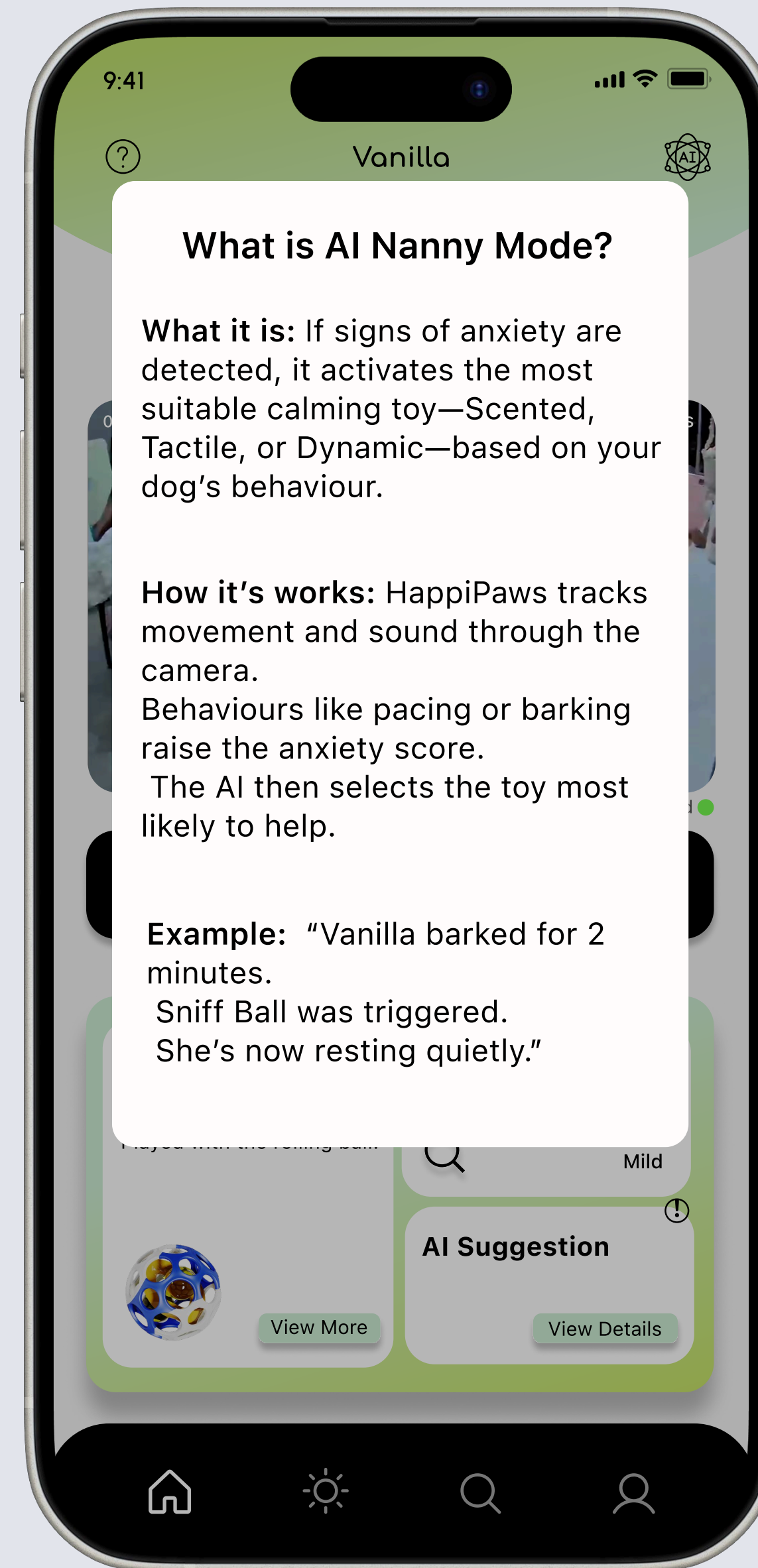
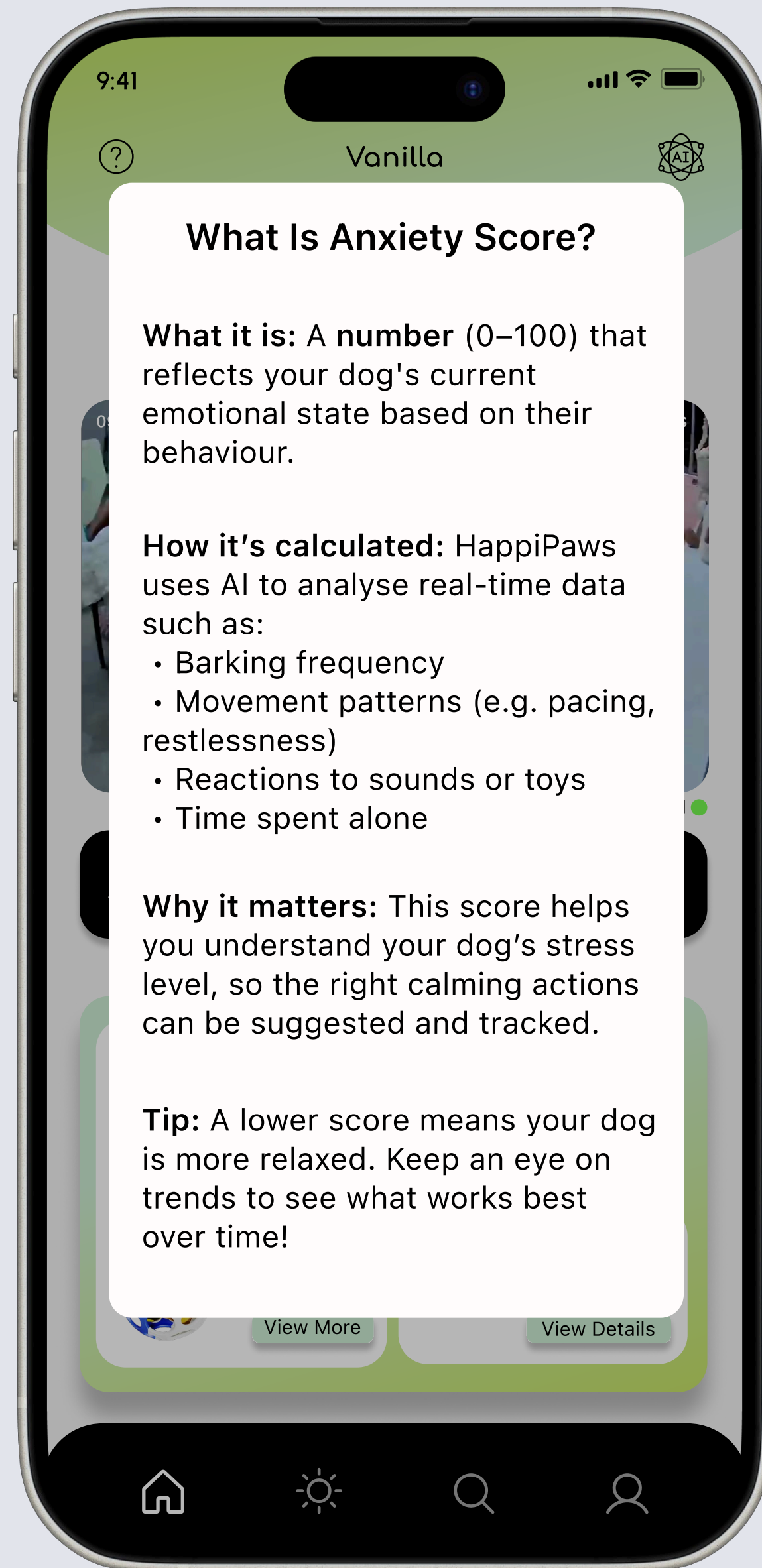
This balance between automated suggestions and owner-led actions ensures personalised and timely support for each dog.



