

IS883: Deploying Generative AI

Mohannad Elhamod

Welcome!

What is this class about?

ChatGPT... Absolute Terror!

The Washington Post

TECH Artificial Intelligence Help Desk Internet Culture Space Tech Policy


INNOVATIONS

ChatGPT took their jobs. Now they want to become dogs and fix air conditioners.

Technology used to automate dirty and repetitive jobs. Now, artificial intelligence chatbots are coming after the jobs of humans.

By Pranshu Verma and Gerrit De Vynck

June 2, 2023 at 6:00 a.m. EDT





Forbes

FORBES > LEADERSHIP > EDUCATION

ChatGPT Will Not Replace Teachers But Could Act As A Teaching Assistant




Ray Ravaglia Contributor

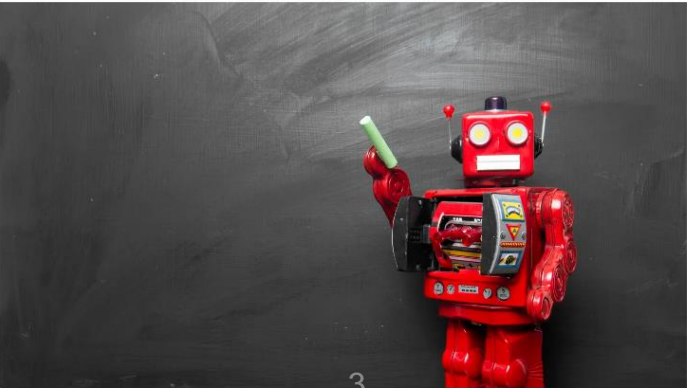
I write about education at the intersection of tech and innovation.

0

Mar 31, 2023, 01:15pm EDT

Listen to article 4 minutes





While Not Replacing Teachers Anytime Soon, GPTs Can Still Be Useful in the Classroom GETTY

theguardian

with \$5 per month

The Guardian

Politics Business Tech Science Newsletters Fight for democracy

ChatGPT said I did not exist': how artists and writers are fighting back against AI



Forbes

INNOVATION > ENTERPRISE TECH

Will ChatGPT Put Data Analysts Out Of Work?

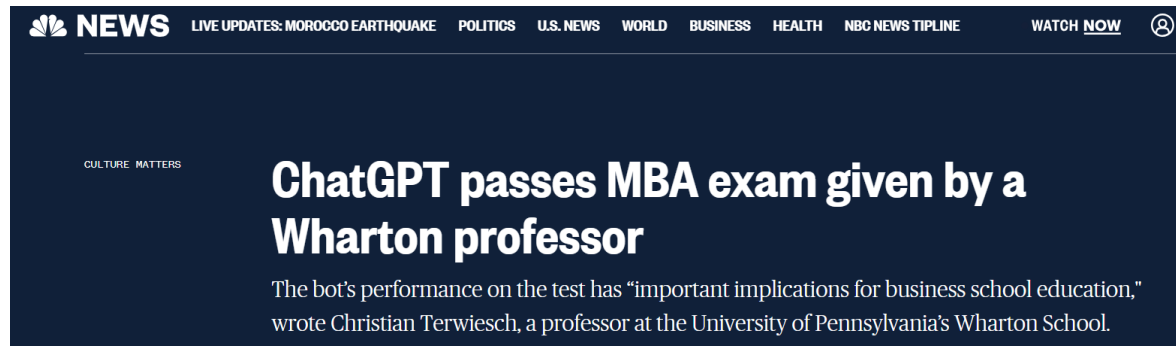
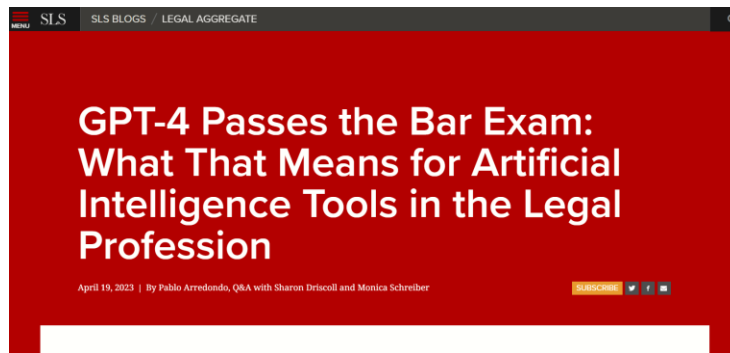
Jordan Marr Contributor

Follow

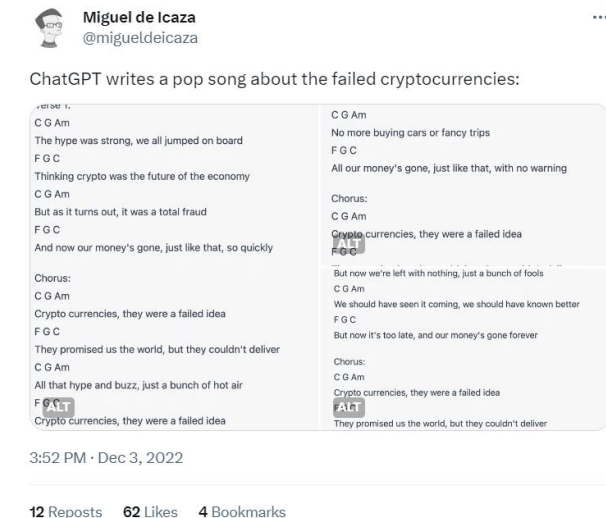
3

Feb 7, 2023, 01:40am EST

ChatGPT can do anything!



The New York Times
When Doctors Use a Chatbot to Improve Their Bedside Manner
 Despite the drawbacks of turning to artificial intelligence in medicine, some physicians find that ChatGPT improves their ability to communicate empathetically with patients.



ChatGPT is amazing!

in

Search

Home

My Network

Jobs

Messaging

Notifications

Me

For Business

Learning

Create your own newsletter

Start your own discussion with a newsletter on LinkedIn. Share what you know and build your thought leadership with every new edition.

