

EECS 245, Winter 2026

LEC 1 Introduction 🖐️

→ Read Ch. 1.1-1.2

→ Course website: [eecs245.org](https://eecs245.org)

# Agenda

- ① Introductions
- ② What is machine learning, and what will we learn in this class?  
Ch. 1.1 of the course notes  
your new BFF
- ③ Logistics  
Ch. 1.2
- ④ Models and loss functions

Who am I?

\* Call me Suraj "soo-rudge"

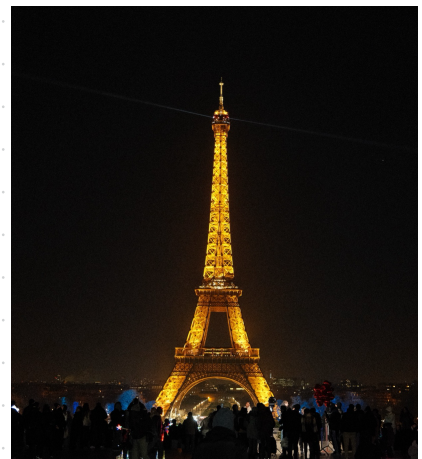


me

- 2<sup>nd</sup> year as faculty at Michigan
- Taught data science @ UC San Diego, 2021-24
- BS and MS in EECS @ UC Berkeley
- From Windsor, ON 🇨🇦
- TA info: [eecs245.org/staff](https://eecs245.org/staff)



recently





Icebreaker: show the person next to you  
your Spotify / Apple Music wrapped  
from 2025

## Top Songs of 2025

▶ Play

↻ Shuffle

mine



1 She Will Be Loved  
Maroon 5 · 171 Plays



2 Move Along  
The All-American Rejects · 146 Plays



3 Hurricane  
Luke Combs · 130 Plays



4 Put On (feat. Kanye West) E  
Jeezy · 123 Plays



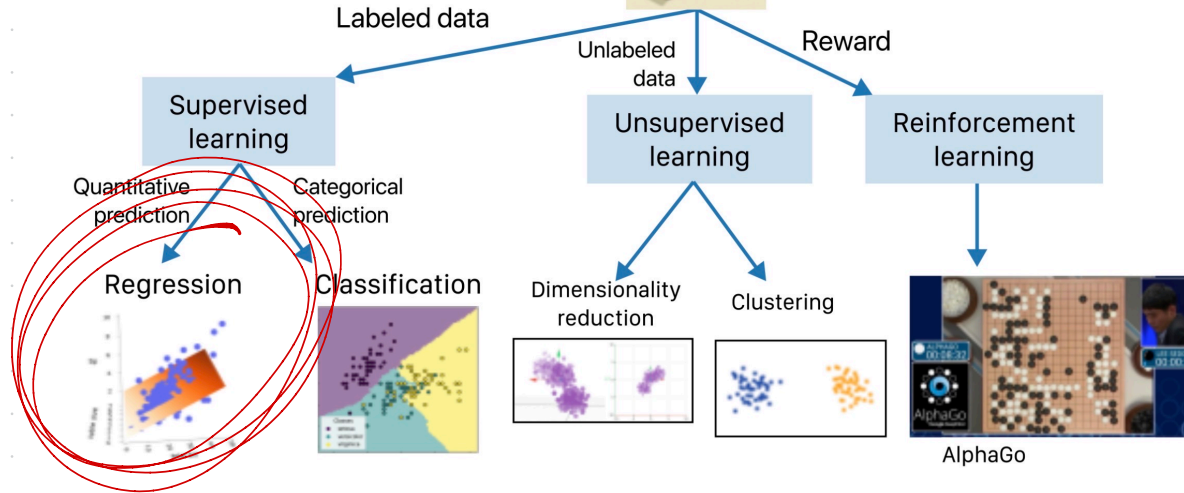
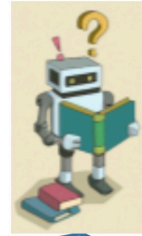
5 Can't Help But Wait  
Trey Songz · 105 Plays