Interactive AI Nanny for Comfort

Owners can switch to “Talk Mode” to receive simple, calming messages from the AI Nanny. This helps maintain a sense of connection and support when they’re away, especially during stressful moments.



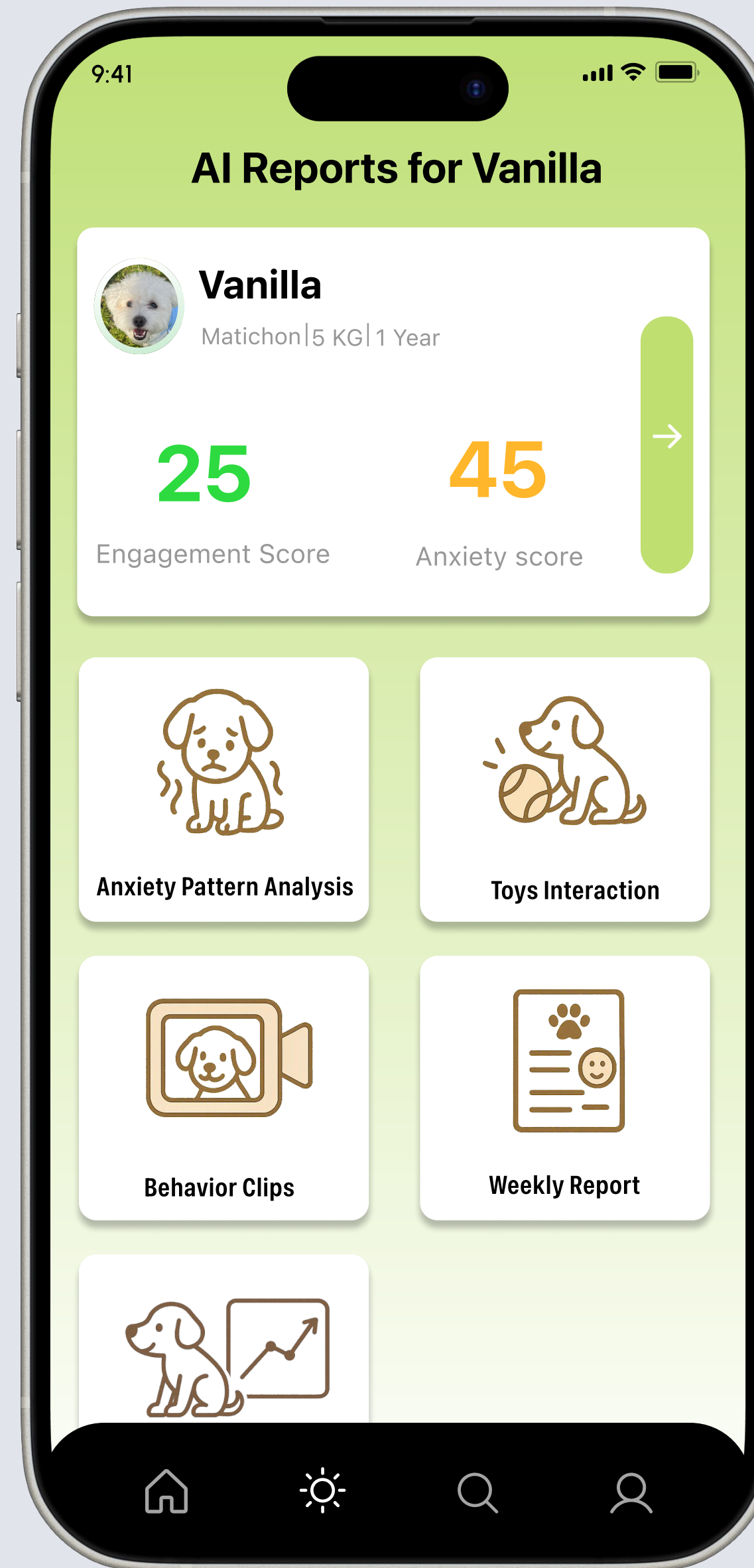


How It Works: AI Logic Behind Support

These two interfaces were added after receiving feedback