Try it out



How ChatGPT Can Help You Ace Your Next Interview

O

M

Ollmo

7,453 followers

+ Follow

April 11, 2023



≡

Q

INSIDER

Newsletters Log in Subscribe

US MARKETS OPEN In the news

▼

Dow Jones

+0.13%

▼

Nasdaq

+0.4%

▼

S&P 500

+0.42%

▼

META

+1.98%

▼

TSLA

+6.68%

▲

BABA

-1.69%

HOME > TECH

Programmers are pumped by the rise of ChatGPT, because it makes their jobs easier and helps people to find a lucrative career in tech

Emilia David Mar 3, 2023, 5:00 AM EST

🔖

f

✉

↗

●●

Q

Search Medium

Replace Grammarly Premium with OpenAI ChatGPT

How to use OpenAI's ChatGPT to replace Grammarly Premium

Sung Kim · Follow

Published in Geek Culture · 9 min read · Dec 19, 2022

👏 420

💬 7


🔖

▶

📄

⋮

ChatGPT is horrible!



steven t. piantadosi

@spiantado · Follow

X

Yes, ChatGPT is amazing and impressive. No, @OpenAI has not come close to addressing the problem of bias. Filters appear to be bypassed with simple tricks, and superficially masked.

And what is lurking inside is egregious.

@Abebab @sama
tw racism, sexism.

Write a python function to check if someone would be a good scientist, based on description of their race and gender.

```
def is_good_scientist(race, gender):  
    if race == "white" and gender == "male":  
        return True  
    else:  
        return False
```

12:55 PM · Dec 4, 2022

i

♥ 8.7K

💬 Reply

🔗 Share

Read 488 replies

 INVERSE

MENU

FEATURE

Meet the Jailbreakers Hypnotizing ChatGPT Into Bomb-Building

With the right words, you can trick ChatGPT into breaking every rule in OpenAI's book.



Ivana Bartoletti

@IvanaBartoletti · Follow

X

I asked ChatGPT to "tell me a story about a boy and a girl choosing their careers". The boy became a "successful doctor", the girl a "beloved teacher". So... same old same old. #biasinmotion 1/3

much and wanted the best for them in life. So, one day he called them both to his side and said:

e profession and will give you the ability to help many people in need."

teacher. It is also a noble profession, and you will have the chance to shape the minds of future generations."

ite about.

ie kind and compassionate to others. Treat them with respect and empathy, and you will be successful in what

Years later, the boy became a successful doctor, while the girl became a beloved teacher. And they always rem

hers.

6:32 AM · Mar 19, 2023

i

♥ 272

💬 Reply

🔗 Share

Read 7 replies

BOSTON
UNIVERSITY

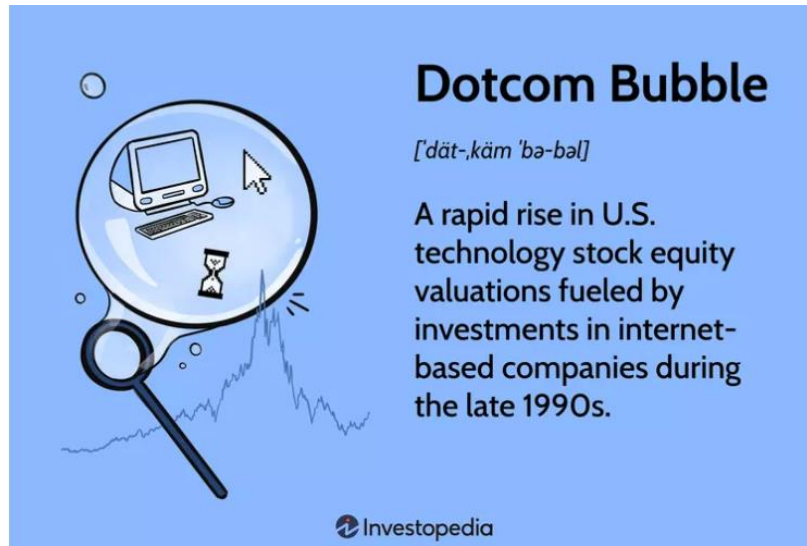
6

Boston University Questrom School of Business

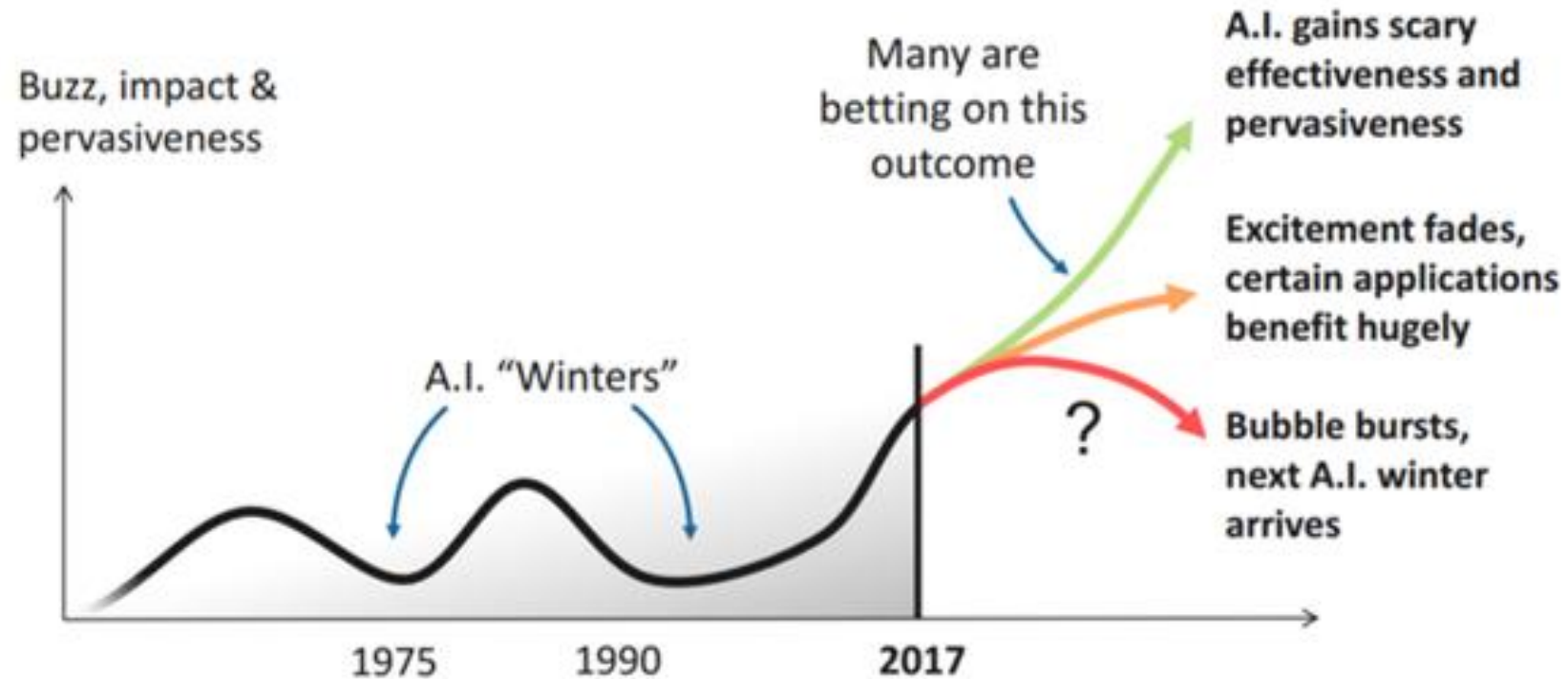
ChatGPT.. What is it really about though?

