

Deep Learning with Python



TODAY'S ROADMAP

- Introduction to Deep Learning Concepts
- Basics of Neural Networks
- From Linear to Logistic Regression
- Deep Neural Networks Insights
- Convolutional Neural Networks (CNNs)
- Wrap-Up and Q&A Session

Introduction to Deep Learning concepts



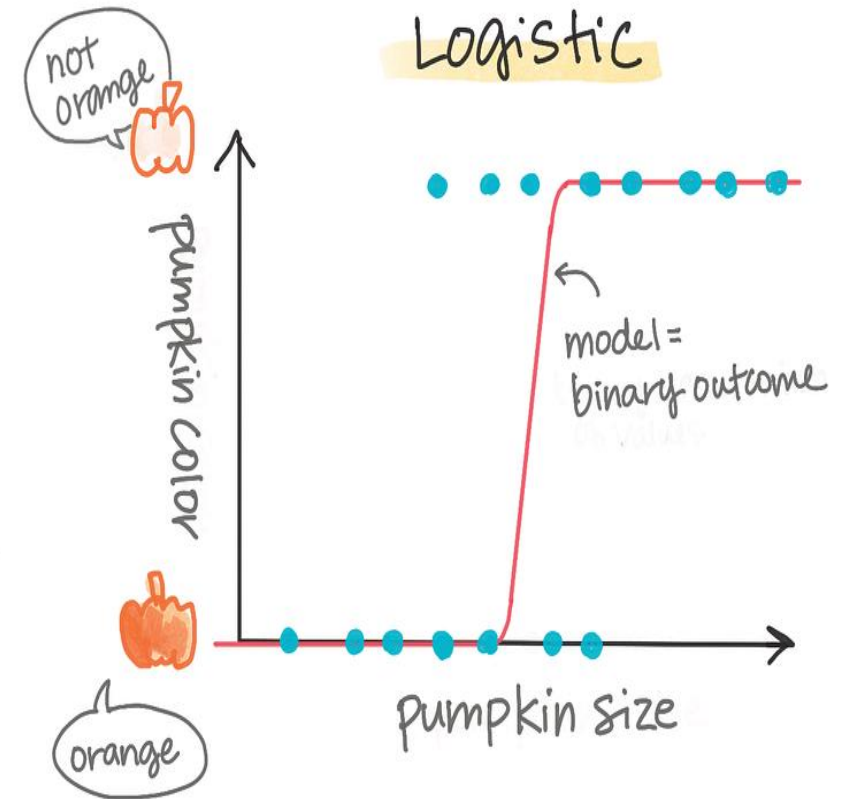
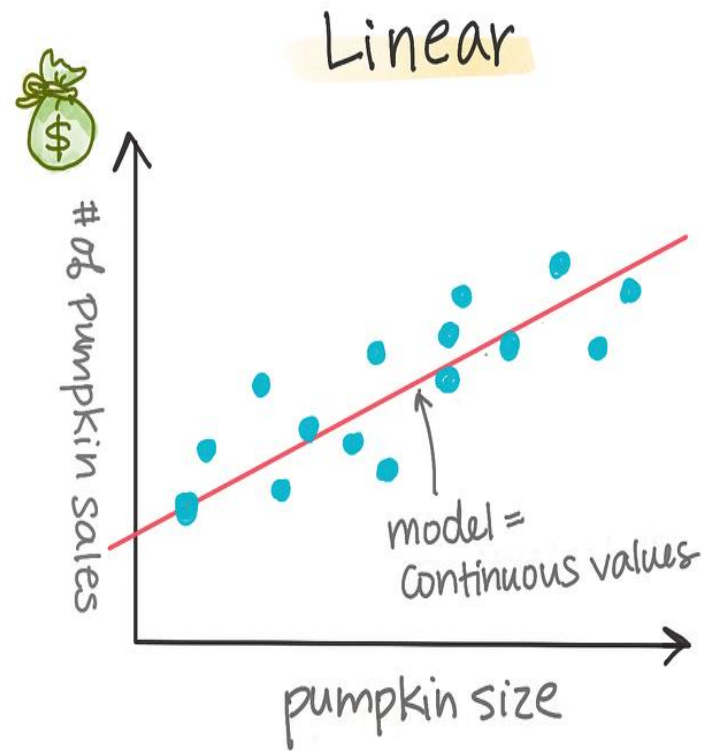


QUESTION 1:

What are some exciting applications of Deep Learning you have seen?

