

Affective Design

Prepared by:

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Topics of Discussion

- Affective Design
 - Emotions and UX
 - What is Affective Design?
 - How to design for Affect?
 - Emotion Models
 - Measuring/tracking Emotions
 - Emotions from Decisions

Emotions and UX

- ***Emotional interaction*** is concerned with how we feel and react when interacting with technologies
- HCI has traditionally been about designing efficient and effective systems
- Focus now has shifted towards designing interactive systems that make people respond in certain ways
 - e.g. to be happy, to be trusting, to learn, to be motivated

Emotions and Usability

- Emotional Interaction:
 - Interactions makes us happy, sad, annoyed, anxious, frustrated, motivated, delirious, etc.
 - How to translate this knowledge to different aspects of the usability engineering, e.g.
 - designing certain products (e.g. virtual pets) that people care for and become attached to
 - social robots that can help reduce loneliness and improve wellbeing
 - changing human behaviour through emotive feedback

What is Affective Design?

- Affective Design [1,2]:
 - Utilising emotional interactions in designing systems, products or services
 - Can lead to:
 - Enhancement of user engagement
 - Building trust and satisfaction towards the implementation
 - Systems being capable of responding adaptively to the emotions of its users

[1] Desmet, P. M. A., & Hekkert, P. (2007). *Framework of product experience*. International Journal of Design, 1(1), 57–66.

[2] Norman, Don. *Emotional design: Why we love (or hate) everyday things*. Basic books, 2007.

What is Affective Design?

- Examples:

Error 404 – Web Page Not Found

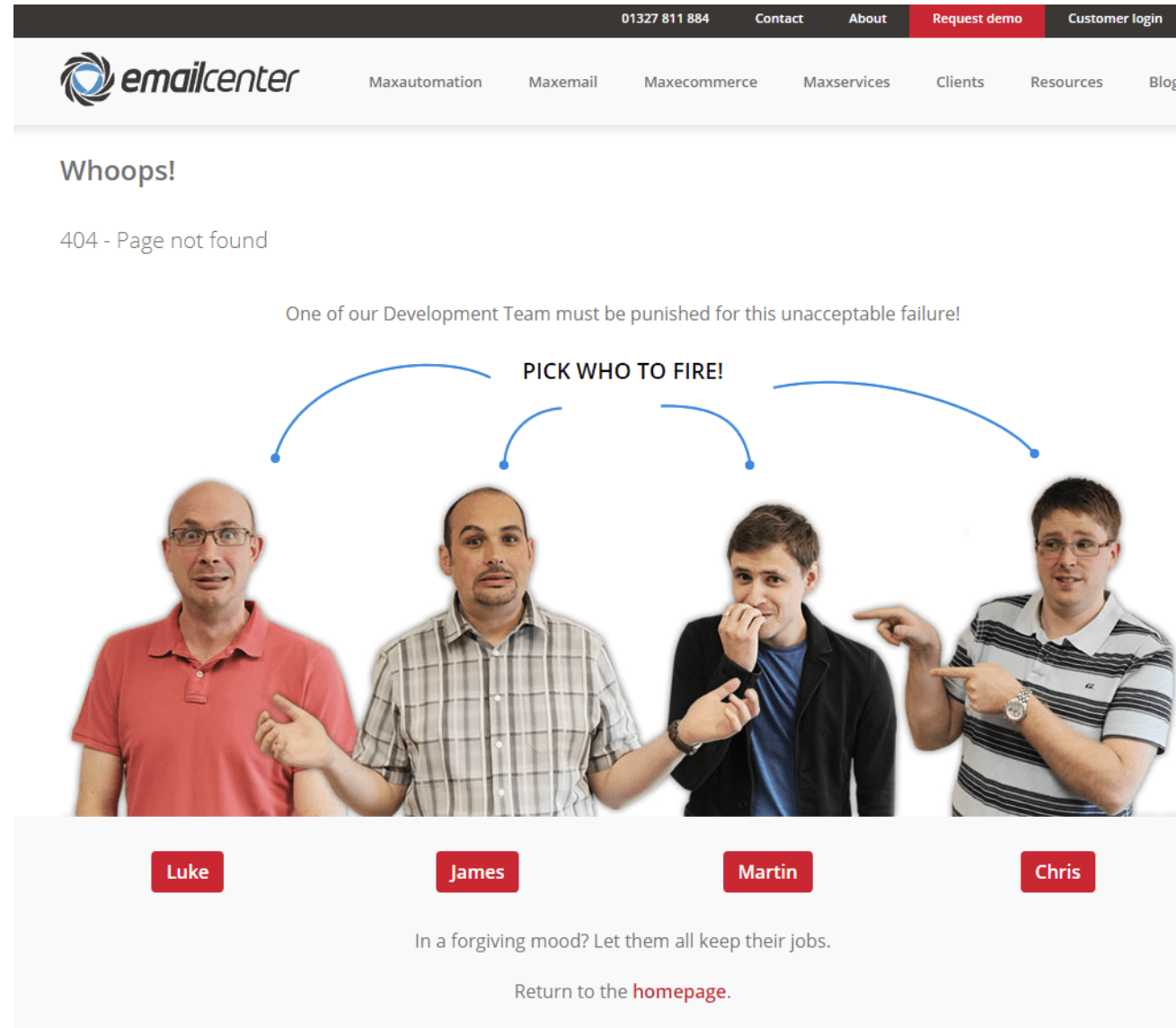
What is Affective Design?