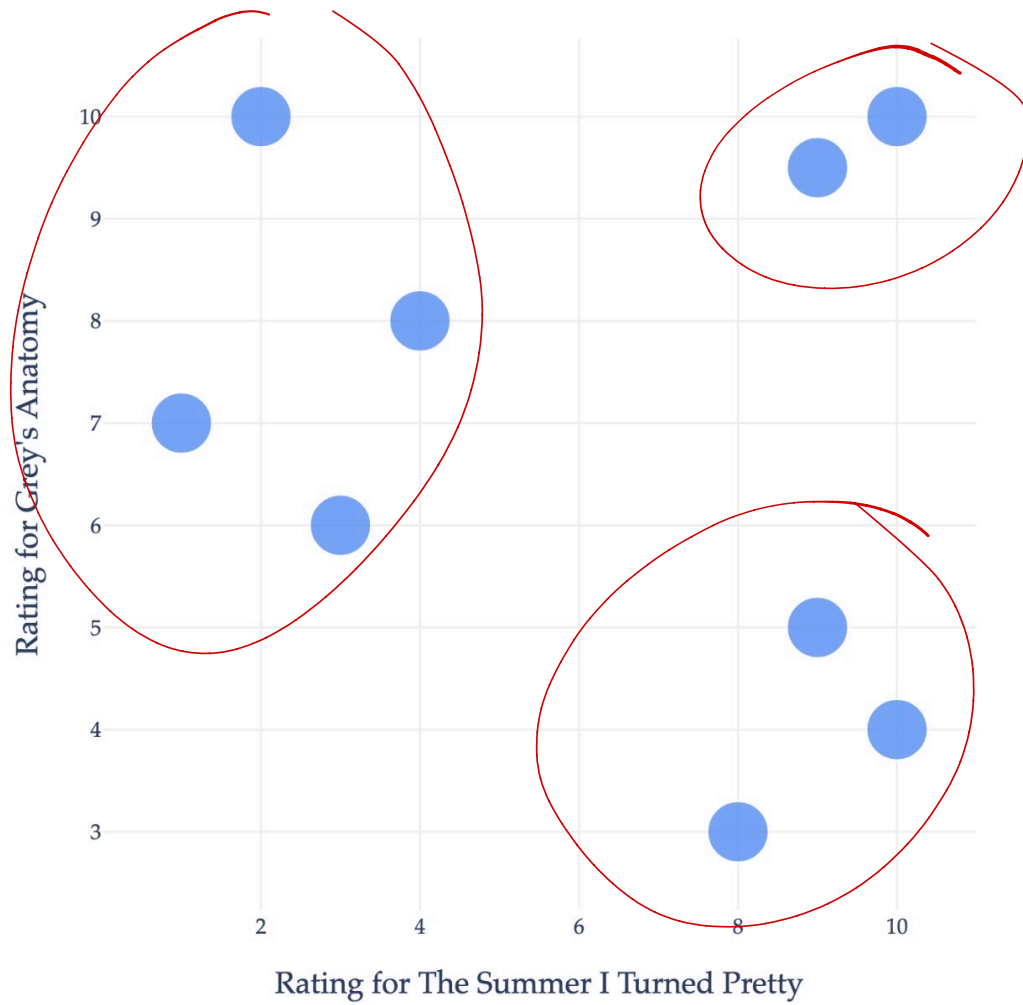


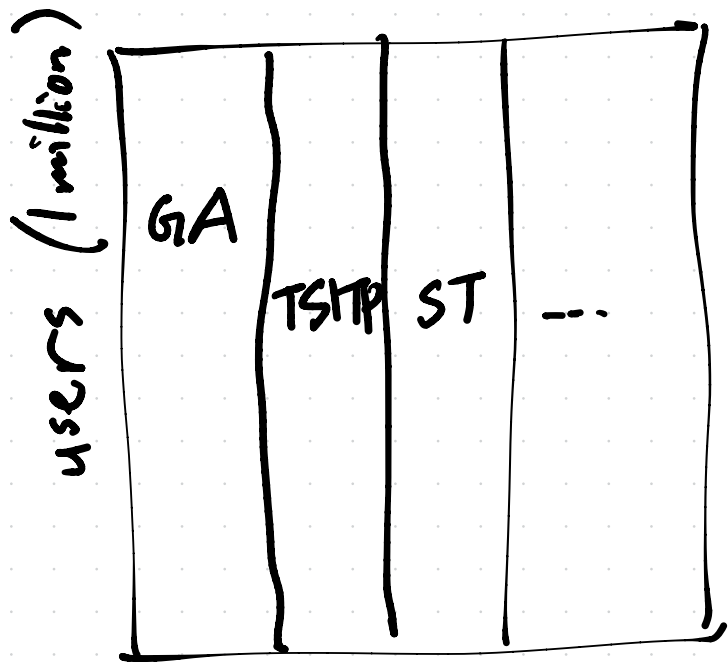
Machine learning: automatically

learning patterns  
from data

# Taxonomy of machine learning

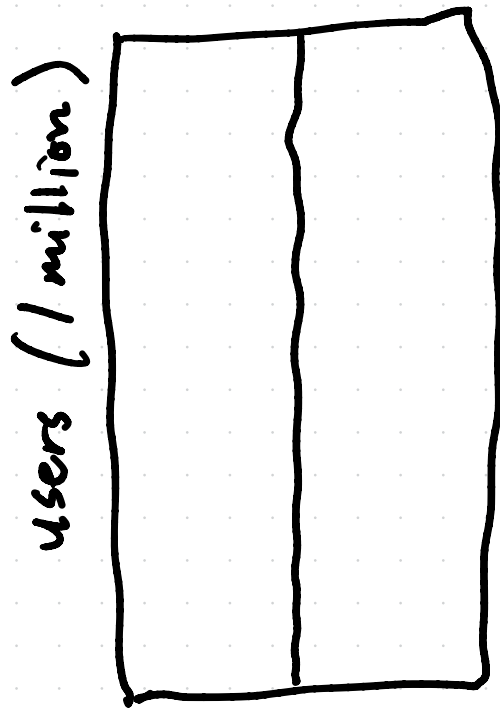






100s of  
cols ---

unsupervised learning



2 cols

dimensionality  
reduction



# Mathematics for Machine Learning

1. Introduction to Supervised Learning
2. Simple Linear Regression
3. Vectors
4. Linear Independence
5. Matrices
6. Linear Transformations and Projections
7. Regression using Linear Algebra
8. Gradients
9. Eigenvalues and Eigenvectors
10. Singular Value Decomposition

