



Dogs and Their *Behaviours*

Yvonne Lim, DSI 39



*How is
this dog
feeling?*





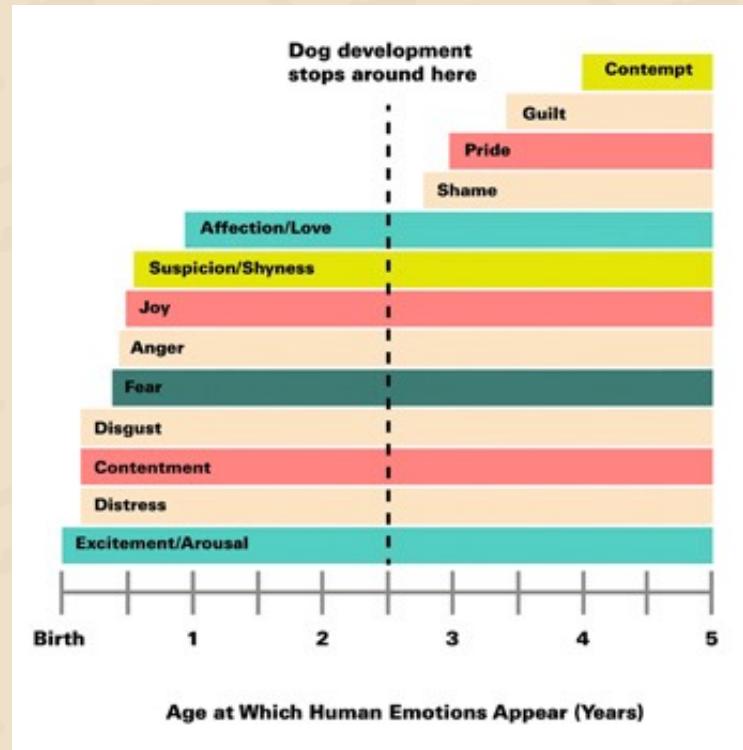
Pug is showing the basic emotion of fear instead of what we think is guilt

*He is feeling
fearful*

Dogs do not
experience *guilt*



Emotions of Dog = Human's Emotions up till 2.5 years old



<https://moderndogmagazine.com/articles/which-emotions-do-dogs-actually-experience/32883>



Why Study Dogs Behaviour?

- First and most important step to ***build a strong and healthy relationship with your dog*** is to understand how it thinks, feels, and learns.
- Understanding your dog and gaining insights into how its mind works can truly make you a ***better pet parent and companion to it.***



Project Objective



“How can we *help new dog owners* understand their dog’s overall emotions to foster healthy development of dogs? ”