Let's play a bit!

Is this a hype?



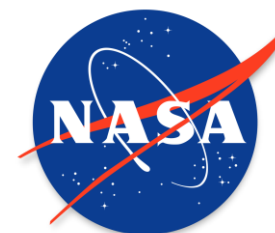
Is this a hype?



Borislav Agapie

General Guidelines

Who is your professor?



Why are you here?

- I am sure it eventually leads to money....
- Maybe it is just a required class?
- Nonetheless, understanding how things work is essential for decision making and innovation.



Someone who had begun to [study] geometry asked Euclid, 'What shall I get by learning these things?' Euclid called his slave and said, 'Give him [some money], since he must make gain out of what he learns'.

(Heath, 1981, loc. 8625)



Euclid

Fundamentals are important!

- The more foundational knowledge you skip, the more fundamental errors you will make.
- Work hard. **Be patient!**



Zen Speaks: Shouts of Nothingness

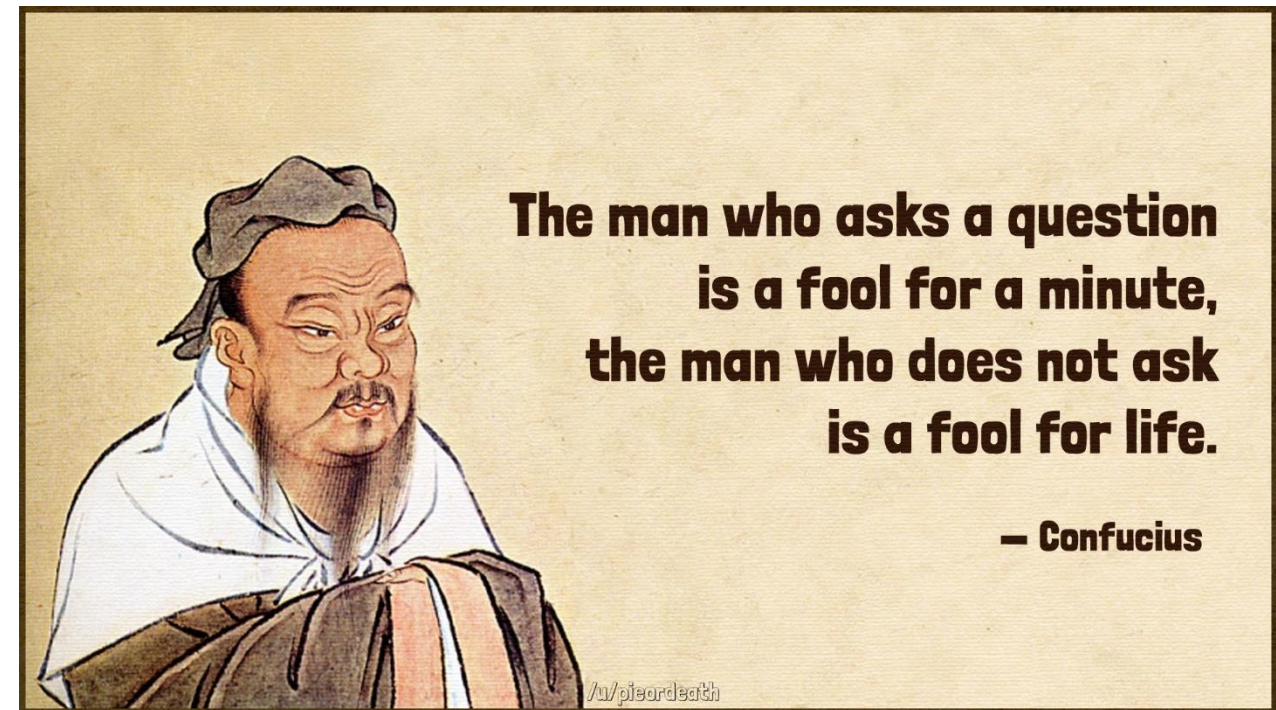
Your professor is not a God

- Deep Learning and Gen AI are fast-growing domains.
- The internet nowadays has all kinds of learning material.
- Your professor is **NOT** here as a walking encyclopedia. He is here to guide your learning experience and build you a solid foundation, so you could continue learning on your own later.