- Examples:



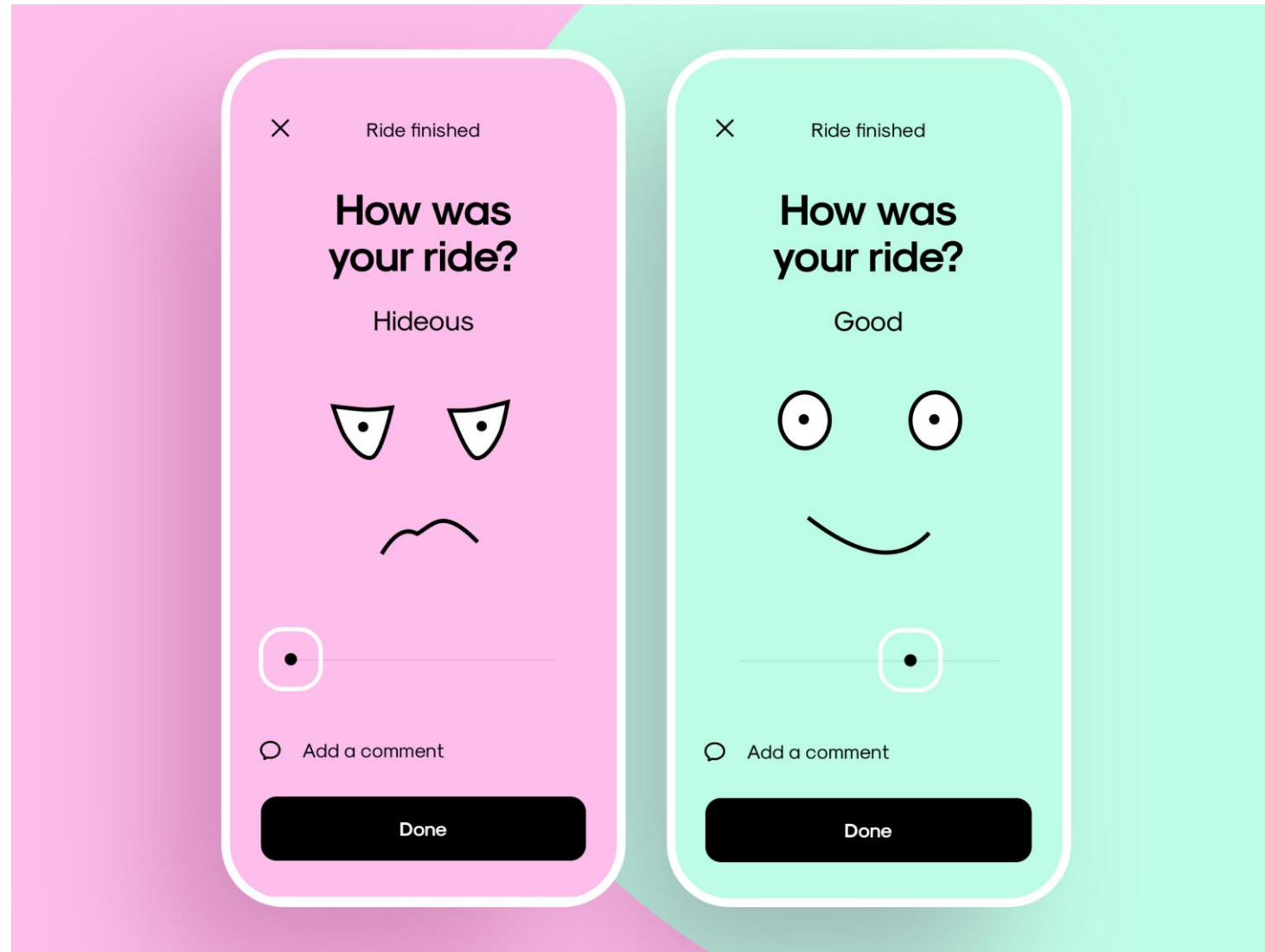
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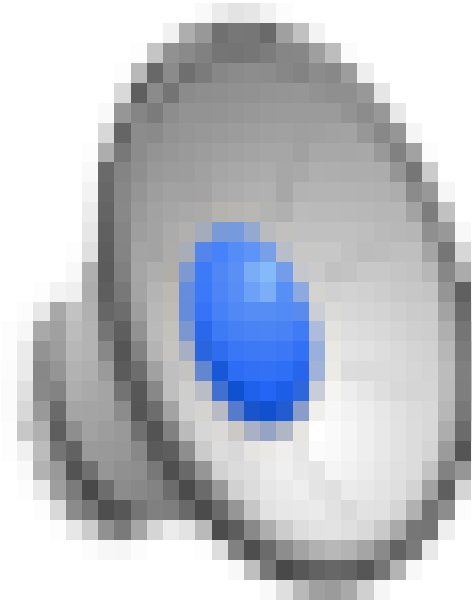