Project Objective



1. Understand the key emotions of dogs



2. Explore data and gain insights



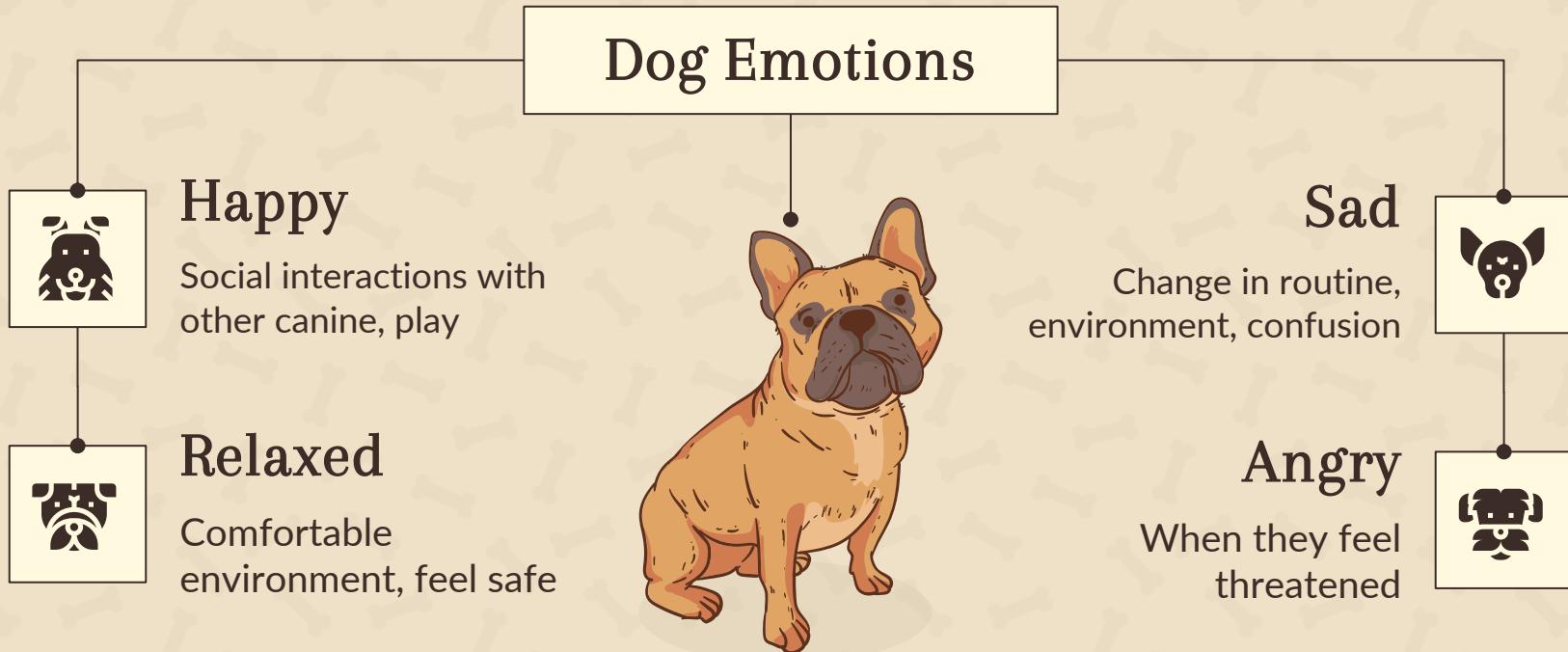
3. Create a predictive model to predict dog emotions through their behaviour



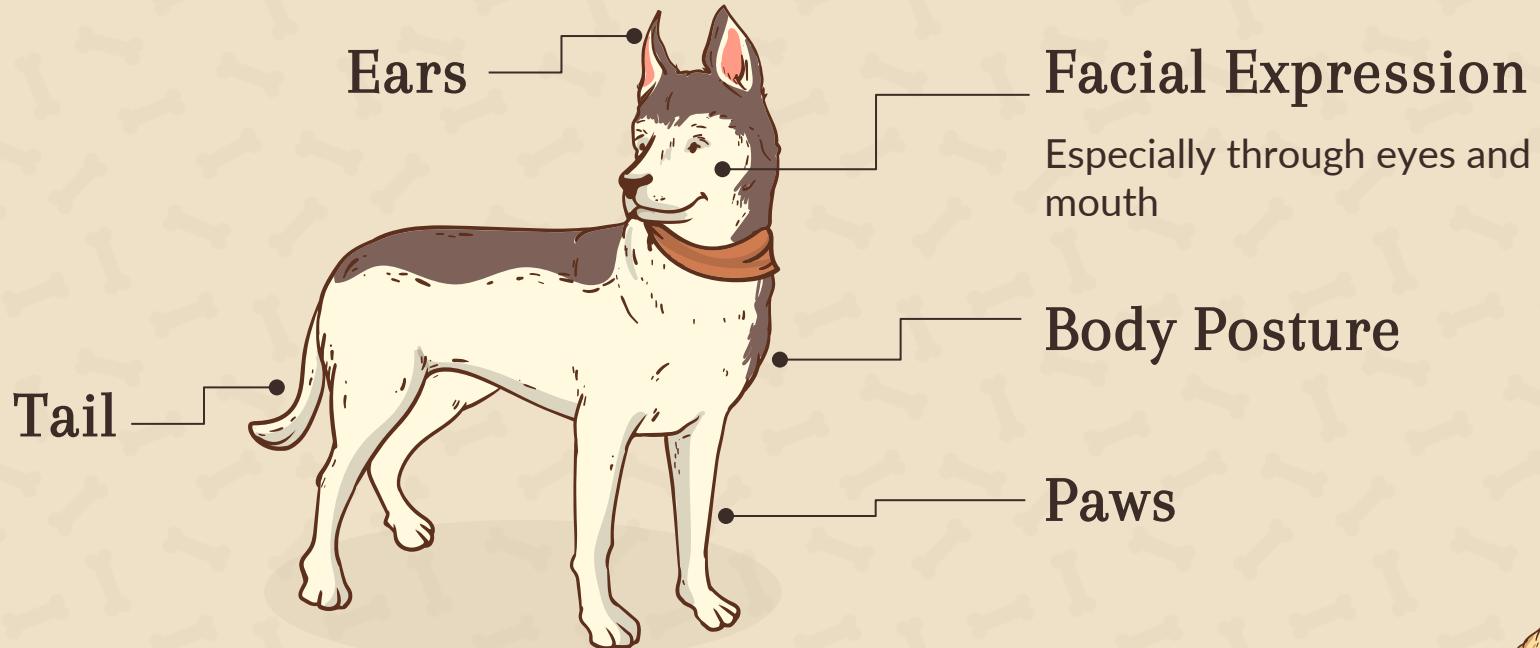
4. Deploying a web application for new pet owners