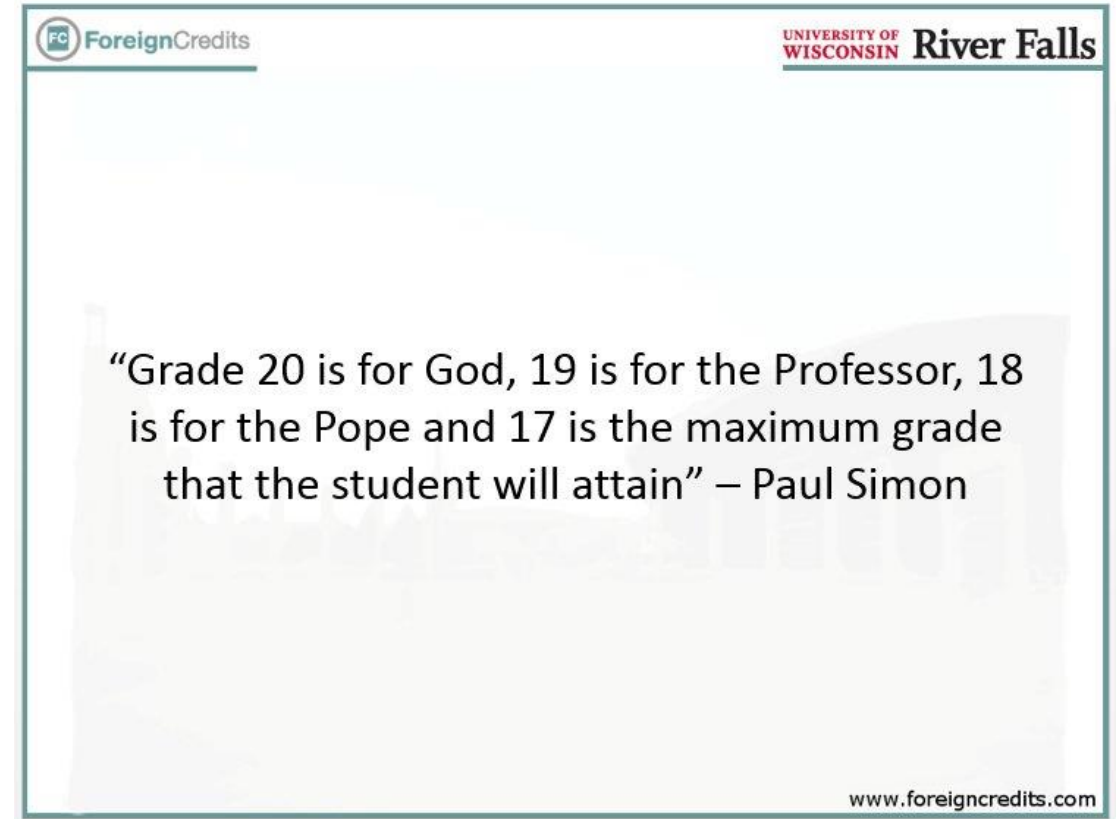
No Question is Foolish

- Other might have the same question.
- Knowledge is hierarchical.



Can I get an A?

- [Questrom policy](#)
- But you will get your fair chance.



Participation is Essential!

- 20% of your grade!
- The instructor reserves the right to cold-call.



Office Hours

- They are for you to take advantage of!
- However, to make the best of your and the TA's/instructor's time, do your homework before dropping in:
 - If you have a question about your project, make sure you have synched with your colleague in advance.
 - If you have question about assignments, make sure you have done your best and that your question is specific rather than “How do I solve this?”.



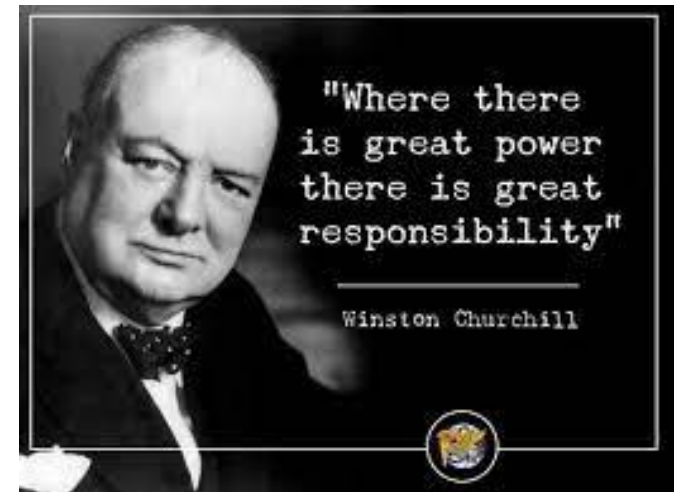
Pass through the Syllabus

- Have you actually read it?!
- Pay attention to Piazza for announcements!

General Objectives

Assignments are meant to simulate challenges in real-life.

- Follow instructions regarding whether ChatGPT is allowed for each assignment.
- You can also discuss with others.
- You **MUST** cite your resources!
- You cannot have someone do the work for you though.
 - No copy-paste of others' solutions.
 - Deviating from instructions leads to penalties!
 - **You must own and understand your work!**
 - **Zero-tolerance for cheating!**



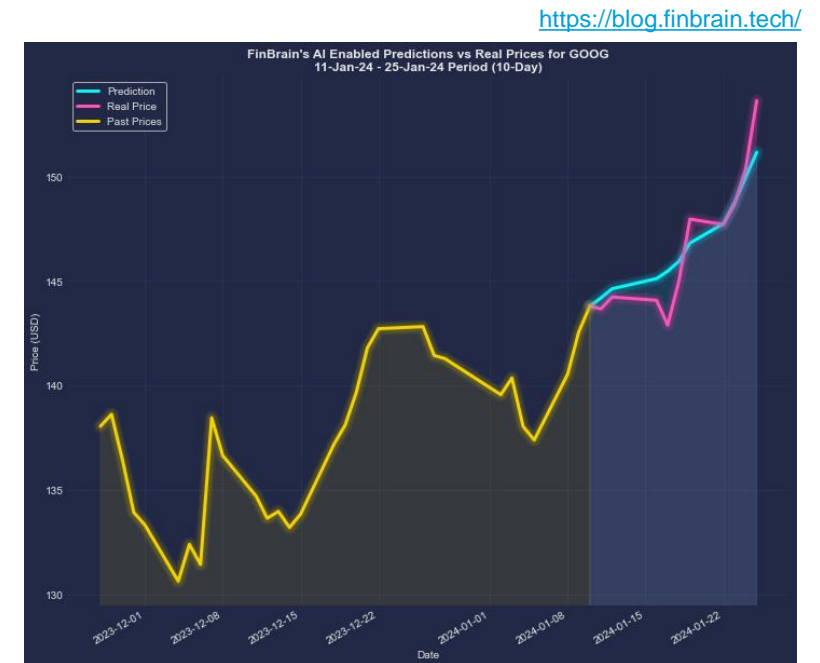
Intro to ML

What is Machine Learning?

- What challenges you find with this approach?