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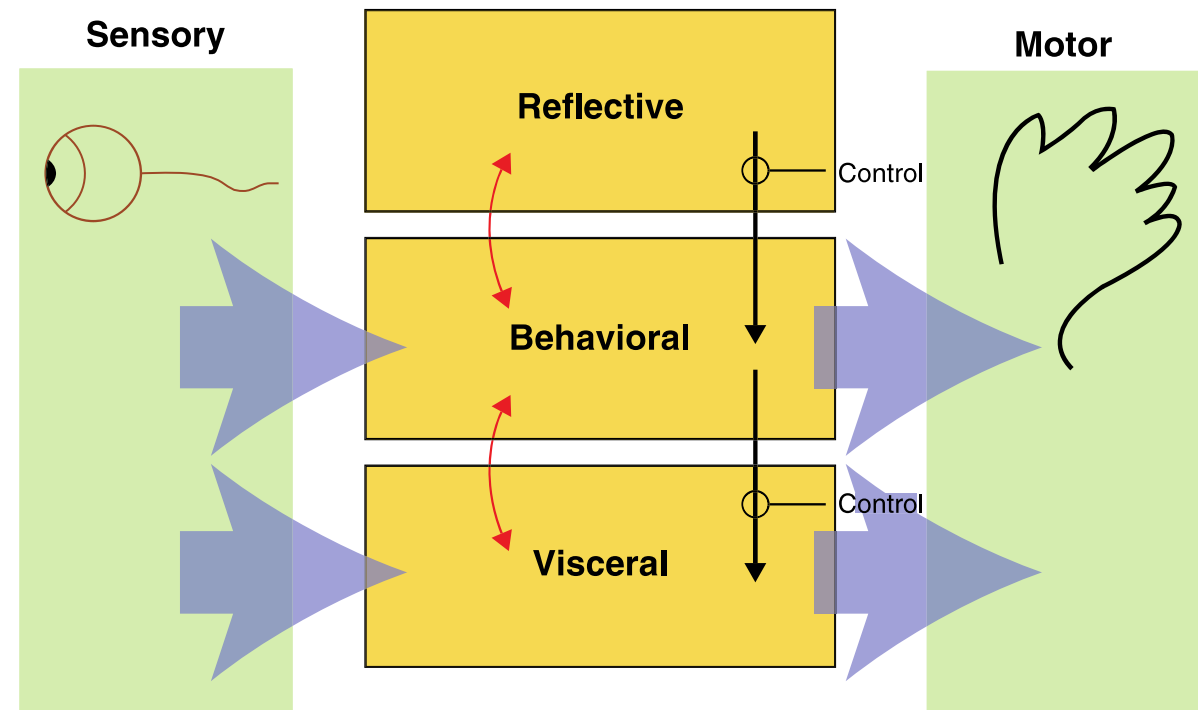
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How to design for Affect?