Key Emotions of Dog



Dogs Communicate with Body Language



EDA – Happy with Tongues Out

Soft, open mouth that kind of looks like a dog version of a smile



<https://www.pethub.com/articles/259461/what-is-your-pet-trying-to-tell-you-reading-your-dog-s-body-language>

EDA – Happy with Tongues Out

Some breeds may look fierce but they are happy



EDA – Relaxed in Posture

Loose shoulders, soft squinty gaze, and body curved in 'C' shape are all clues that your dog's feeling super chill



EDA - Relaxed with Cross Paws

Dogs crossing their paws are relaxed even though we might not observe from their facial expressions



EDA - Relaxed

Body is curve shaped and their head is often propped up while lying on their belly



EDA - Relaxed with Paws Spread Out

They may look sad but they are relaxed when body/paws is spread out widely



<https://www.pdsa.org.uk/pet-help-and-advice/looking-after-your-pet/puppies-dogs/canine-body-language>



EDA – Sad with Body Appear Smaller

Paws are hidden and body is not as wide-spread

They might look bored but in real fact, when they are bored, they will find things to do.



EDA – Sad with Head Low

Hold their head low and avoid eye contact – this is not guilty face because they don't have the capacity to feel guilt



EDA - Angry with Eyes Narrow

Eyes are usually narrow and appear smaller than normal, almost as if they are squinting



<https://www.pethub.com/articles/259461/what-is-your-pet-trying-to-tell-you-reading-your-dog-s-body-language>



EDA – Angry with Teeth shown

Lips pulled back and is bearing their teeth. If you notice that their face is in this position and their top and bottom teeth are separated, this is an indication the dog is ready to bite.



