Who am I ?

AKASH PUSHKAR CHARAN *aka* APC
Quick witted | Tech-Savvy | Observer

- IIT Kanpur Alumnus
- Working as Principal Data Scientist with Accenture Strategy & Consulting

- 9+ of Industry experience of delivering **multiple data science projects** *across industries*

- 15+ years of experience training & mentoring

- Taught 30000+ GATE Students

- 5000+ career transitions into Data Science roles

"It's not who I am underneath but what I do that defines me"

https://www.linkedin.com/in/akash-pushkar-04642925/

Handwritten notes:

2008 - IIT-JEE Maths — 2nd

2013 - GATE - ECE

2015 - GATE | DS & AI

2024

9 yrs

[ISI Kolkata]
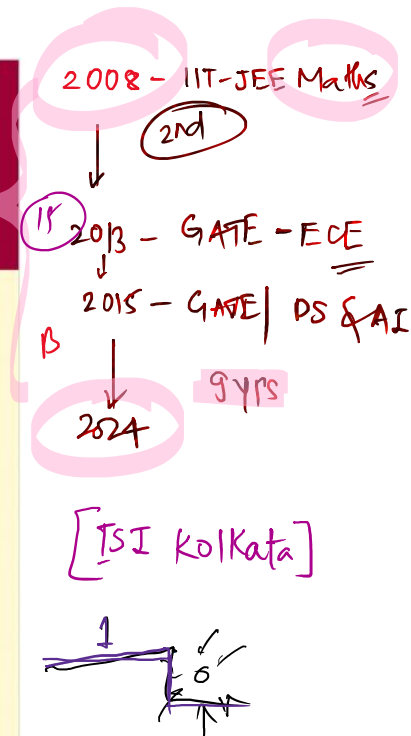
Why Deep learning?

→ to make a career in this field. (90%)
+
(career growth) → good money.

As of now, how much %-age of Job opportunities fall in this area?

1000 job posts

30%

$$ £ €

1. Deep learning — (2 - 10%)
2. Machine Learning — 20 - 25% [Data scientist] 20%
3. Data Engineering — (10 - 20%)
4. Data Analysts 10%
5. BI (Business Intelligence) Analysts

Gen A I

Keep an eye !!!

2 Yrs   15%

$$\frac{10}{200} \times 100 = 5\%$$

→ this is a good starting point for non-tech folks.

→ (60 - 70%) ≅ (600 - 700)

Expectations for YOU!

On a scale of 1 to 10

Practice is needed ?!?

Python

1   5 6   8   10

Machine Learning

1   4 5   6 7 8   10
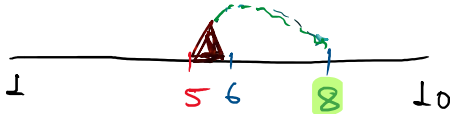
Numpy
↓
Pandas
↓
Visualization → Matplotlib, Seaborn → PLOTLY

OOPs! Good to have

https://plotly.com/
https://gabria1.pythonanywhere.com/step3

{
→ Linear & logistic Regression
→ DT & Random Forest
→ XGBoost, Light GBM etc.
     SVM
}

Kaggle.com

↳ (help you with resources)

Certain Guide lines

① Do not miss a single live session ✓✓

→ (unless its really urgent)

Wedding videos →

A) 1-2 times
B) 3-5 times
C) 0 time
D) countless times

② DDS: Dedicated doubt slots after the break : (10-15 mins)

in the end : (10-15 mins)

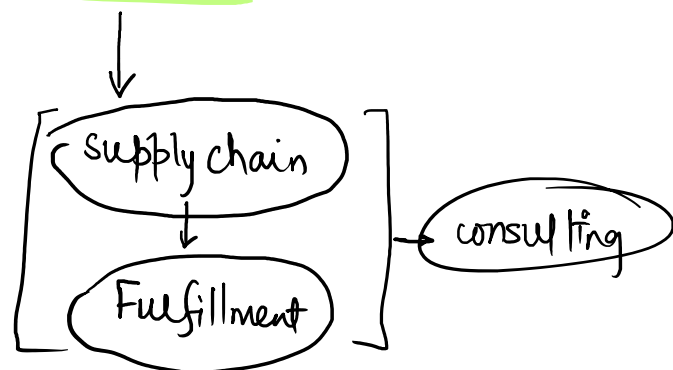③ Motivating Factor: Respect your time and money