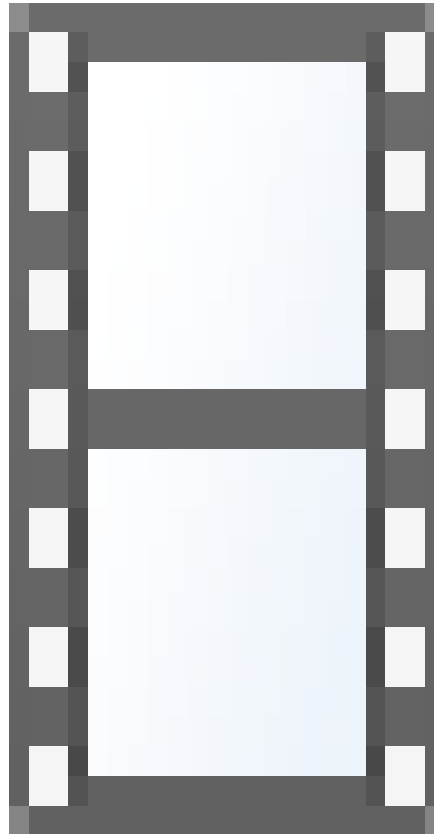
- Don Norman's three levels of design [2]:
 - **Visceral:** Appearance, first impressions, look & feel.
 - Governed by immediate sensory input
 - e.g., through visual aesthetics
 - **Behavioral:** Use, function, performance, usability.
 - Governed by interaction effectiveness and ease
 - e.g., intuitive navigations/interactions/controls
 - **Reflective:** Meaning, interpretation, self-image, memory.
 - Governed by conscious thought and cultural context.
 - e.g., branding, story



[2] Norman, Don. *Emotional design: Why we love (or hate) everyday things*. Basic books, 2007.

How to design for Affect?

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 - Example:



How to design for Affect?

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 - Example:
 - **Visceral:** Brilliant colors and wild design attract user's attention.
 - **Behavioral:** Wearability in terms of comfort, being able to read the time.
 - **Reflective:** Quality of materials used, what/who their design identifies with, brand impression.



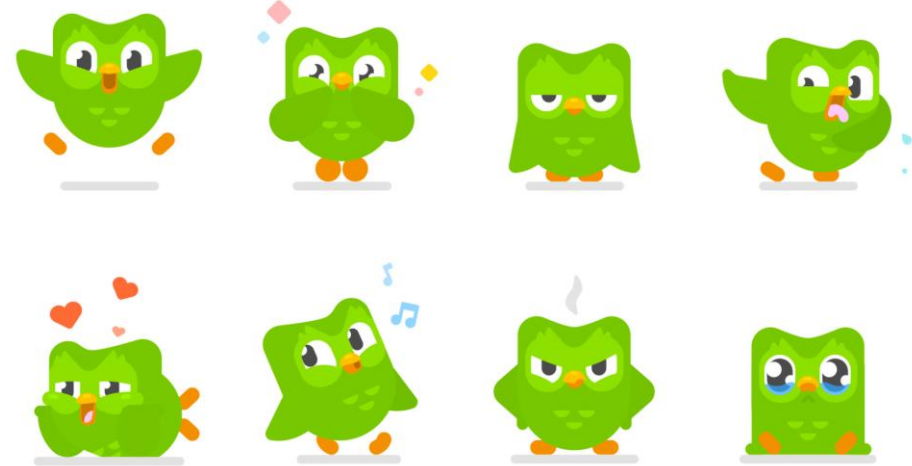
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How to design for Affect?