during my presentation. It became clear that users needed a clearer explanation of how HappiPaws detects anxiety and delivers calming support. They explain the core logic behind how HappiPaws interprets behaviour and responds with meaningful actions.

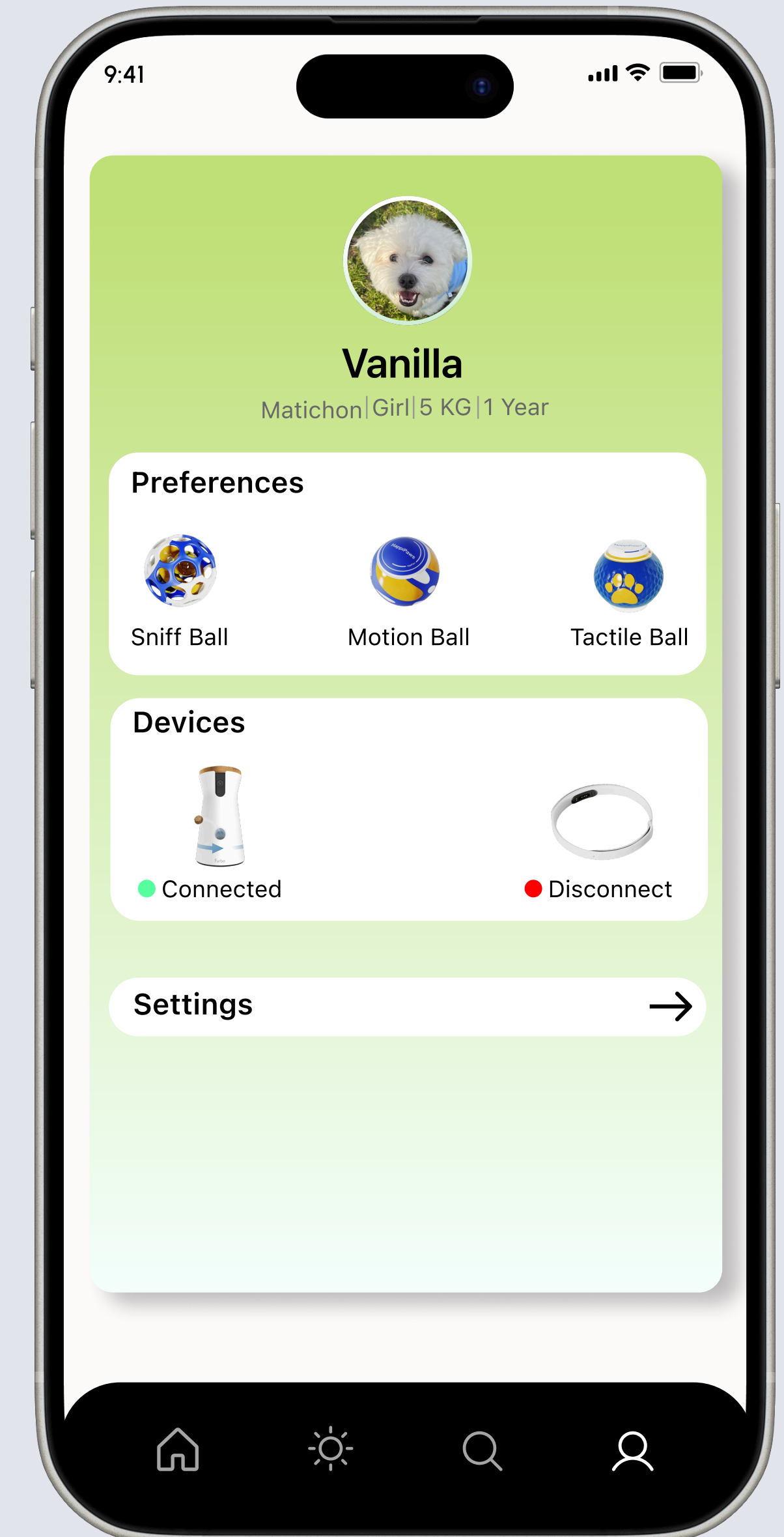
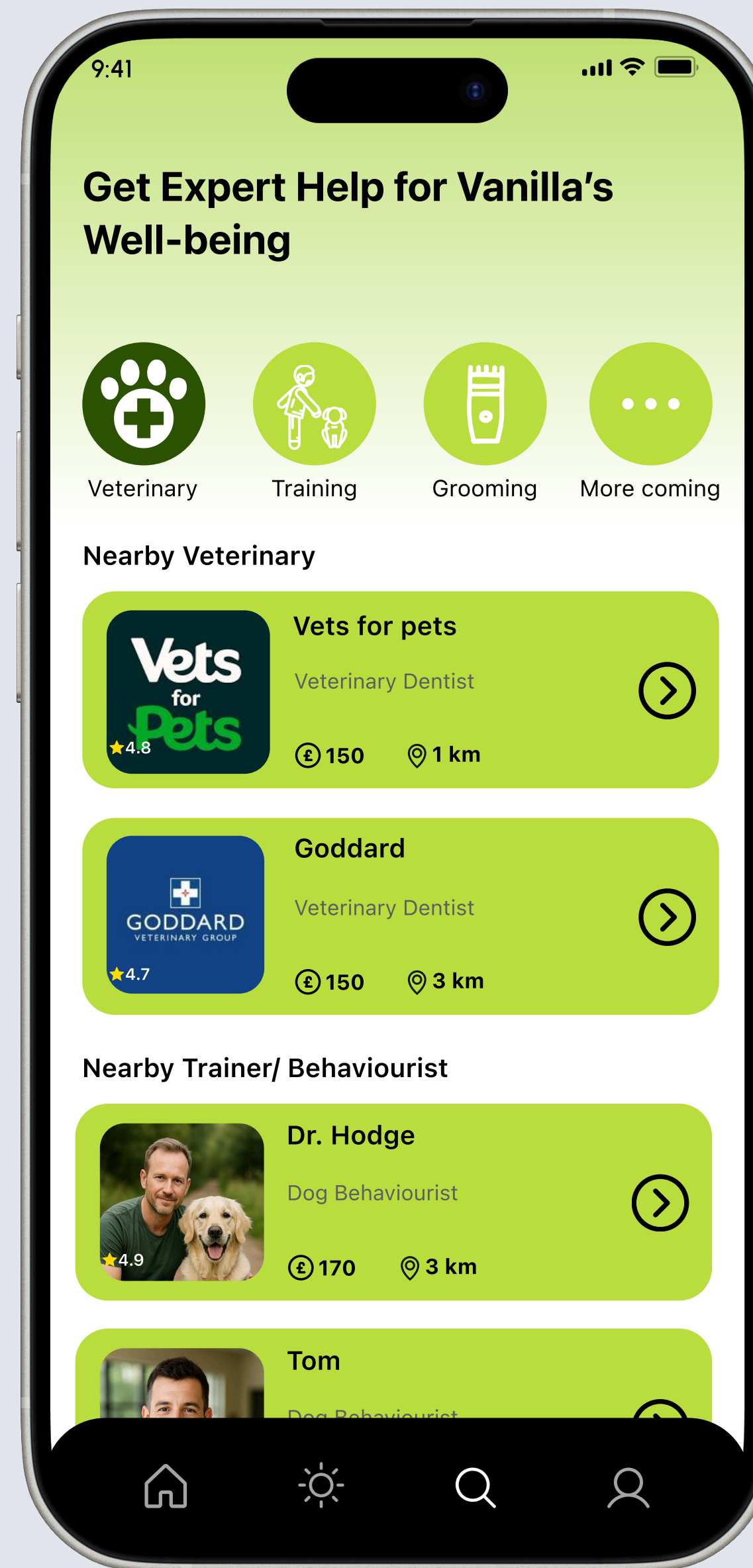
Understand Emotional Trends Over Time