(2-4 hours /week) beyond classes

(6 hrs)

8 - 10 hrs /week

[Discord — a professional community]

Course Structure

Module #① Introduction to Deep Learning

- Difference b/w DL, AI, ML, GenAI, Data Science, EDA
- What are some real use-cases (latest and updated) across Industries.
- BE DEAD SERIOUS abt DOMAIN

```
                    supply chain
                         │
                         ▼          → consulting
                    Fulfillment
```

Module #② Introduction to Neural Networks (NNs)

- Connecting the dots between human mind (brain) → Nervous system and neural network
- Gradient Descent Algorithm (GDA)
- single layer perception (SLP) ⎤
- Multiple layer perception (MLP) ⎦ two parameters
                                        │
                              ┌─────────┴─────────┐
                              ▼   ▼
                          weights   biases

Hands-on : Build a neural network from scratch
            — write our own functions using OOPs principles.

- Activation function and its implementation
    — Sigmoid   — softmax

- Activation function and its implementation
  - Sigmoid   - Softmax
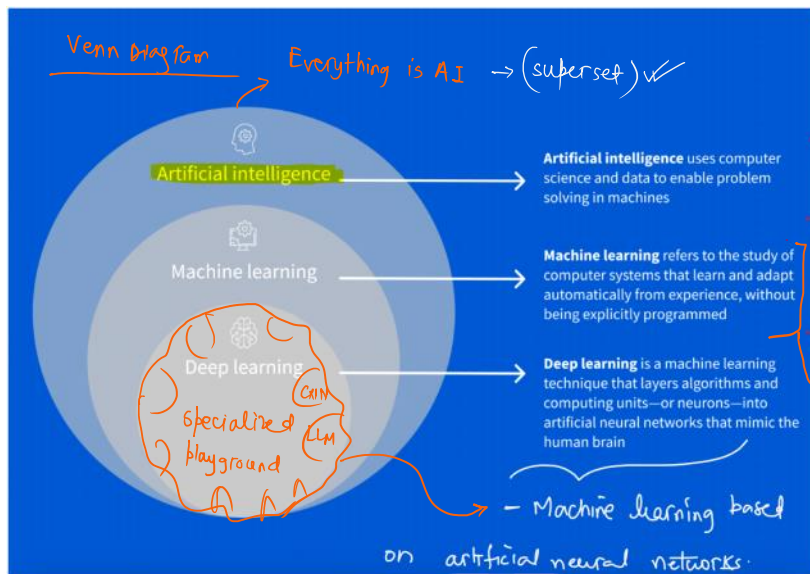 - ReLU   - tanh

Ad-hoc Requests

1. Gradient Descent Algorithm

2. Bias - Variance trade-off.

3. Underfitting and overfitting

4. Pandas and Numpy

    a) Lambda function

    b) Zip method

    c) Array flattening

    d) Linear Algebra — leveraging Numpy

Module #1: Introduction to Deep Learning

Difference between AI, ML, DL, Data Science, EDA, Generative AI etc. ?

Venn Diagram   Everything is AI → (superset) ✓

Artificial intelligence

Artificial intelligence uses computer science and data to enable problem solving in machines

Machine learning

Machine learning refers to the study of computer systems that learn and adapt automatically from experience, without being explicitly programmed

Deep learning

Deep learning is a machine learning technique that layers algorithms and computing units—or neurons—into artificial neural networks that mimic the human brain

CNN
LLM

Specialized playground

— Machine learning based on artificial neural networks.

NVIDIA + Algorithms + Data = AI ✓

} playground to engineer machines empowered by data to mimic cognitive functions

} ML has the ability to perform tasks

data is the new oil in today's world)

without explicit instructions and learns underlying patterns in the data.

— specialized field to mimic as closely as possible the human brain functioning