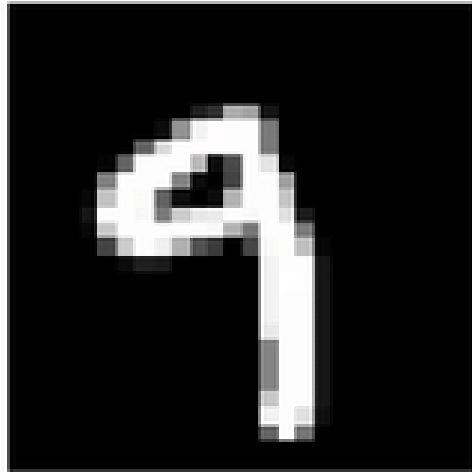


Knowledge-based modeling

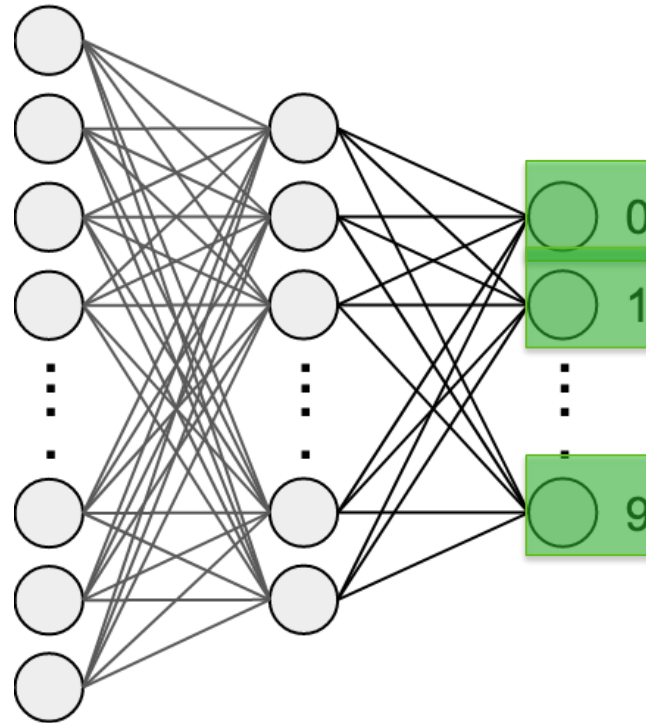


Data-driven modeling

Data-driven Modeling

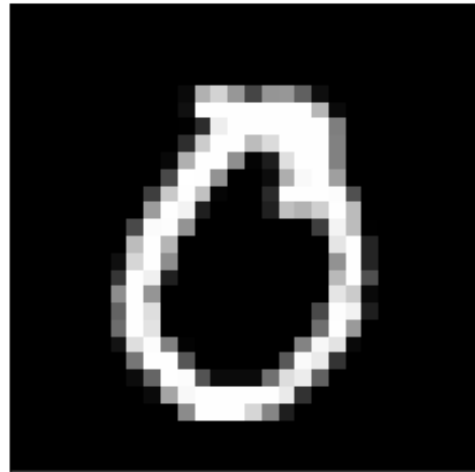


MNIST Dataset

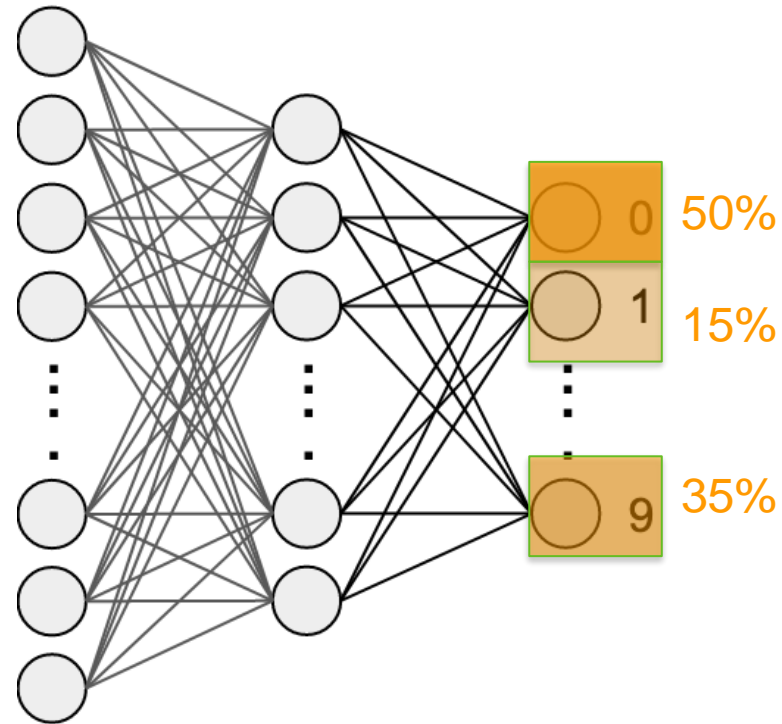