To help owners make informed care decisions, the app summarises anxiety scores and behaviour patterns. Visual charts reveal peak anxiety times and toy effectiveness, turning abstract data into actionable insight.



Get Human Support When AI Isn't Enough

If anxiety remains high, the app recommends local trainers or vets. By bridging digital monitoring with professional help, HappiPaws supports a full care ecosystem for dogs and owners.

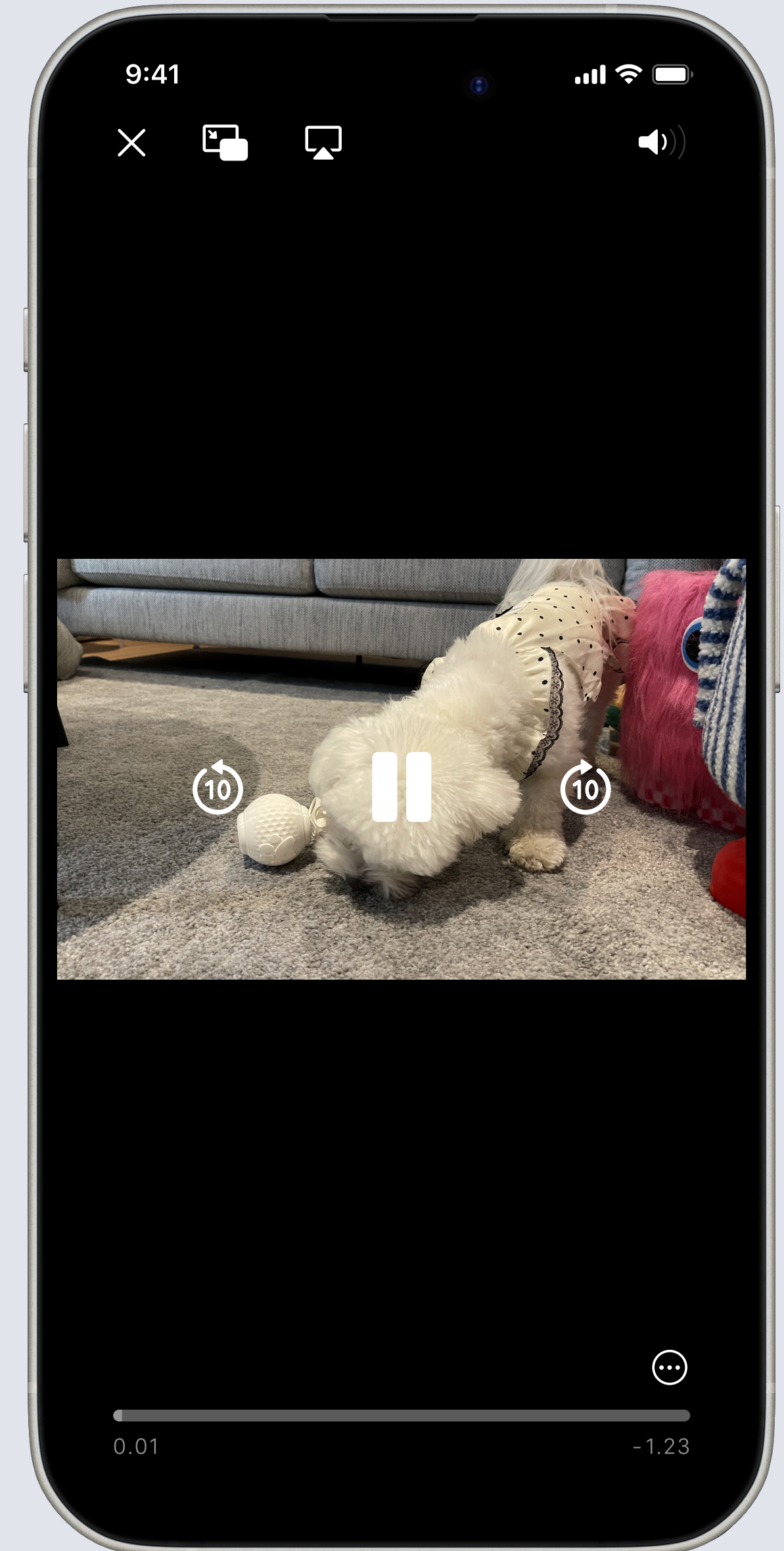
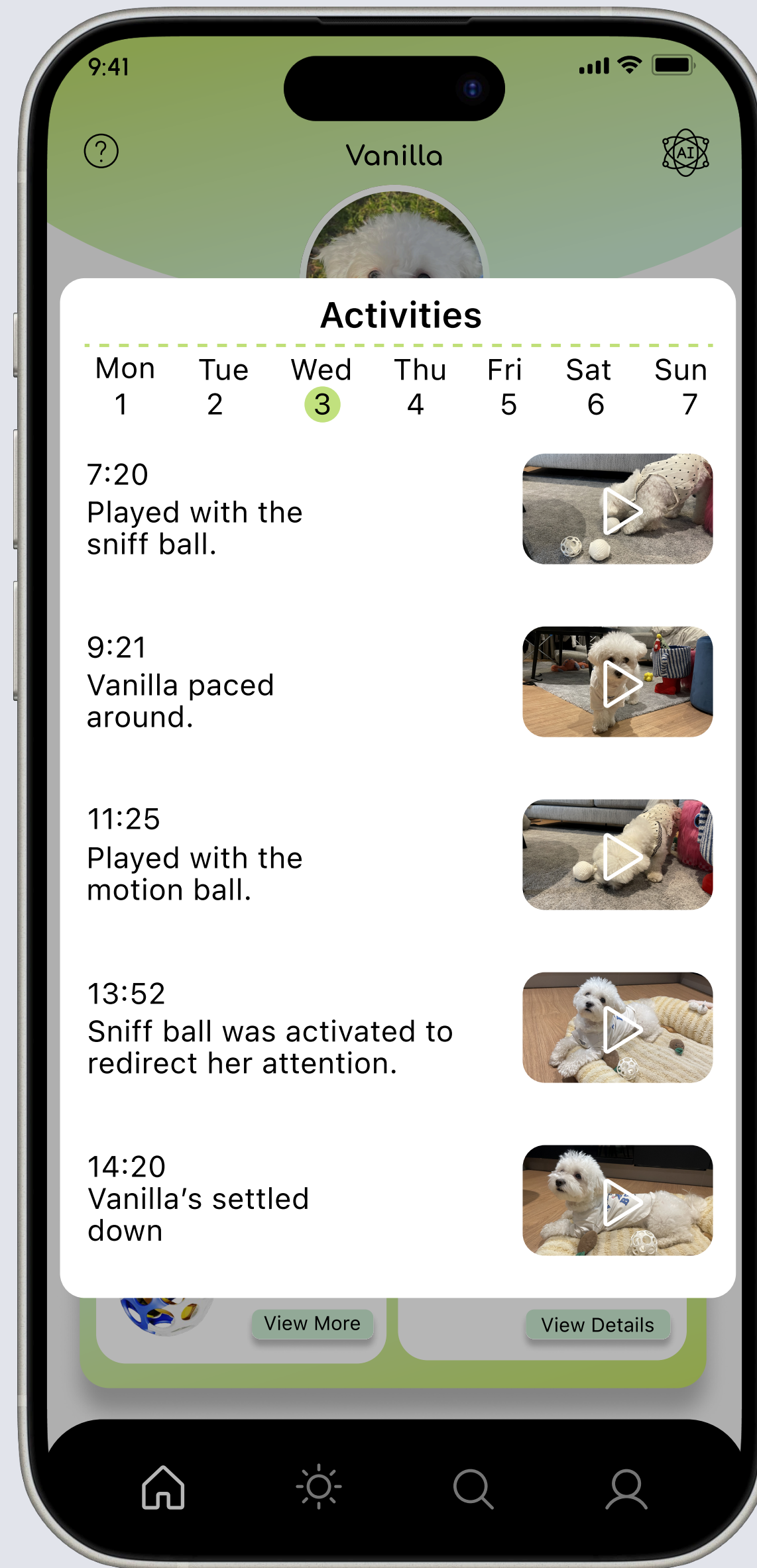


Daily Record & Video Log

This screen offers a clear timeline of Vanilla's day — from signs of anxiety to calming interventions.