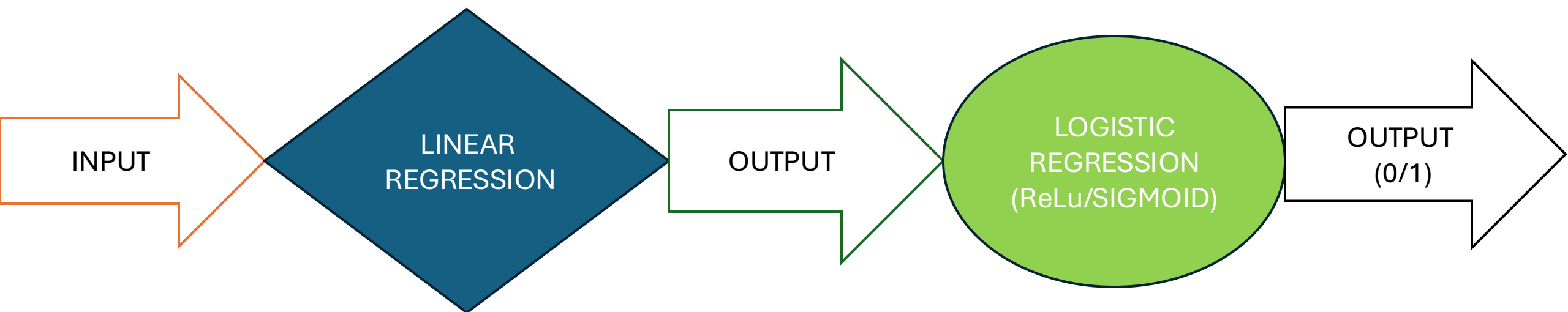
Linear & Logistic Regression

LINEAR vs. LOGISTIC REGRESSION



@girlie_mac

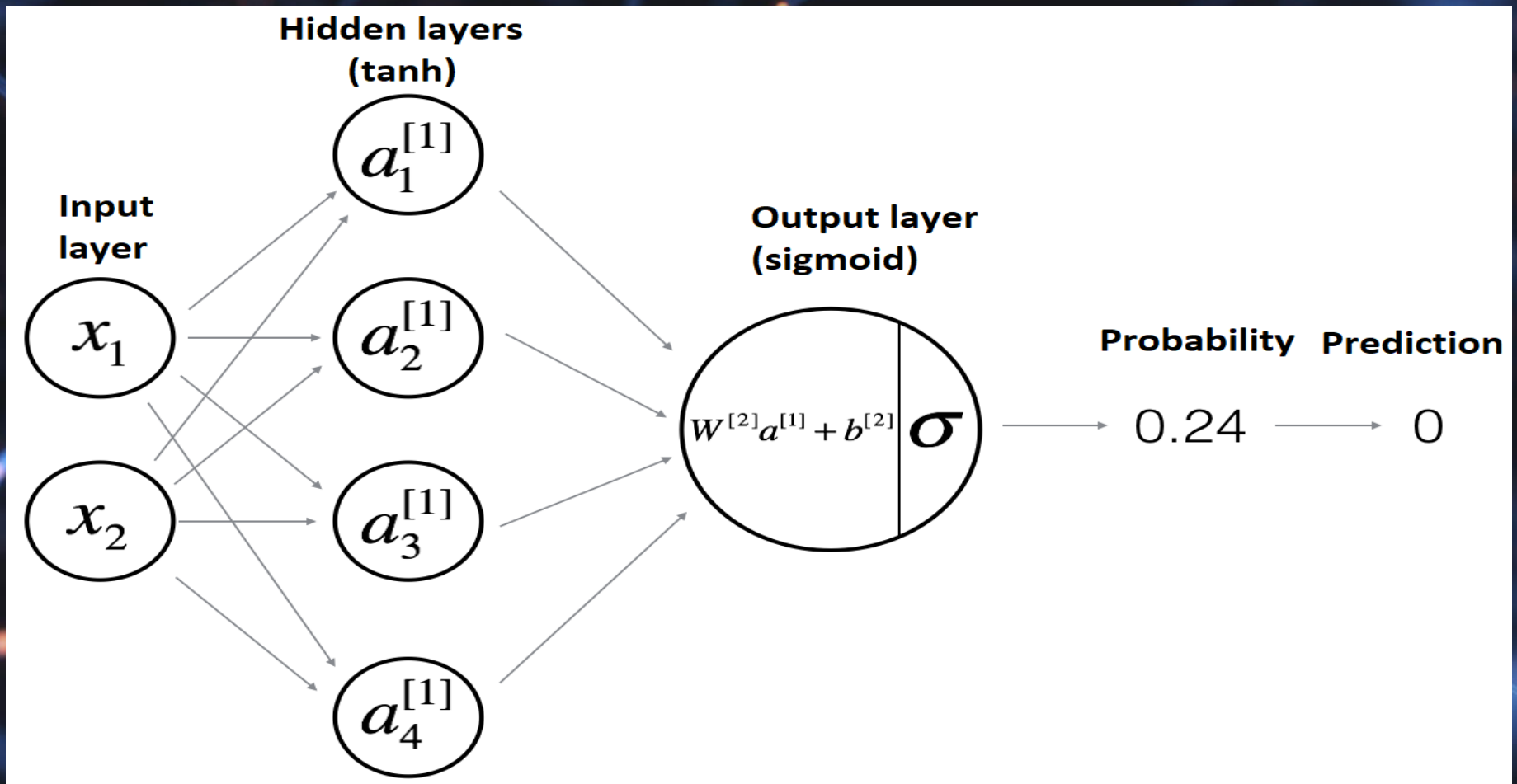
Linear Regression	Logistic Regression
Predicts continuous outcomes.	Predicts categorical outcomes (binary, multinomial).
Assumes a linear relationship between input and output variables.	Uses a logistic function to model a binary outcome.
Output can be any real number.	Output is typically a probability that ranges from 0 to 1.
Commonly used for prediction of amounts or sizes.	Commonly used for classification problems (e.g., spam detection, diagnosis).
Least squares estimation is used for fitting.	Maximum likelihood estimation is used for fitting.
Sensitive to outliers.	Less sensitive to outliers due to the nature of the logistic function.
Assumes homoscedasticity (constant variance of error terms).	Does not assume constant variance of errors.
Coefficients represent the change in the dependent variable for a one unit change in an independent variable.	Coefficients are log-odds, which can be converted into odds ratios for interpretation.





QUESTION 2:

What do you think makes logistic regression suitable for classification tasks?