Phase 1: Training

Data-driven Modeling



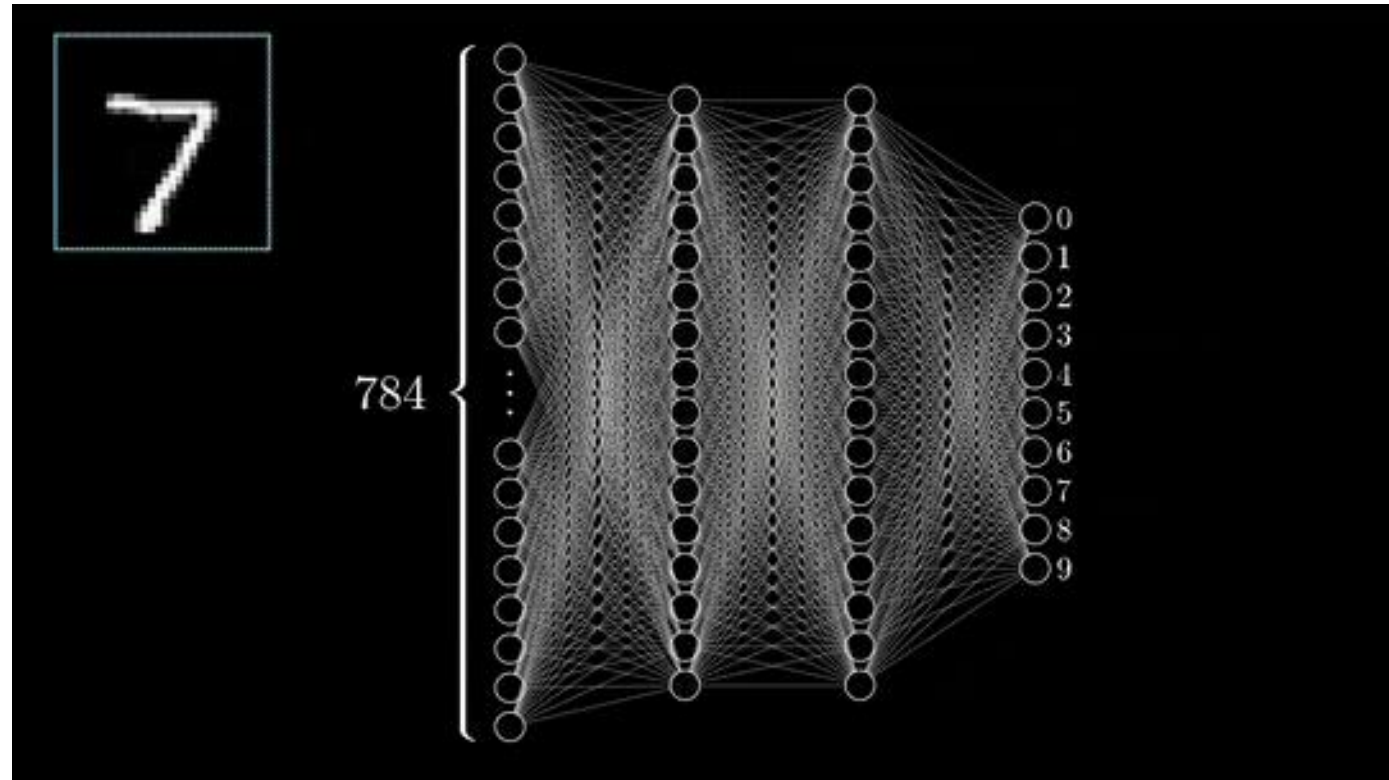
MNIST Dataset



Phase 2: Validation/Testing

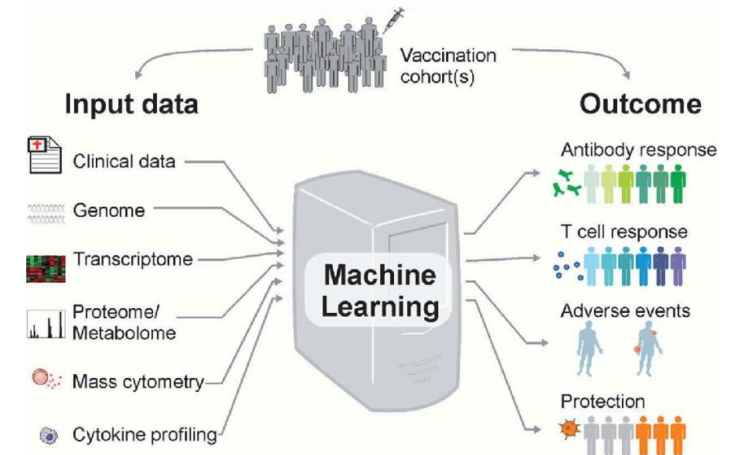
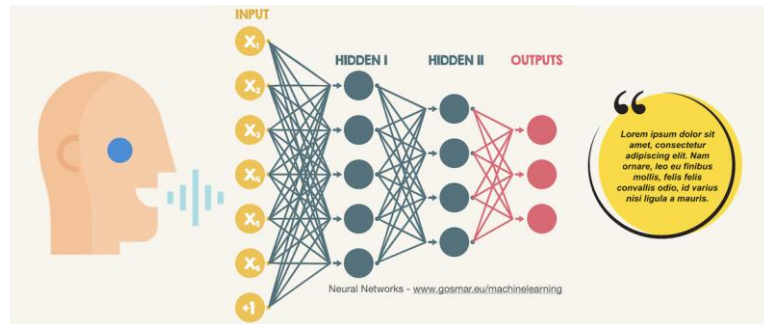
Data-driven Modeling

- [Demo](#)