Each event is logged with time, behaviour, and the toy triggered.

Owners can replay video clips for better understanding or to share with experts.



AI TOY SET OVERVIEW

This is Happipaws AI TOY SET



Based on previous behavioural research and user interviews, I identified three core sensory responses that help dogs manage anxiety: scent, motion, and touch.

This led to the design of the AI Toy Set, featuring three specialised toys:

- Sniff Ball – scent-based emotional soothing
- Motion Ball – unpredictable movement to reduce boredom
- Tactile Ball – soft texture for comfort through touch

I also designed a smart collar to support behaviour detection and AI response.

In the following pages, I'll walk through the design process, explain how each ball functions, and why it plays a key role in supporting anxious dogs.

SNIFF BALL

What it is

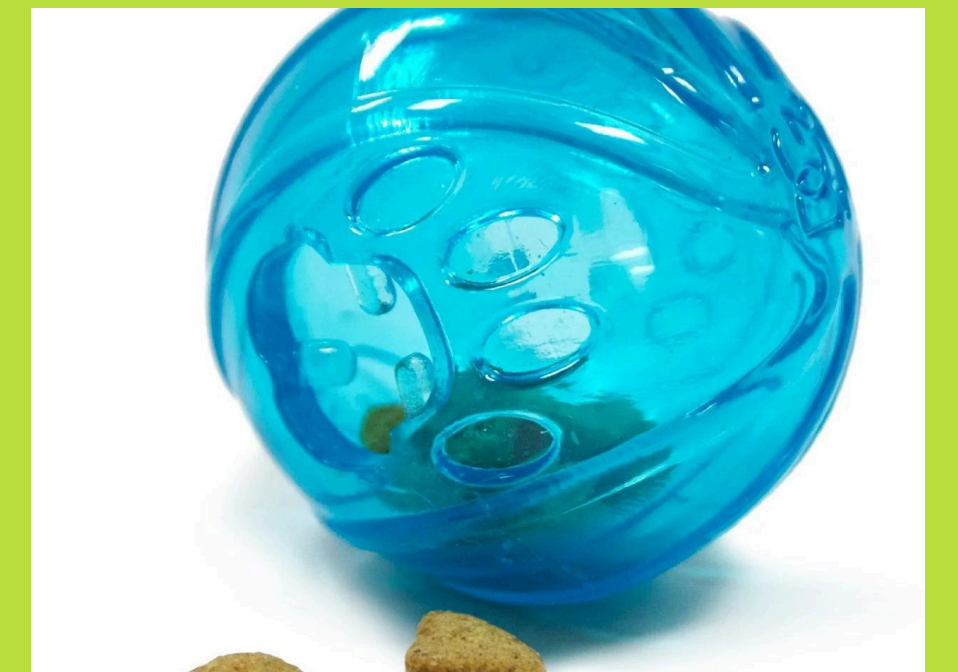
The Sniff Ball is a scent-based calming toy designed to reduce a dog's anxiety through olfactory stimulation. It contains treat cavities that hold familiar or soothing scents, such as the owner's worn fabric or calming essential oils.

Why it works

Research shows scent is one of the strongest emotional triggers for dogs, activating memory and reducing anxiety (Horowitz, 2009). This ball provides a predictable, comforting smell (Owner's clothes or treats etc) that helps the dog relax without overstimulation.

Inspiration

Inspired by market-available treat balls, I explored shape, grip texture, and scent placement. I redesigned the form to encourage longer engagement and make scent-holding more effective.



MOTION BALL

What it is

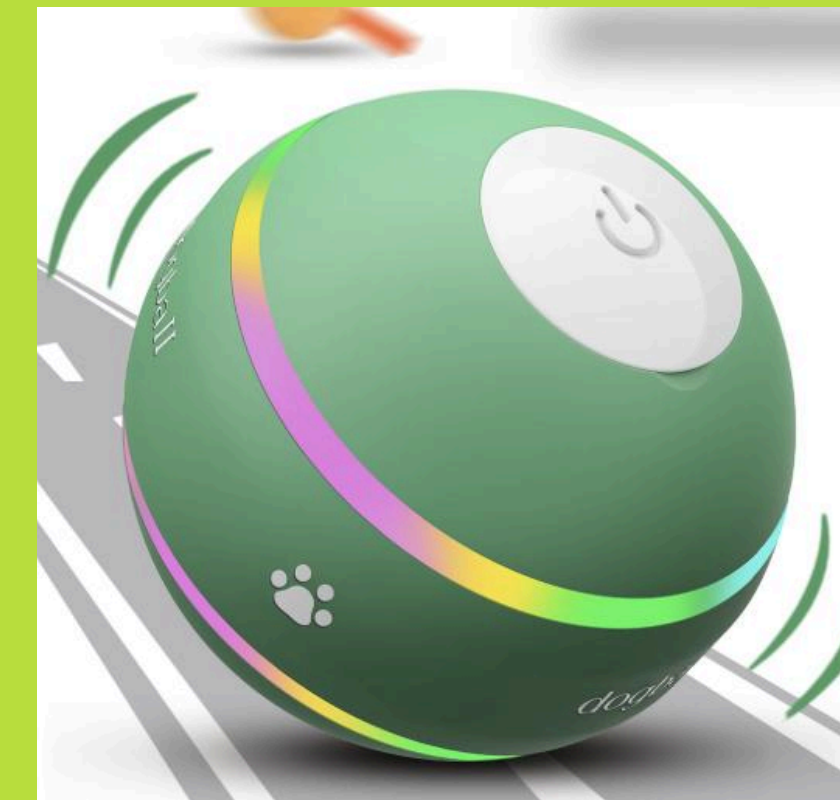
The Motion Ball is an interactive toy designed to relieve boredom through unpredictable movement. It rolls, wobbles, or vibrates to simulate play and engage the dog's curiosity.