NEURAL NETWORKS

Common Activation Functions

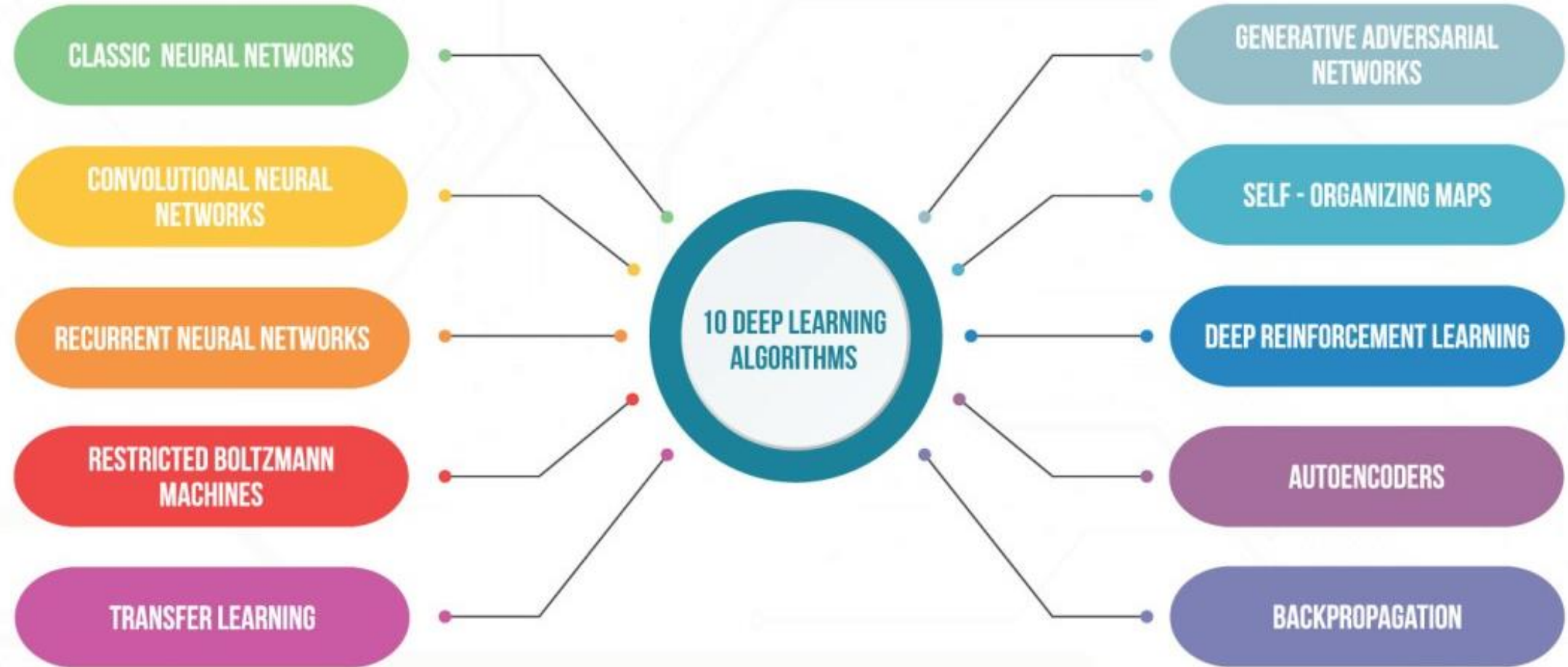
- Sigmoid
- ReLu
- Tanh



ACTIVITY

A man with short brown hair, wearing a dark blue button-down shirt, is shown from the chest up. He has his hands raised in front of him, palms facing forward, with fingers slightly spread. He has a wide, enthusiastic smile on his face. The background is a slightly out-of-focus indoor setting, possibly a home office, with a window and some furniture visible. Overlaid on the bottom half of the image is the text "LET'S CODE" in a bold, yellow, stylized font. The letters have a mechanical or gear-like texture, particularly the 'C' and 'O'.