Midterm 1

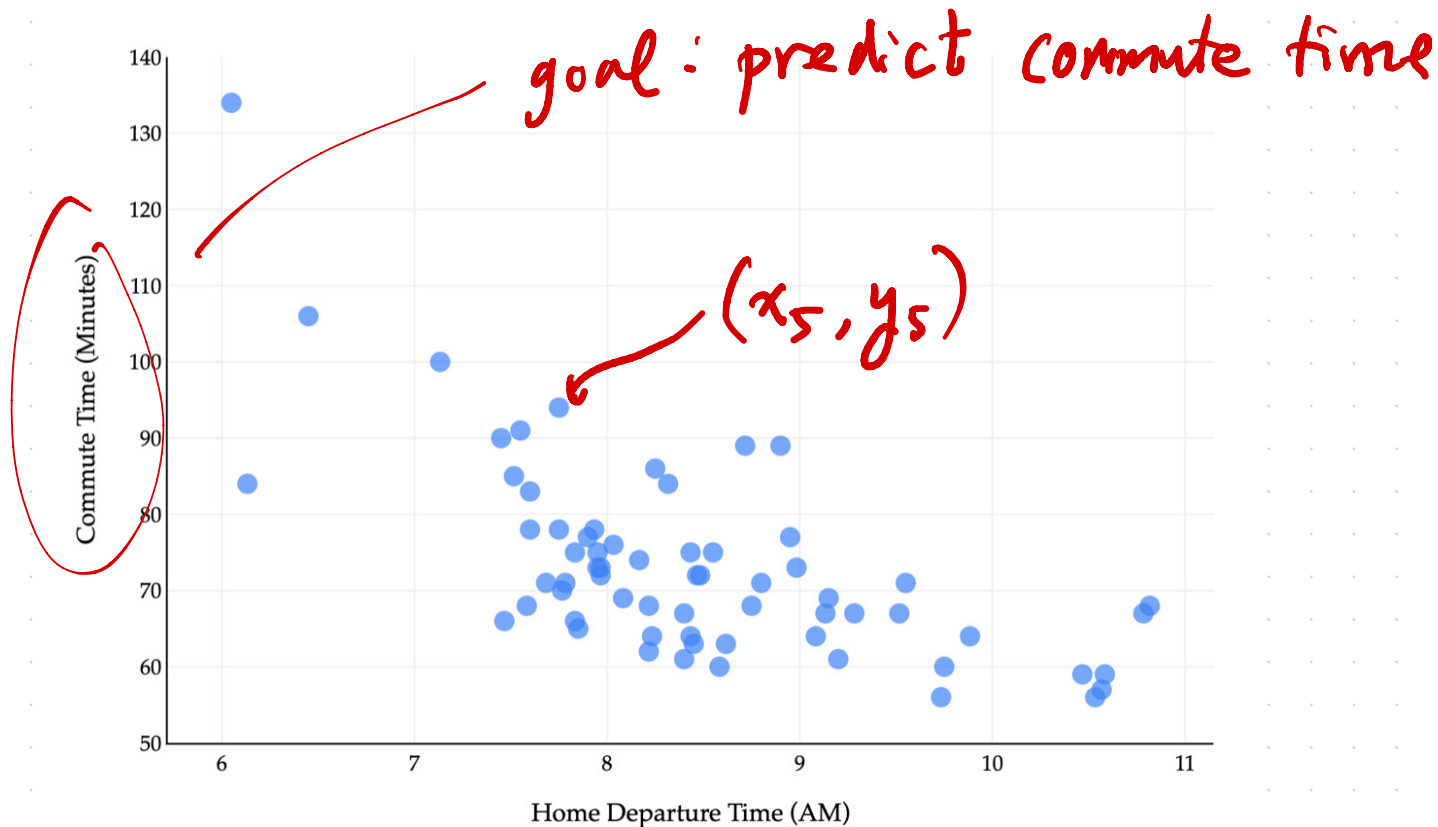
Midterm 2

post-Midterm 2

eeecs245.org

no Canvas!

start Ch. 1.2 →



Goal: given  
an  $x_i$ , predict  $y_i$

" $x$ "

" $y$ "

	date	day	departure_hour	minutes
0	5/15/2023	Mon	10.816667	68.0
1	5/16/2023	Tue	7.750000	94.0
2	5/22/2023	Mon	8.450000	63.0
3	5/23/2023	Tue	7.133333	100.0
4	5/30/2023	Tue	9.150000	69.0

