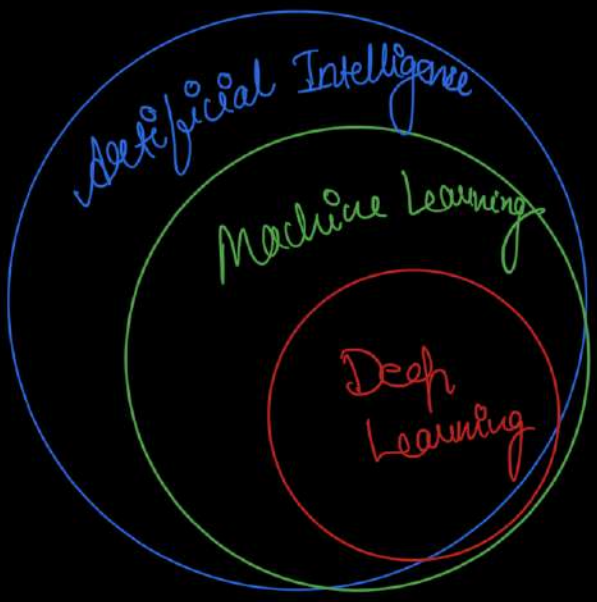
Deep Learning Introduction

→ Machine Learning is turning things (data) into numbers and finding patterns in those numbers

ML vs DL



Traditional Programming:

I/P:

Vegetables + chicken

Rules:

i) cut vegetables

I/P + Rules → O/P

Starts with makes

I/P:

Vegetables + chicken

Rules:

i) cut vegetables
ii) Season chicken
iii) Preheat oven
iv) Cook Chicken for 30 mins
v) Add vegetables

↓

O/P:

Chicken (cooked)

I/P + Rules → O/P

Starts with → makes

Machine Learning Algorithm:

I/P:

Vegetable

O/P:

cooked chicken

→ Rules:

Starts with → Figured out

Q why we ML (or DL)?

Good reason: ~~why not?~~

Better reason: For a complex problem, can you think of all the rules?

A If you can build a simple rule-based system that doesn't require ML, do that.

Q what DL is good for?

→ Problems with long lists of rules - when the traditional approach fails, ML/DL may help.

→ Continually changing environments - DL can adapt ('learn') to new scenarios.

→ Discovering insights within large collections of data - can you imagine trying to hand-craft rules for what 101 different kinds of food look like.

kinds of

Q What DL is not good for?

→ When you need explainability - The patterns learned by a deep learning model are typically uninterpretable by a human.

→ When the traditional approach is a better option - If you can accomplish what you need with a simple rule-based system.

→ When errors are unacceptable - Since the outputs of deep learning model aren't always predictable.

→ When you don't have much data - Deep learning models usually require a fairly large amount of data to produce great results.