Why it works

Irregular motion triggers the dog's natural prey instincts and attention, keeping them engaged and mentally stimulated when alone. Movement-based interaction has been shown to reduce restlessness in anxious dogs (Horwitz & Mills, 2009).

Inspiration

I studied existing robotic pet toys with erratic rolling behaviours. I simplified the design to focus on anxiety relief rather than hyper-activity—emphasising smooth, gentle patterns and soft materials.



TACTILE BALL

What it is

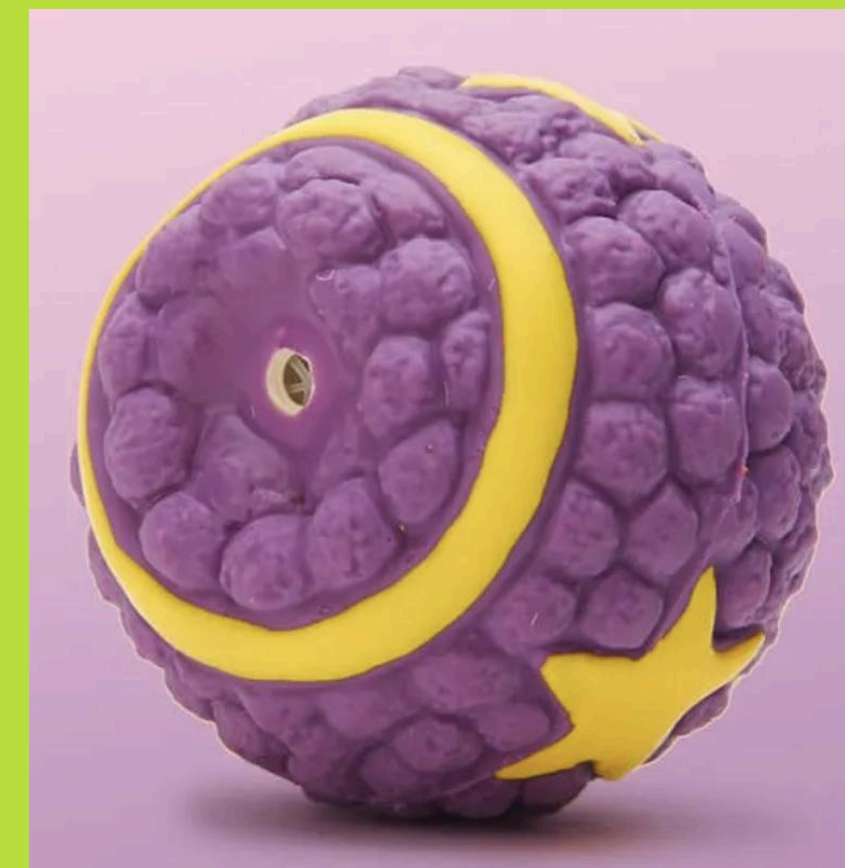
The Tactile Ball uses texture and softness to comfort dogs who respond well to physical contact. Its material is squeezable, with surface bumps to mimic fur or massage-like sensations.

Why it works

Touch-based stimulation has been shown to reduce stress in dogs by activating the parasympathetic nervous system (Tellington TTouch, 2020).

Inspiration

I referenced massage toys and textured dog balls made of silicone and rubber. I chose a soft-touch finish and developed varied surface patterns to enhance the tactile response while ensuring safety during chewing.