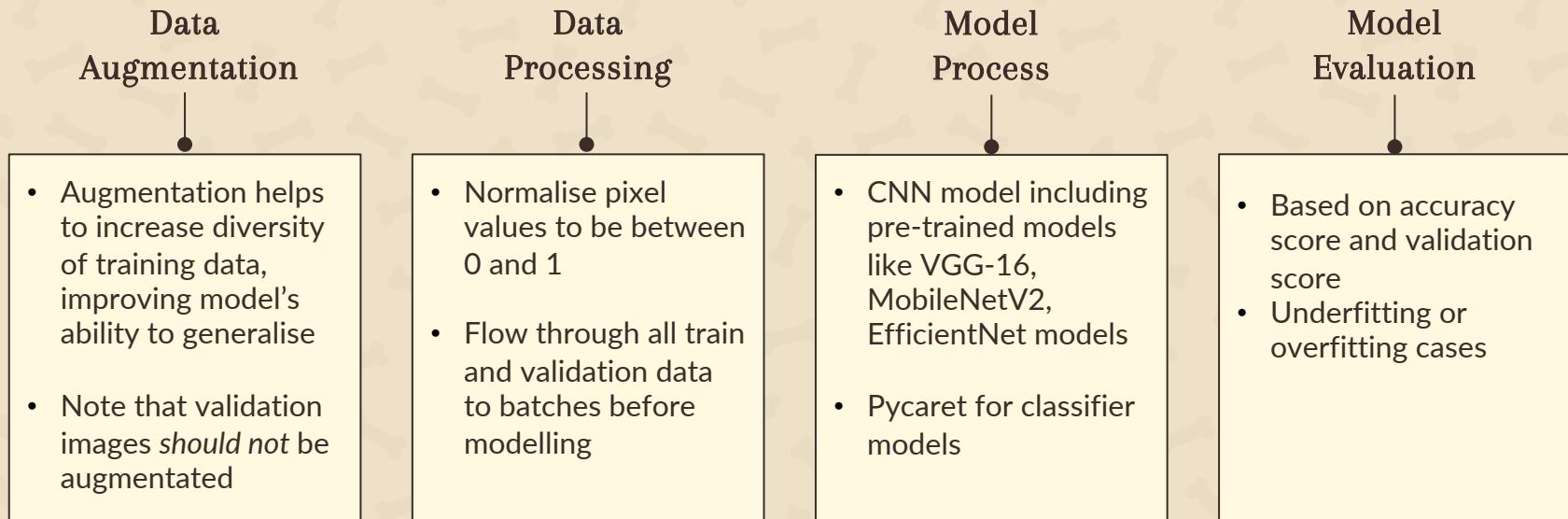
Dog Behaviour Analyser Application



To *help new dog owners*
identify their dog's overall
emotions.



Predictive Model Process

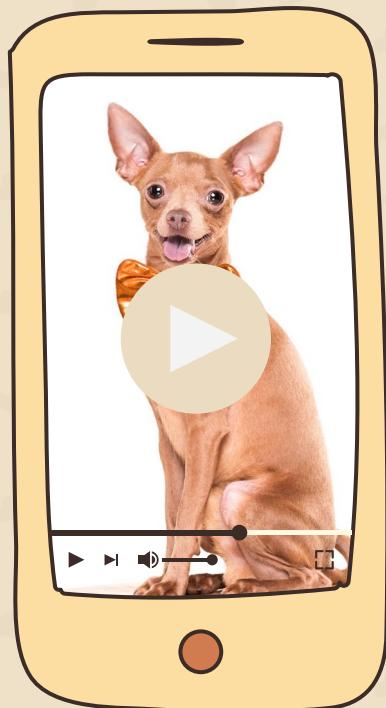


Best Model - EfficientNet



Model	Accuracy Score	Validation Score	Time Taken
Baseline CNN model	0.999	0.322	6,578 sec
VGG-16 model	0.990	0.568	66,131 secs
MobileNetV2 model	0.998	0.552	3,759 secs
EfficientNet model	0.997	0.589	7,478 secs

Deployment Model - EfficientNet



Deploy 2 classes
- Sad and Relaxed

Model	Accuracy Score	Validation Score	Time Taken
EfficientNet model	0.999	0.850	4,855 secs

Foster Healthy Development of Dogs



Social Interactions

- Set up a doggy playdate with another canine friend



Play

- Exercise & playtime like fetch, brisk walk, toys
- Positive reinforcement helps to reinforce good behaviour



Safe space

- Provide a comfortable environment, cozy bed and soft toys



Training

- If your dog is showing signs of aggression frequently, consult a professional dog trainer

SUMMARY

Problem Statement

- “How can we *help new dog owners* understand their dog’s overall emotions to foster healthy development of dogs? ”

Creating web application for new pet owners

- Allows users to understand their dog behaviours quickly and do small actions that helps to develop a healthy dog well-being in the long term.

Future Work

- Include other emotions that could be harder for new pet owners to differentiate such as fear and distress.