- Don Norman's three levels of design:
 - Example: Duolingo
 - Visceral?
 - Behavioral?
 - Reflective?



<https://developer.apple.com/news/?id=jhkvplla>

<https://www.youtube.com/watch?app=desktop&v=m-3-D7S0piw>

How to design for Affect?

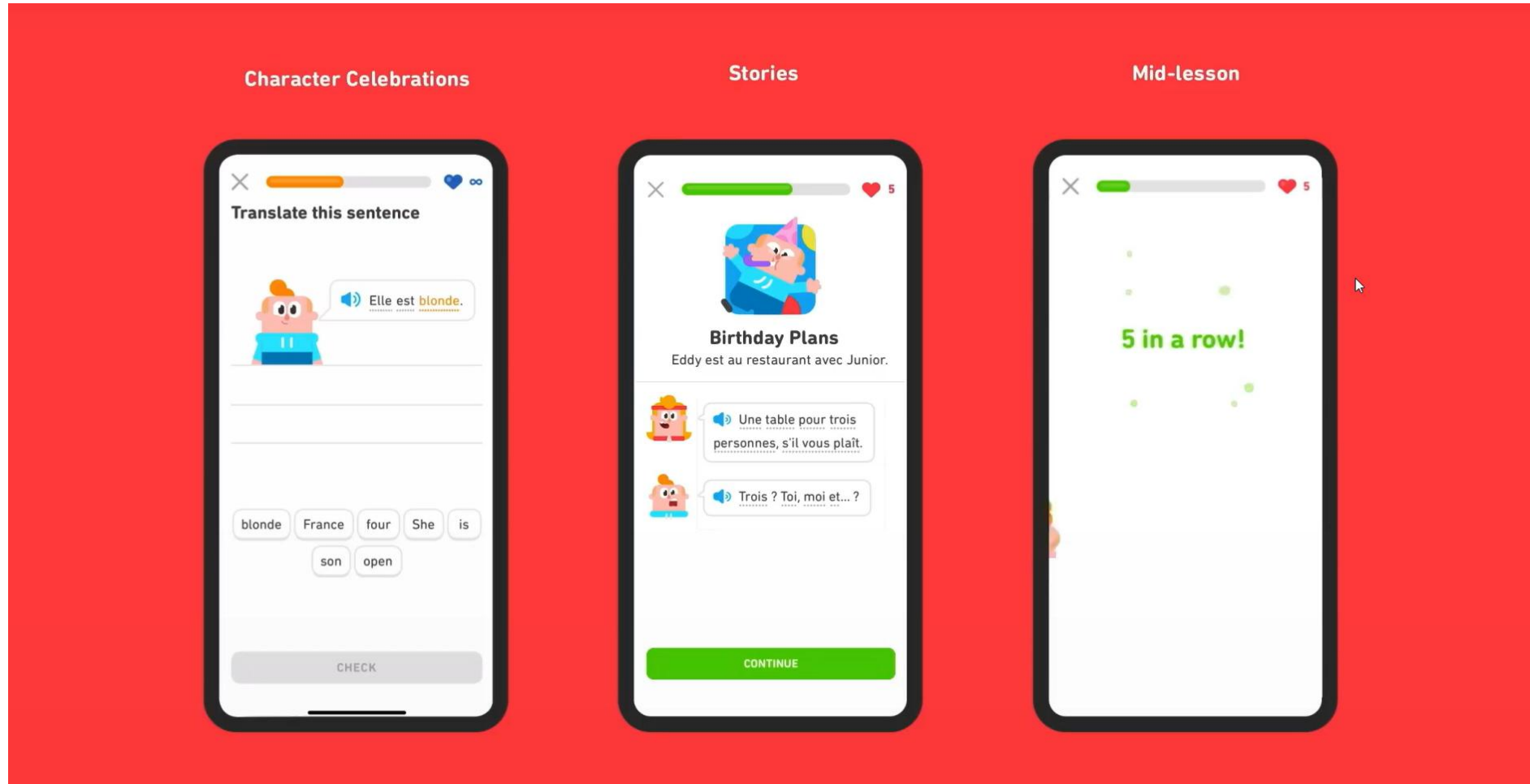
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Menti Link:

