

ALEX

Augmented
Lecture
EXplainer

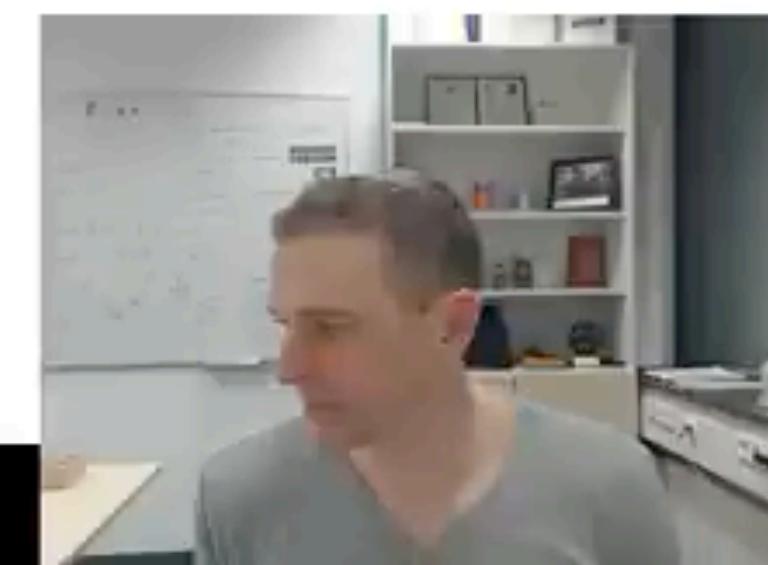
???





Machine Learning Basics

I2DL: Prof. Niessner



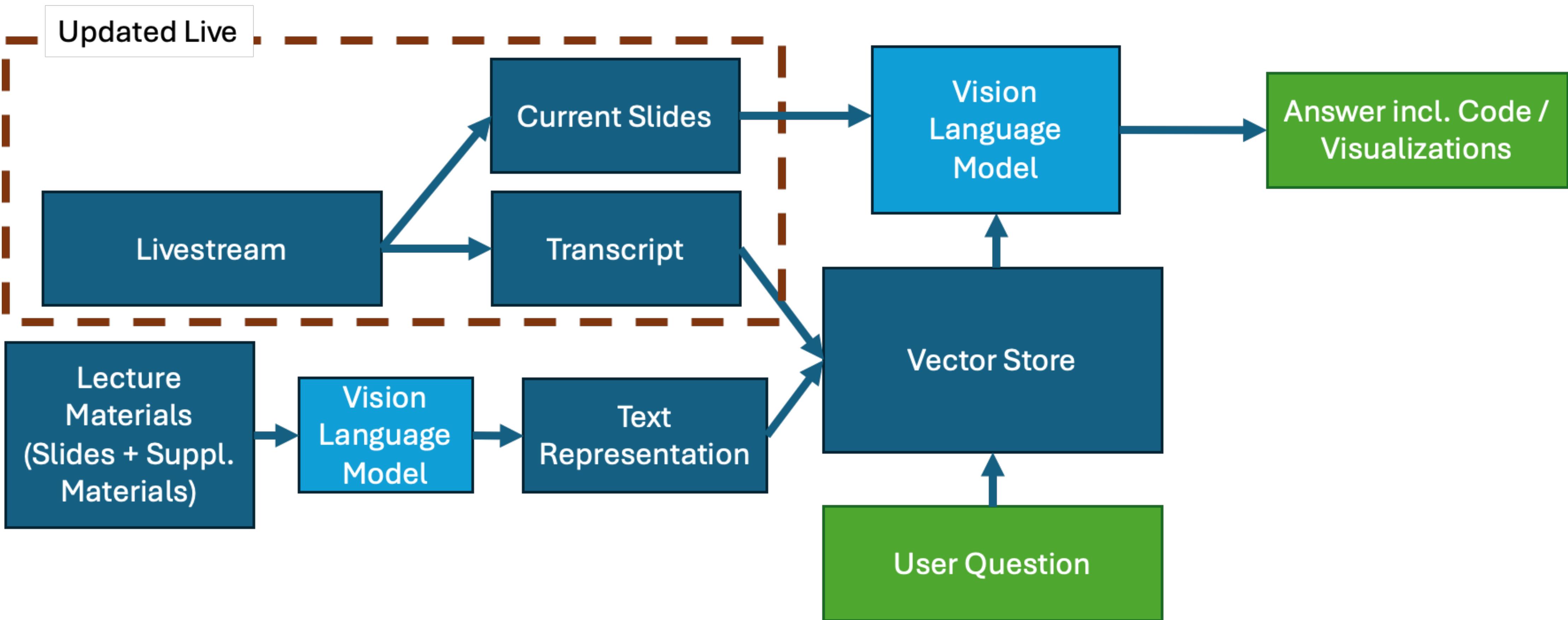
ALEX VS THE COMPETITION

	ALEX	ChatGPT
Tailored Visualizations	✓	✗
Full Lecture Material	✓	✗
Internal Hosting	✓	✗
Integration in Live Lectures	✓	✗
Transcripts	✓	✗
State-of-the Art Model	✓	✓