LET'S CODE



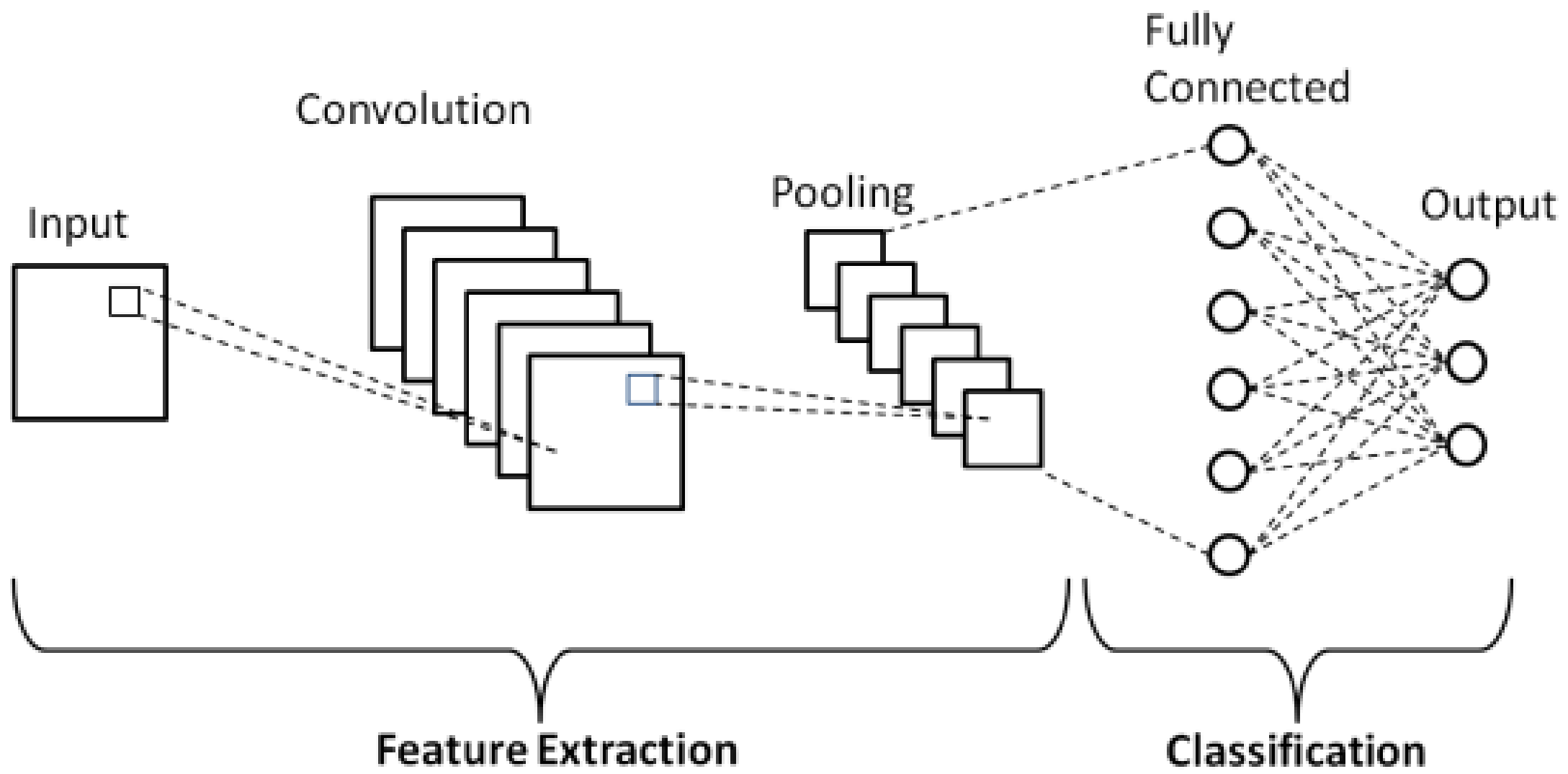
A still from the British sitcom 'Blackadder' showing the character Edmund Blackadder (played by Hugh Laurie) in a military uniform, standing with his arms outstretched and looking at a cityscape from space. The background shows a city at night with lights and a blue sky.

**Building a Deep Learning
Model**

LET'S DO THIS!

Convolutional Neural Networks (CNN)

CNNs perform more efficiently on image processing tasks. CNNs use a technique known as parameter sharing that makes them much more efficient at handling image data.