<https://www.menti.com/al3f9czdhpup>

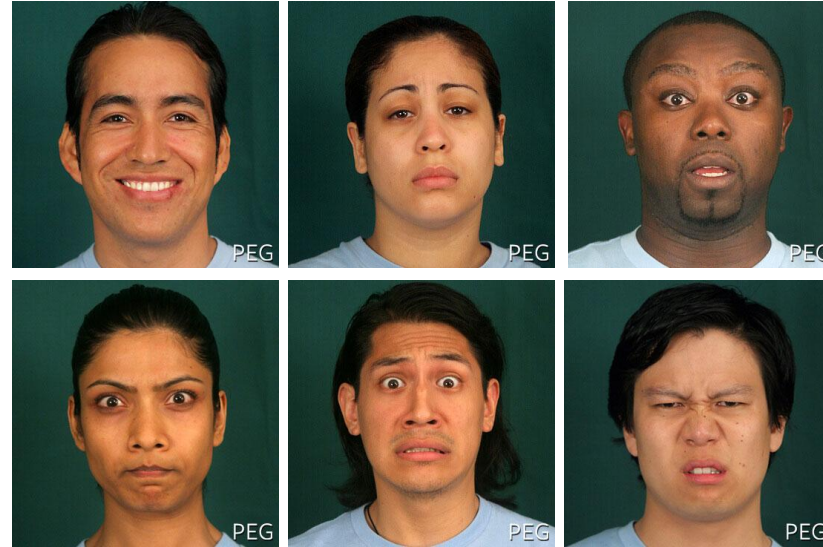
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Emotion Models

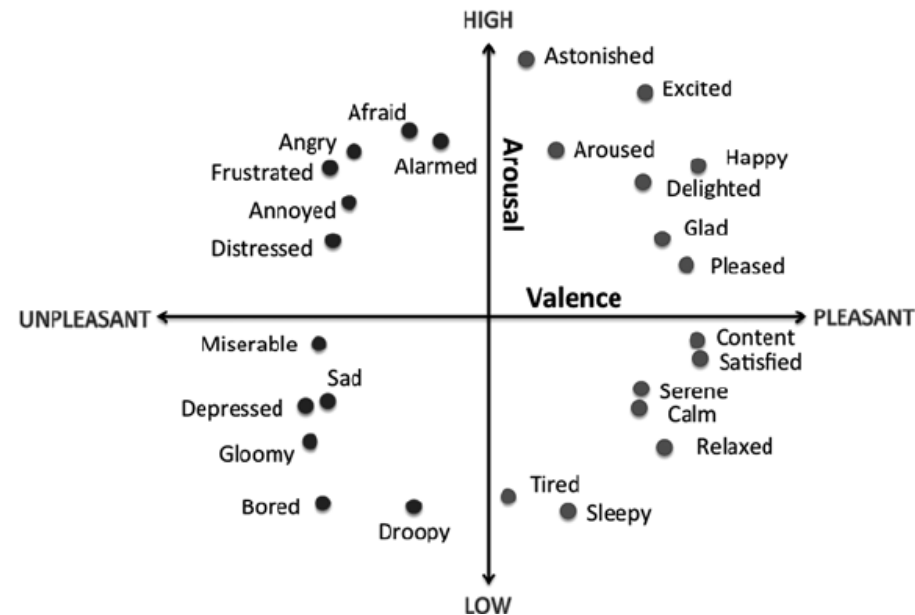
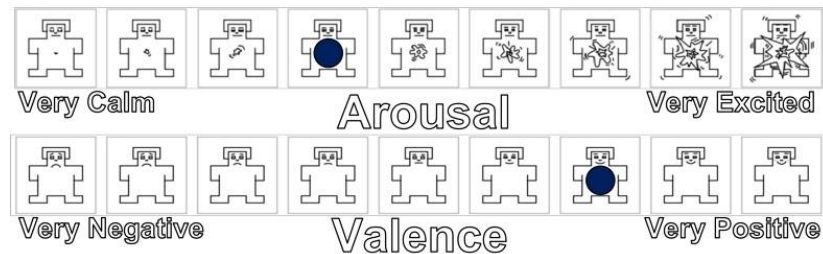
- Ekman's 6 basic emotions [3]:

- Happiness
- Sadness
- Anger
- Fear
- Surprise
- Disgust



- Circumplex Model of Affect [4]:

- Uses 2 dimensions: Valence & Arousal
- Models emotions more flexibly



[3] Ekman, Paul, Tim Dalgleish, and M. Power. "Basic emotions." *San Francisco, USA* (1999).

