Day 1
History of Deep Learning, Map of Deep Learning

No maths. No practical. No mind games

1805–1890: Theoretical Foundations

1. Linear algebra
2. Probability theory
3. Calculus
4. Optimization

1940s: Birth of Artificial Neurons

A Logical Calculus of Ideas Immanent in Nervous Activity

- First **mathematical model of a neuron**
- Binary input/output
- Inspired by biology

"Brains can be modeled as computation."

1949 — Hebbian Learning
Rule: *"Neurons that fire together, wire together"*

1950 — Alan Turing
- **Turing Test**

1957 — Perceptron (Rosenblatt)
- First trainable neural network
- Single-layer
- Hardware implementation

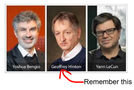
HYPE

1969 — Minsky & Papert
Problem: Perceptrons cannot learn XOR

- Funding collapsed
- Neural networks abandoned

1986 — Backpropagation (Rumelhart, Hinton, Williams)
Paper: *Learning representations by back-propagating errors*

✓ Multi-layer networks become trainable
✓ Chain rule applied to neural nets



Remember this Name

1980s–early 1990s
Graphics handled by **CPU + simple VGA cards**

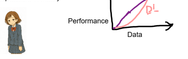
1993 — NVIDIA is Born
1. **1993**: NVIDIA founded by *Jensen Huang*
2. Goal : Accelerate 3D Gaming

Company was about to Bankrupt 1999

1999 — The Birth of the GPU
GeForce 256
- **Coined the term "GPU"**
- Hardware **Transform & Lightning**
- Parallel graphics pipeline

REVOLUTION
Deep learning *became possible in theory*

✗ CPUs too slow
✗ Small datasets



2001–2005 — Programmable Shaders
GeForce 3 → GeForce 7

Jenseng Huang - If i could make 3d games work with GPU which require High Processing Power , The Power could reallyt transform the world

ImageNet is a **huge labeled image dataset** created by **Fei-Fei Li** and her team.

- **~14 million images**
- **~20,000 object categories**
- Images labeled by humans (crowdsourcing)

2010
Top Computer Scientist

Jenseng (like a mad person) invest all his Money where there wasn't any FUTURE (except for what he saw)

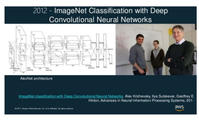
2006 — CUDA (🔥 Biggest Revolution Ever)
G80 Architecture (GeForce 8800)
- **CUDA introduced**
- Programmable in **C/C++**
- Developers could now
- Use GPU for **non-graphics tasks**

2025 BEST GPU for AI & DL

2012 — Deep Learning Explosion
(🔥 Historic Day)
AlexNet + NVIDIA GPUs
- **AlexNet wins ImageNet**
- Used **NVIDIA GTX 580**
- Trained neural networks **10–20× faster**

📌 **This is the day AI changed forever**
- Deep learning became practical
- GPUs became essential for AI

🟦 **Most important AI revolution in history**



🔥 2013–2016: Rapid Acceleration

Computer Vision
- 2014: VGG
- 2015: ResNet (152 layers!)
- Solved vanishing gradients
- ImageNet performance surpassed **human-level**

Speech Recognition
- Deep nets beat HMMs
- Google & Baidu adopt DL

NLP
- Word2Vec (2013)
- GloVe
- Seq2Seq models

📊 **Benchmarks**
- ImageNet
- MNIST (saturated)
- CIFAR-10/100

2017 — Transformers

✓ No recurrence

✓ Parallel training

✓ Scales extremely well

Key models
- BERT (2018)
- GPT (2018 →)
- T5

Benchmarks dominated
- GLUE
- SQuAD
- BLEU

2022 - ChatGPT was launched Nov30

2020 – GPT-3
- 175B parameters
- Few-shot learning

2021–2022
- CLIP
- DALL·E
- Stable Diffusion

Entire Map of Deep Learning

Basic Neural Network

Computer Vision

Image Classification
Object Detection
Medical Imaging

NLP

Speech
Human Language Processing
Time Series

Transformers

LLMs
Vision Transformers
Multimodal AI

Generative Models

GANs
Diffusion
Synthesis Data Generation

Specialized Architecture

Autoencoders
GNNs
RAG

Thanks for Joining this Course

I congrats you for Joining me in this Course.
its about our Modern 4th Revolution

You will surely Love this Journey Ahead
See ya in Day 2

Scan on GoodNotes