$x_2$

$y_2$

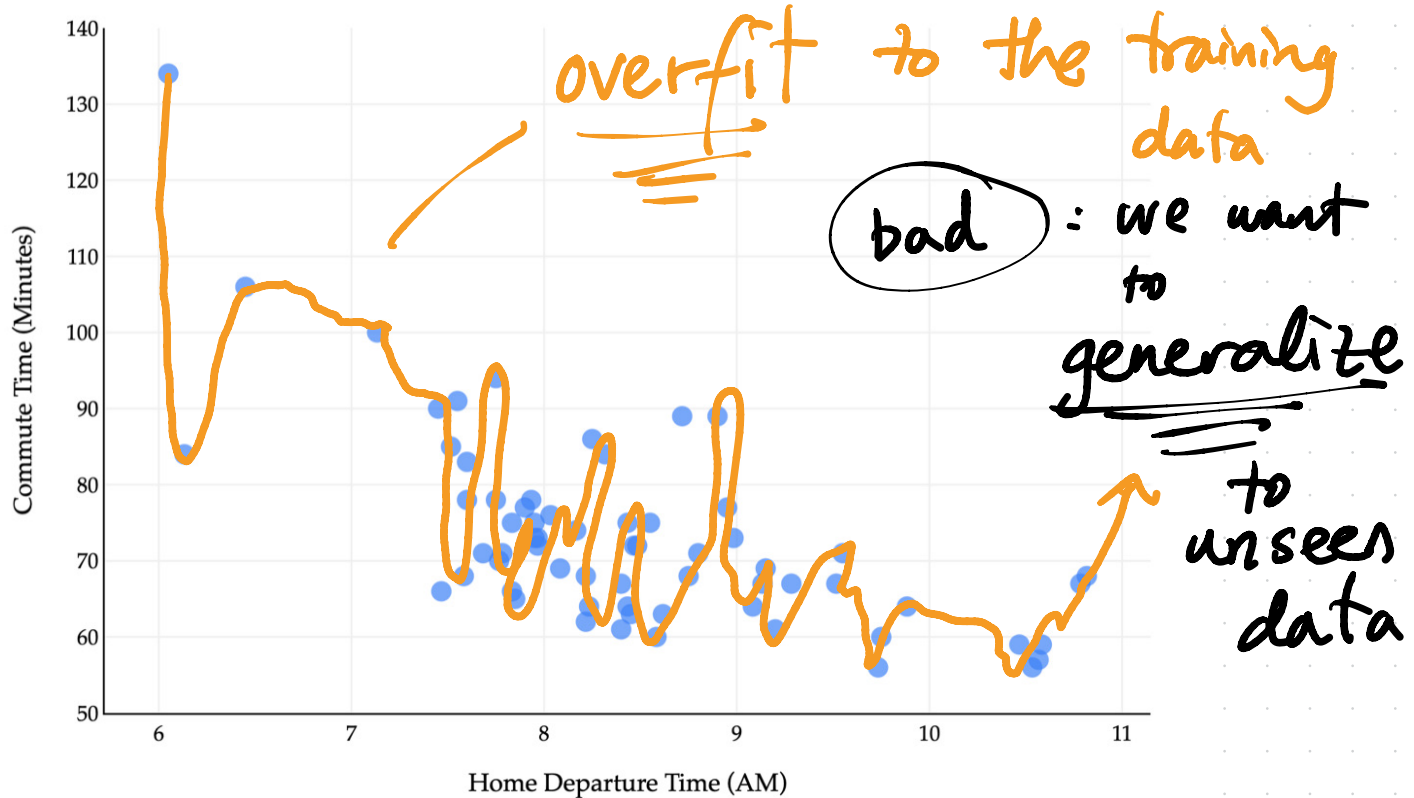
"input var" feature

feature

labels

assume  
future  
 $\approx$   
past

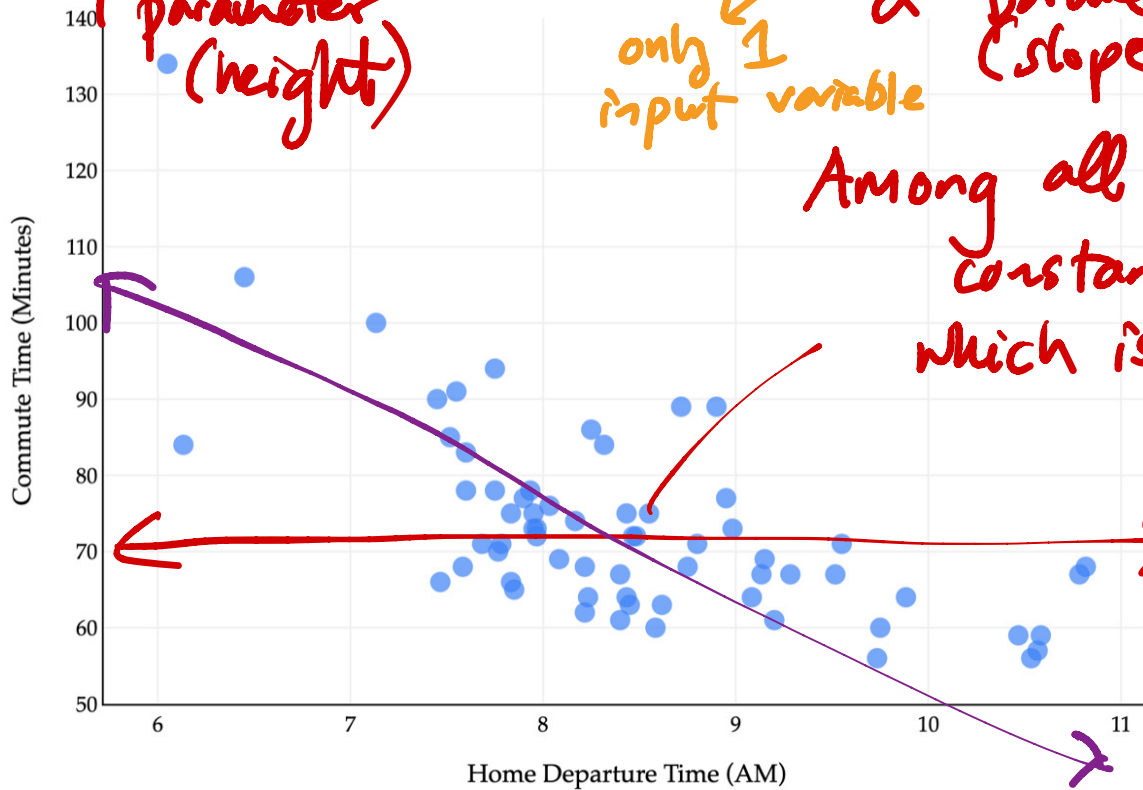
Model : A set of assumptions about how data was generated





① constant model  
1 parameter  
(height)

② simple linear regression  
2 parameters  
(slope, int)  
only 1 input variable



Among all possible  
constant models,  
which is the  
best?