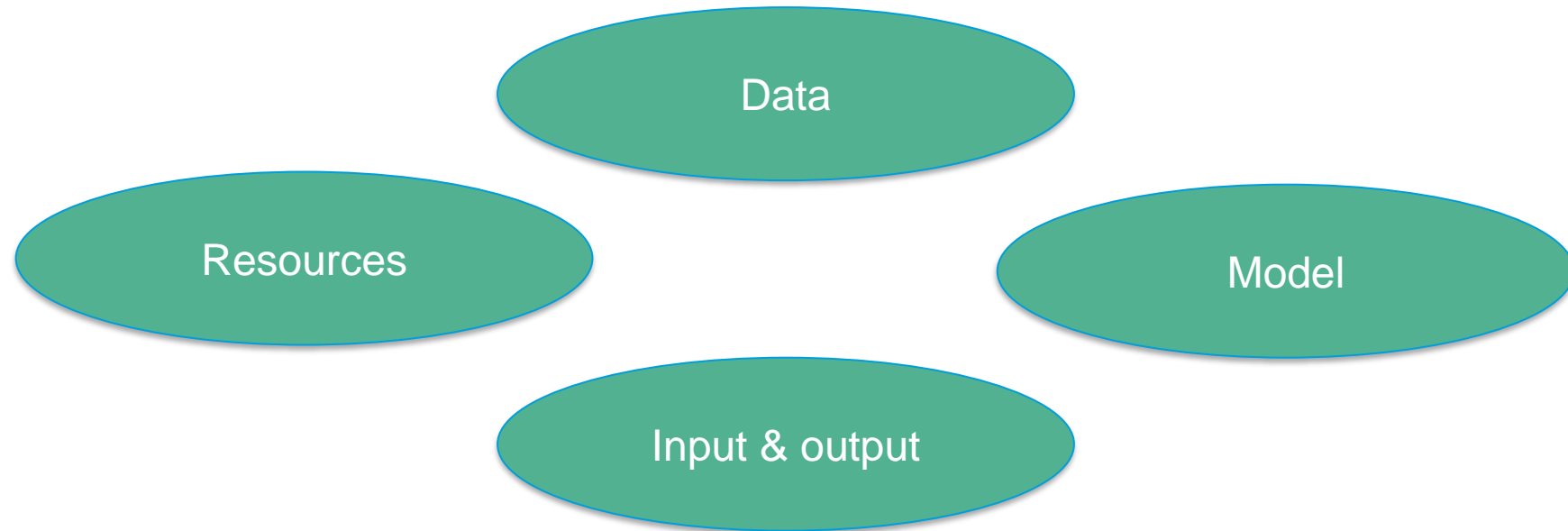
<https://gfycat.com/gifs/tag/3b1b>

Applications



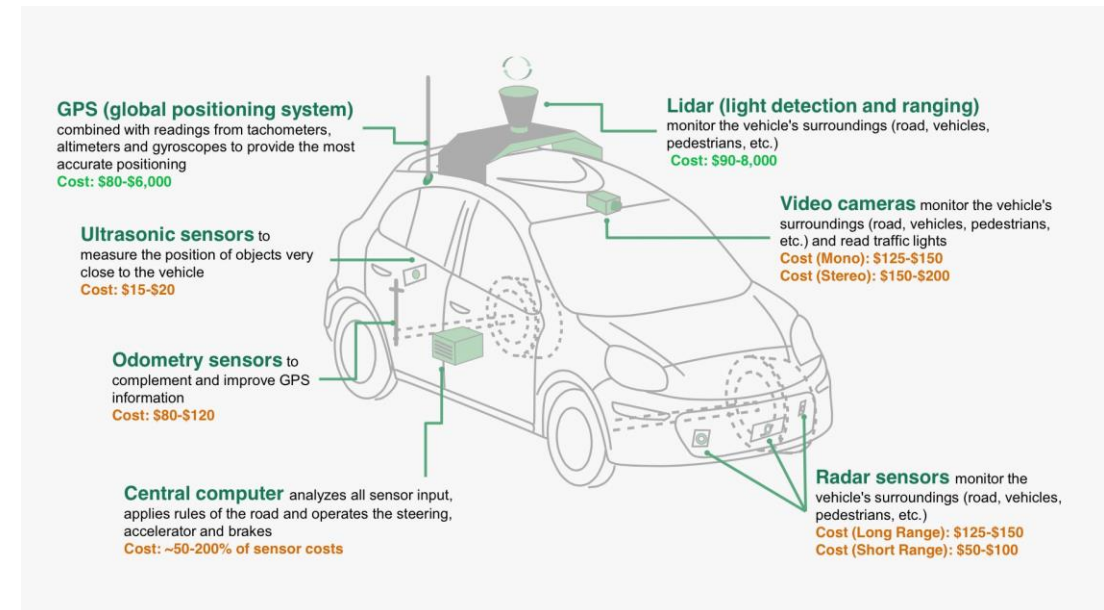
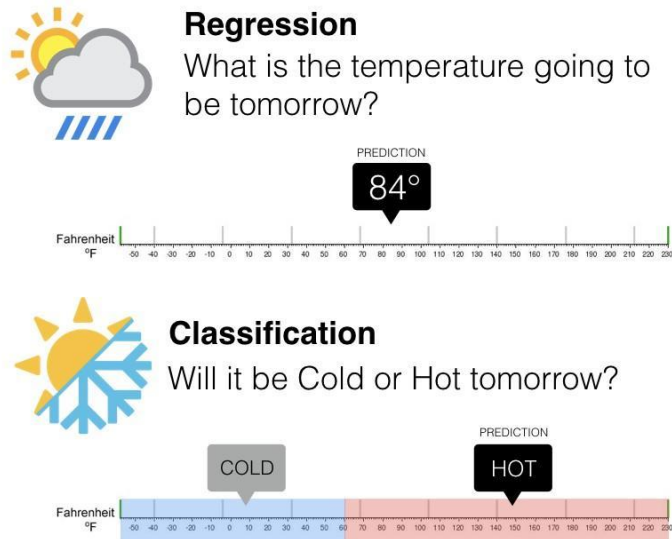
- <https://www.gosmar.eu/machinelearning/2020/05/25/neural-networks-and-speech-recognition/>
- <https://www.ufrjnautilus.com/post/vis%C3%A3o-computacional-e-carros-aut%C3%B4nomos>
- <https://www.nature.com/articles/d41586-019-03298-6>
- <https://www.forbes.com/sites/johnkoetsier/2023/04/14/generative-ai-music-platform-creates-forever-songs-with-artists-unique-sounds-melodies-and-beats/?sh=75a691eada47>
- Gonzalez-Dias, Patricia & Lee, Eva & Sorgi, Sara & Lima, Diógenes & Urbanski, Alysso & Silveira, Eduardo & Nakaya, Helder. (2019). Methods for predicting vaccine immunogenicity and reactivity. Human Vaccines & Immunotherapeutics. 16. 1-8. 10.1080/21645515.2019.1697110.

“Pillars” of Using ML



Input & Output

- What exactly are you trying to model?



<https://www.wired.com/2015/04/cost-of-sensors-autonomous-cars>
https://medium.com/@ali_88273/regression-vs-classification-87c224350d69

Data

- Is there enough of it?
- Does it need clean-up?



Damaged specimen

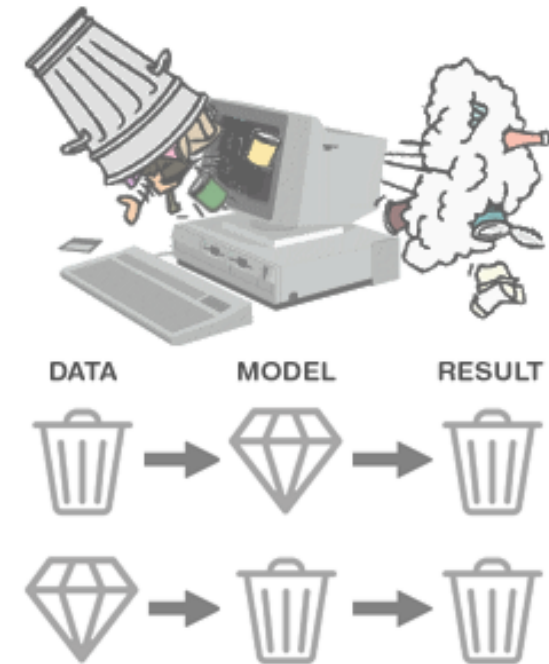


Missing Features



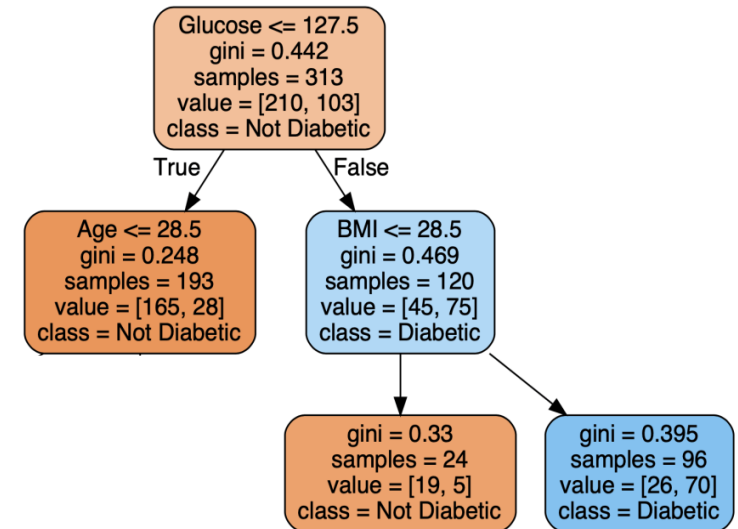
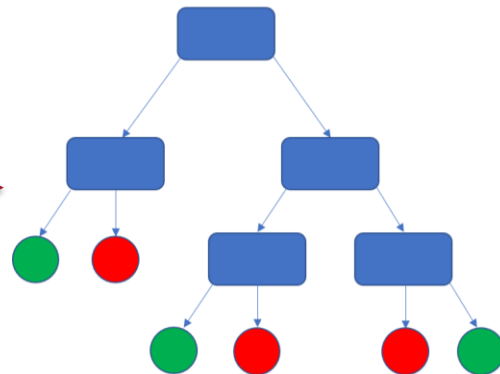
Occluded Features