[4] Russell, James A. "A circumplex model of affect." *Journal of personality and social psychology* 39.6 (1980): 1161.

Measuring/tracking emotions

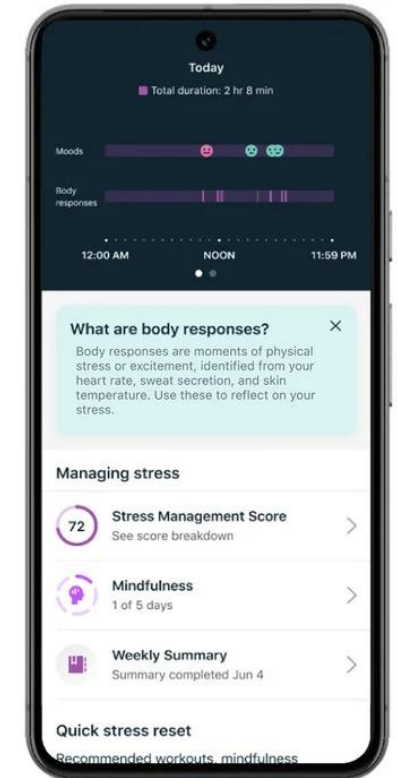
- Cameras for measuring facial expressions
- Example: Affectiva app
 - Uses deep neural networks to analyze a face at pixel level
 - classifies facial expressions and emotions
 - if user screws up their face suggests disgust
 - if user starts smiling suggests they are happy



El Kaliouby, R., & Picard, R. W. (2010). Affective computing and autism. In *Annals of the New York Academy of Sciences*, 1184(1), 228–232.

Measuring/tracking emotions

- Biosensors placed on fingers or palms to measure GSR
- Example: Google Pixel Watches detecting stress to prompt self-reporting
 - Uses the following sensors to detect stress:
 - continuous electrodermal activity sensor to detect tiny changes in the skin's sweat level
 - heart rate monitor to detect unusual palpitations
 - temperature sensor to measure skin temperature



<https://blog.google/products/fitbit/measure-stress-fitbit-google-pixel-watch/#:~:text=Body%20Response%20uses%20the%20Google,rate%20variability%20and%20skin%20temperature.>

Emotions from Decisions

- The inspiration:

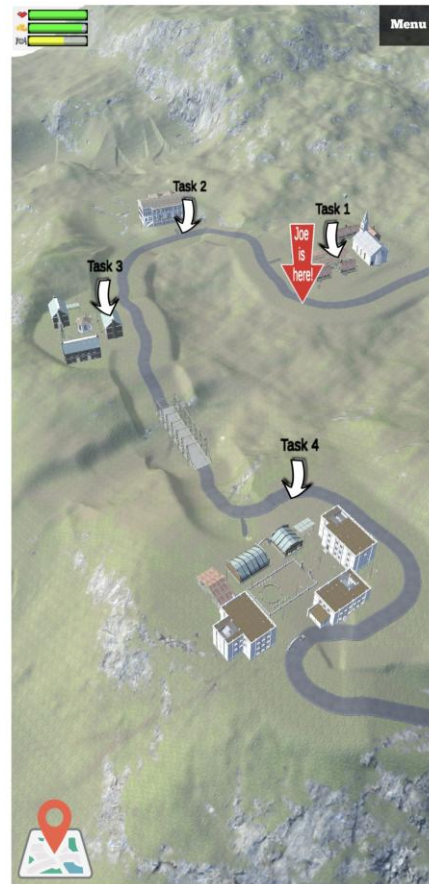
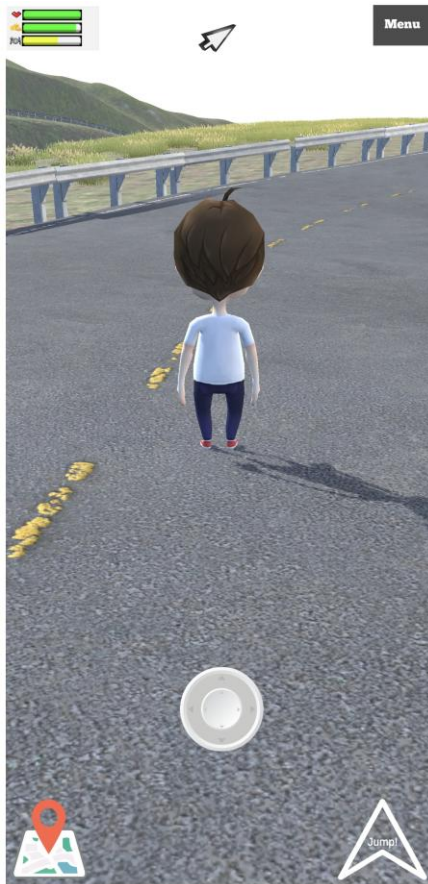