3D MODELLING

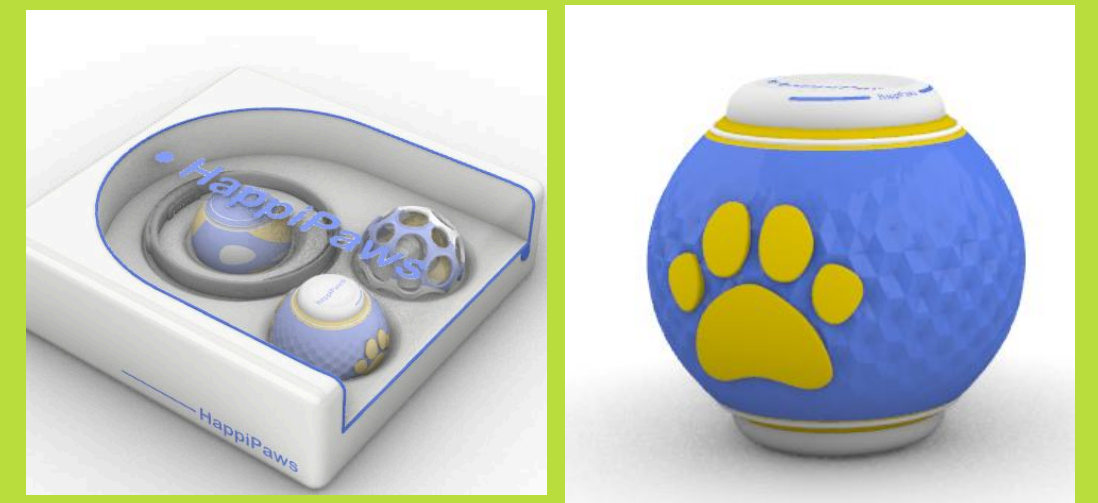
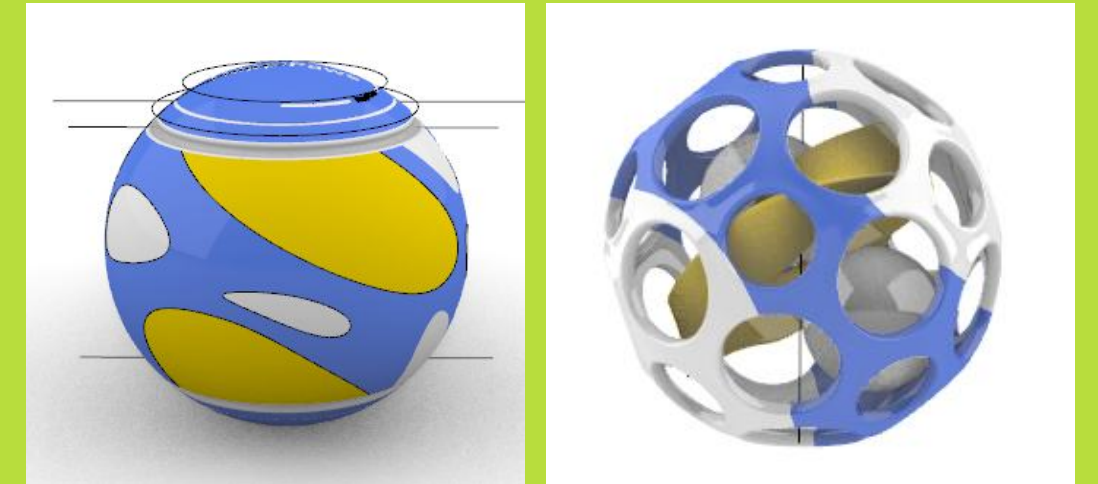
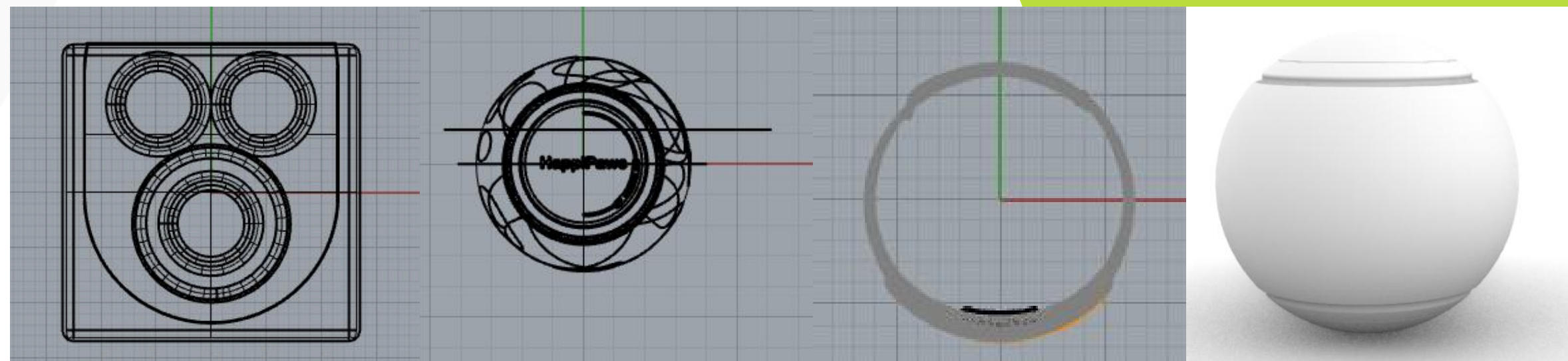
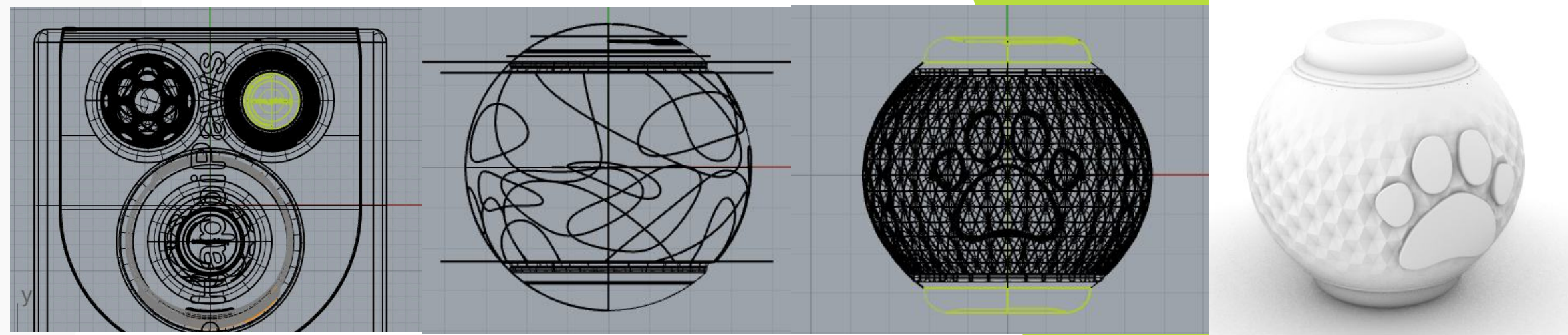
Colour

Why I chose Blue and yellow?

Because dogs are dichromatic and can mainly perceive blue and yellow, while red and green appear greyish. Choosing these two colours makes the toy easier for dogs to see and engage with (Miller & Murphy, 2014).

3D model process

These images show how i 3D modelled these 3 different ball.



HAPPIPAWS' AI TOY SET

THIS IS THE FINAL AI TOY SET—BRINGING TOGETHER EVERYTHING I'VE LEARNED TO CREATE AN INTERACTIVE, BEHAVIOUR-BASED SUPPORT SYSTEM FOR ANXIOUS DOGS.