ALEX



TECH OVERVIEW

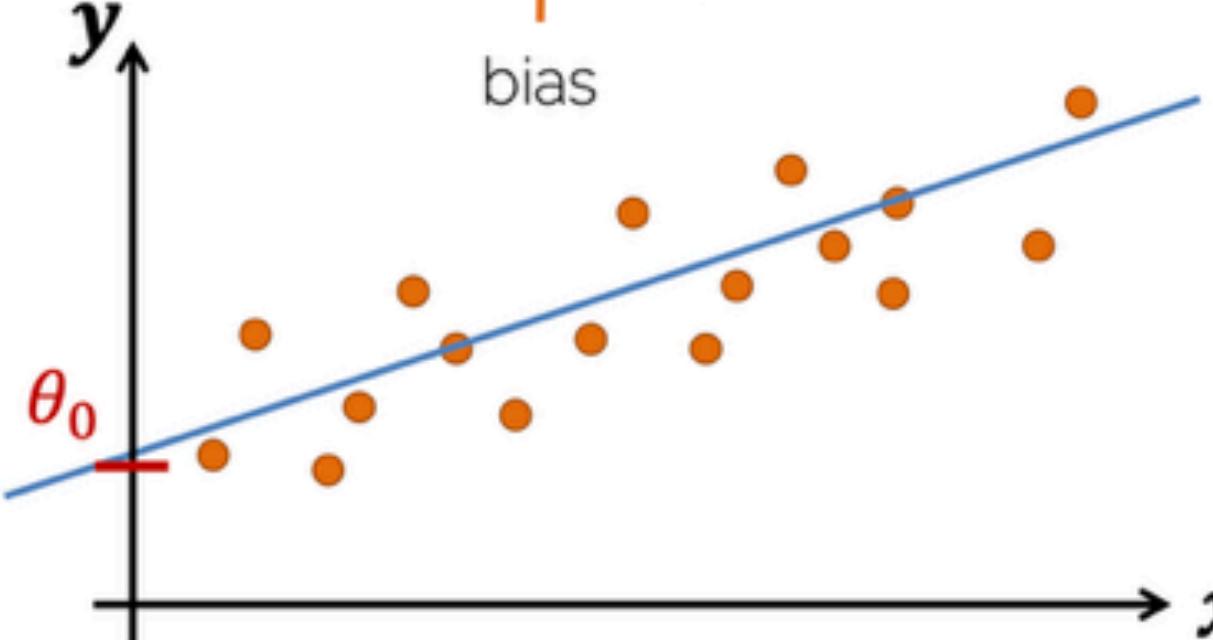


WHAT ABOUT CHATGPT

Linear Prediction

- A linear model is expressed in the form

$$\hat{y}_i = \theta_0 + \sum_{j=1}^d x_{ij}\theta_j = \theta_0 + x_{i1}\theta_1 + x_{i2}\theta_2 + \dots + x_{id}\theta_d$$



I don't understand the current slide



This slide explains **linear prediction** in a linear model.

1. **Equation:**

$$\hat{y}_i = \theta_0 + \sum_{j=1}^d x_{ij}\theta_j$$

- \hat{y}_i : Predicted output.
- θ_0 : Bias term (intercept).
- x_{ij} : Input features.
- θ_j : Coefficients (weights).

2. **Graph:**

- Shows the relationship between input (x) and output (y).
- The line is the prediction, starting from θ_0 .
- Points are the actual data values.

Would you like a simpler explanation?

WHAT ABOUT CHATGPT

How does the professor explain this concept?



The professor likely explains it like this:

1. Linear Model:

- A way to predict y based on input x .
- Adds a **bias** (θ_0) to adjust the line's starting point.

2. Graph Example:

- The line represents predictions (\hat{y}_i).
- Points show actual data; the line tries to fit them.

3. Weights (θ_j):

- Determine how each feature x_{ij} impacts the prediction.
- Adjusted to minimize prediction error.

It's a combination of math (equation) and intuition (line fitting data). Want further clarification?