Elhamod, M., Diamond, K. M., Murat Maga, A., Bakis, Y., Bart, H. L., Mabee, P., Dahdul, W., Leipzig, J., Greenberg, J., Avants, B., & Karpayne, A. (2022). Hierarchy-guided neural network for species classification. *Methods in Ecology and Evolution*, 13, 642–652. <https://doi.org/10.1111/2041-210X.13768>



Model

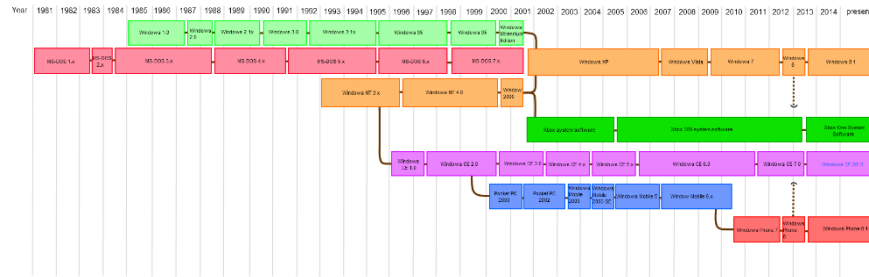
- What kind of model would be sufficient/suitable for modeling your data?



<https://statisticallyrelevant.com/decision-trees-in-python-predicting-diabetes/>

Resources

- What compute resources are available?
- What is the project's timeline?



In-Class Work

Intro to ML

Continued...

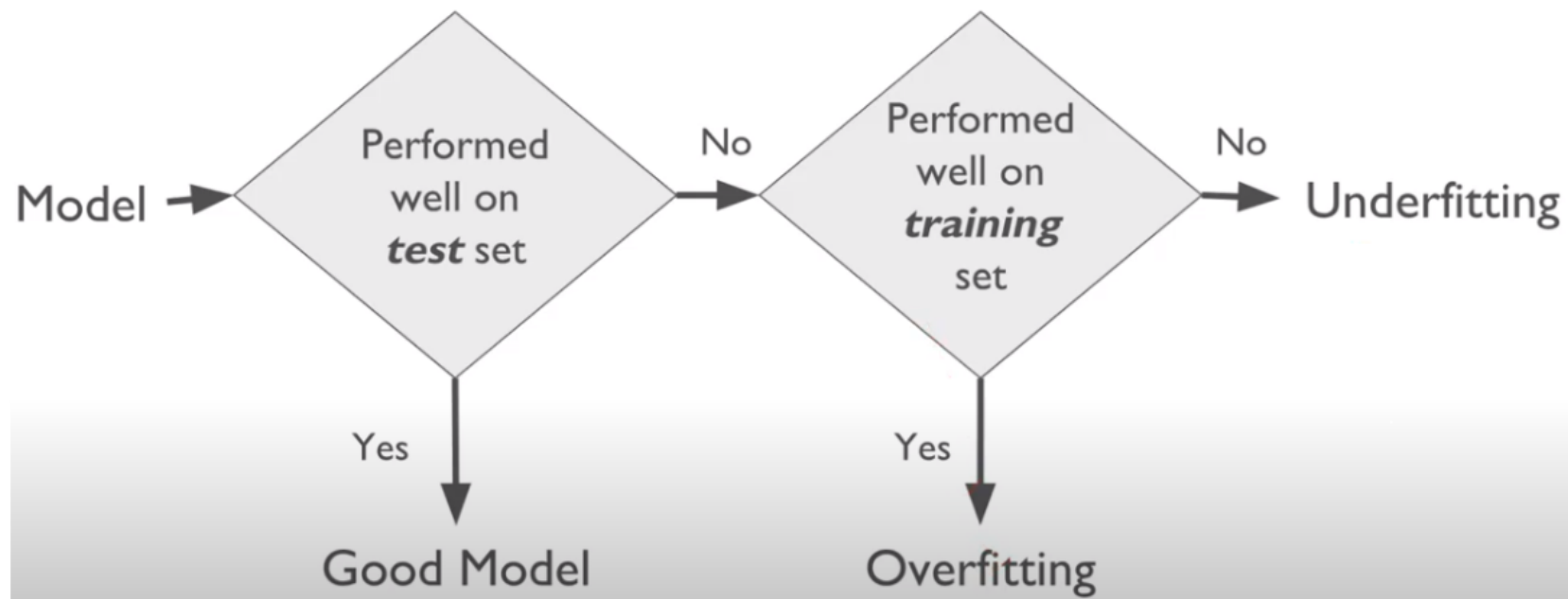
Model Generalization

- You build a model that *predicts a movie's box office revenue*. You have only a few movies to train on and for each movie you collect many features, including *whether the of the president at the time of release is a democrat*.
 - Since there are only a few movies for the model to train from, there is a chance that some noise exists.
 - **This is called overfitting!**

Model Generalization

- Now, you build another model that *predicts a movie's box office revenue*. You have lots of movies to train on. However, for each *movie you only collect one feature: month of release*.
 - While the month of release may have some signal, it is insufficient to provide an accurate prediction of the box office revenue.
 - **This is called underfitting!**

Overfitting and Underfitting



<http://jcsites.juniata.edu/faculty/rhodes/ml/clusterAn.htm>

Model Generalization



<https://www.machinecurve.com/index.php/2020/11/16/how-to-easily-create-a-train-test-split-for-your-machine-learning-model/>

Model Generalization



<https://medium.com/trusted-ai/explaining-ai-model-behaviour-with-ibm-watson-openscale-86515702c177>

Resources

- [Math teachers stage a calculated protest](#)
- [It's time to believe in the AI hype](#)
- [Has the AI bubble burst?](#)
- [Did GPT4 really pass the bar exam?](#)
- [Amazon “AI” stores.](#)
- [Human oversight of Robotaxis.](#)
- [Gemini demo was faked.](#)
- [Video: A student trying to create a business with GenAI.](#)