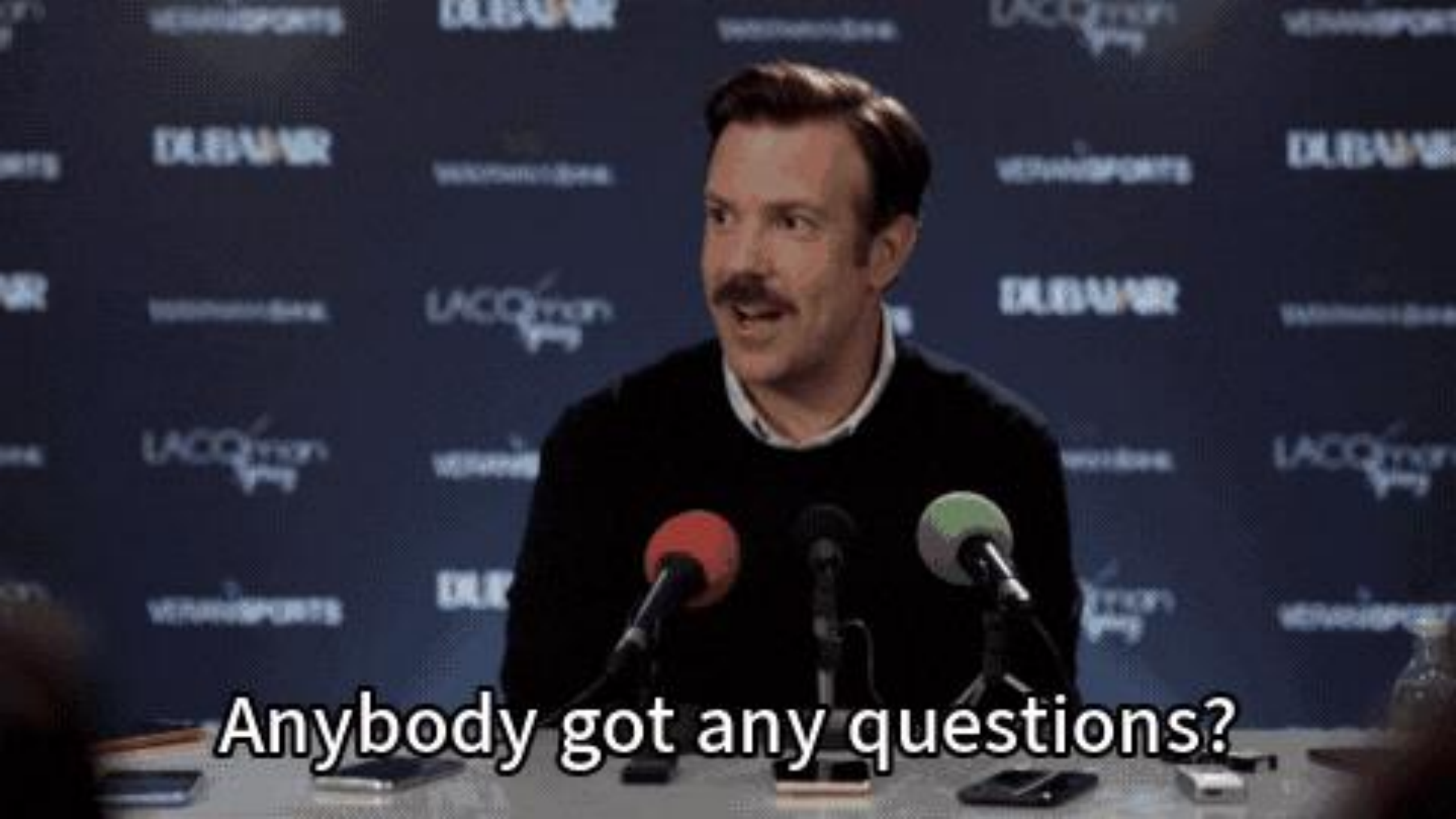


LET'S CODE





ACTIVITY

A man with a mustache, James Van Der Beek, is seated at a table during a press conference. He is wearing a dark sweater over a collared shirt. In front of him are three microphones with red, black, and green foam covers. The background is a blue wall with repeating logos for 'ELENA', 'LACOSTE', and 'VERANO SPORTS'. The text 'Anybody got any questions?' is overlaid at the bottom of the image.

Anybody got any questions?



Bye.