**Not based on
the actual lecture!!**

WHAT ABOUT CHATGPT

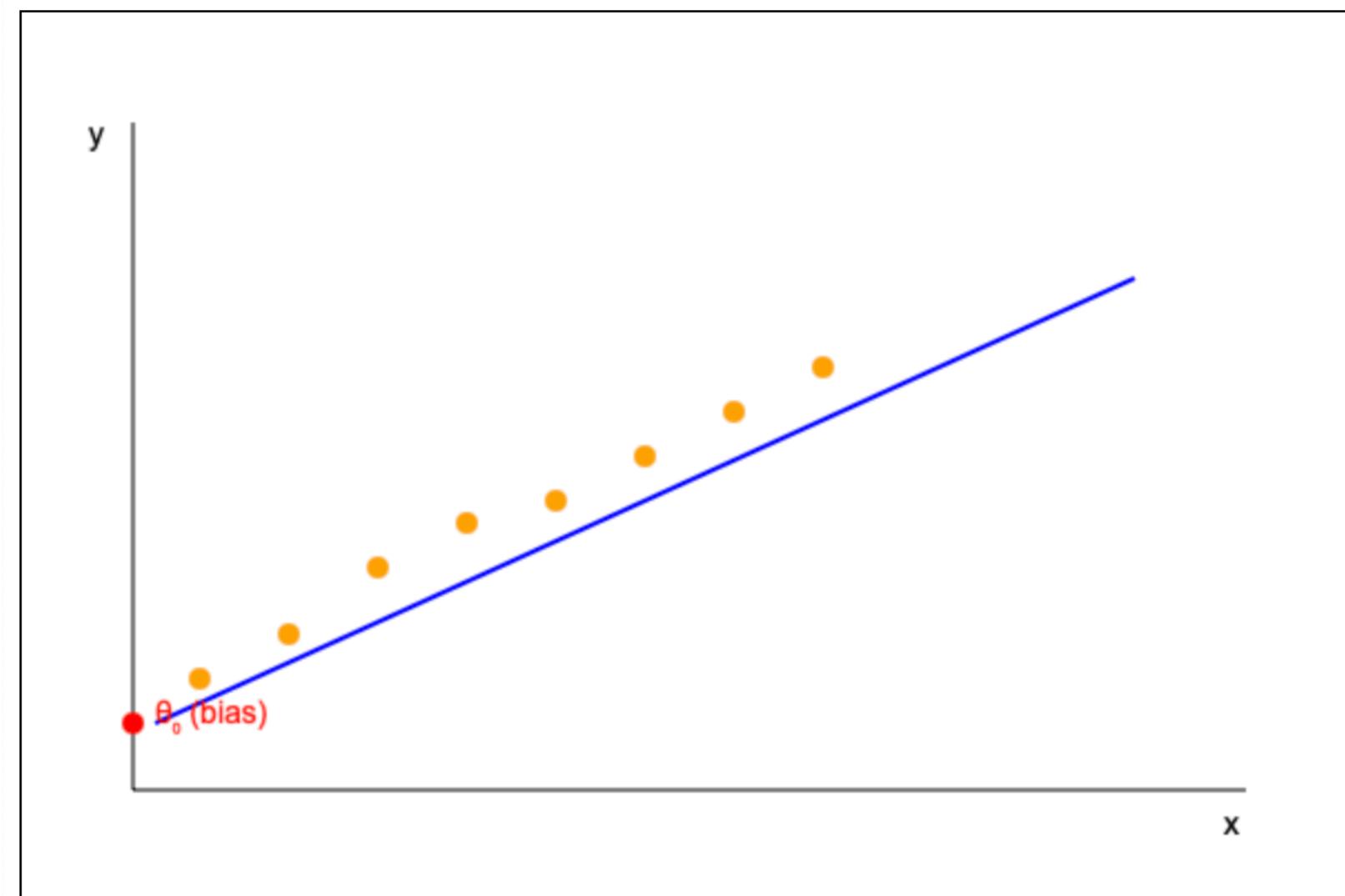
Can you create a visualisation out of it that can be rendered in html

Here's the HTML + JavaScript code to render a linear regression visualization using the **Canvas API**. Copy and paste it into an HTML file:

```
html
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Linear Regression Visualization</title>
  <style>
    canvas {
      border: 1px solid black;
    }
  </style>
</head>
<body>
  <h1>Linear Regression Visualization</h1>
  <canvas id="linearCanvas" width="500" height="400"></canvas>

```

Linear Regression Visualization



Need to create
own HTML file

WHAT ABOUT CHATGPT

Can you make a visualisation of it

Here's a visualization of linear regression with a fitted line and data points!