Emotions from Decisions

- The Theory:
 - Psychology of Emotions
 - What factors effect emotions?
 - Emotion Models
 - Ekman's 6 basic emotions
 - Game Theory
 - Socio-economic games
 - Bayesian Modelling
 - Ended up developing a Dynamic Bayesian Network to model the relationship between emotions and decision-making patterns

Emotions from Decisions

- The implementation: *Socio-Economic Decision Making and Emotion Elicitation with a Serious Game in the Wild*

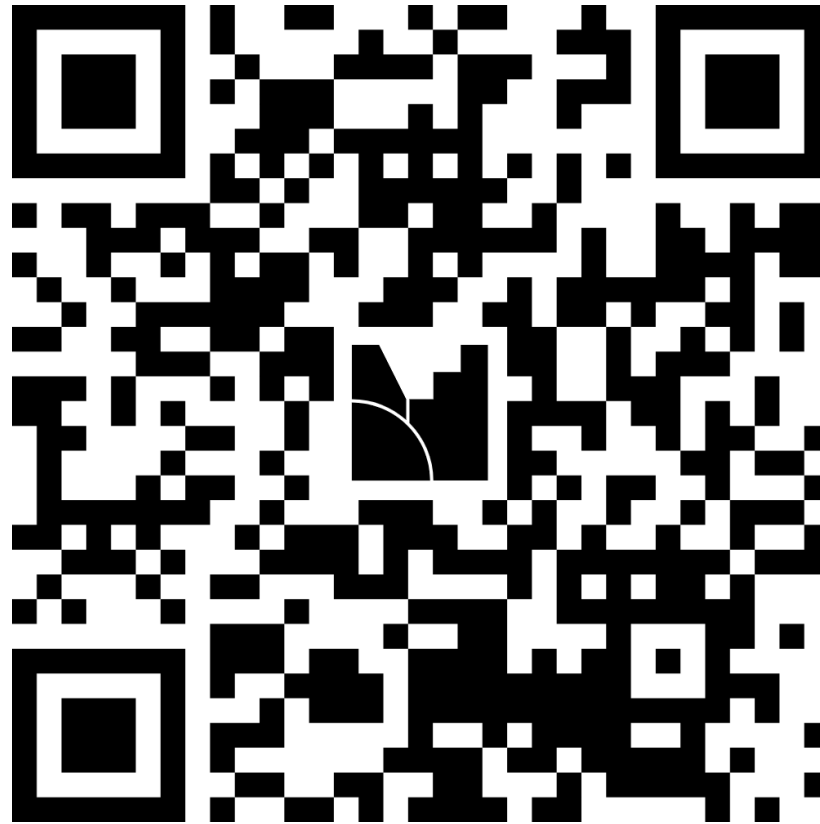


Thank you for your attention!

Questions?

Session Feedback

If you had to summarise your experience in this session in 1 word, what word would it be?



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