

A Evolução da Inteligência Artificial

Da Lógica Simbólica aos Foundation Models

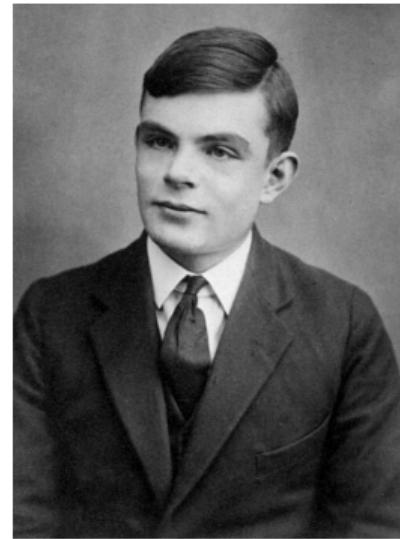
Professor Bruno Menezes

FAETEC Resende

Inteligência Artificial Aplicada

- IA não começou com ChatGPT
- Mais de 70 anos de evolução científica
- Mudanças de paradigma
- Próxima revolução: IA para Ciência

- Teste de Turing
- Inteligência como comportamento observável
- Base conceitual dos LLMs atuais



- Marco formal da IA
- Surgimento do termo Artificial Intelligence
- Início da IA simbólica

1956 Dartmouth Conference: The Founding Fathers of AI



John McCarthy



Marvin Minsky



Claude Shannon



Ray Solomonoff



Alan Newell



Herbert A. Simon



Arthur Samuel



Oliver Selfridge

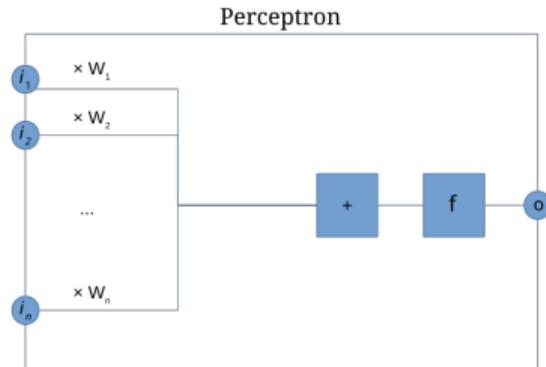


Nathaniel Rochester



Trenchard More

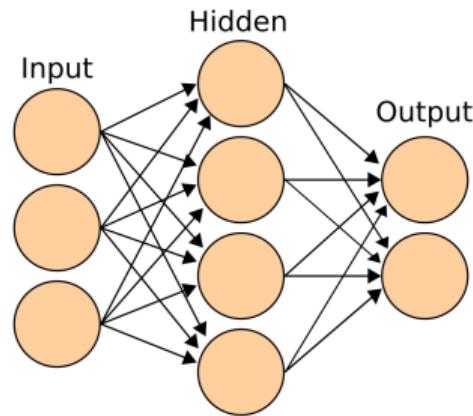
$$y = \text{sign}(w^T x + b)$$



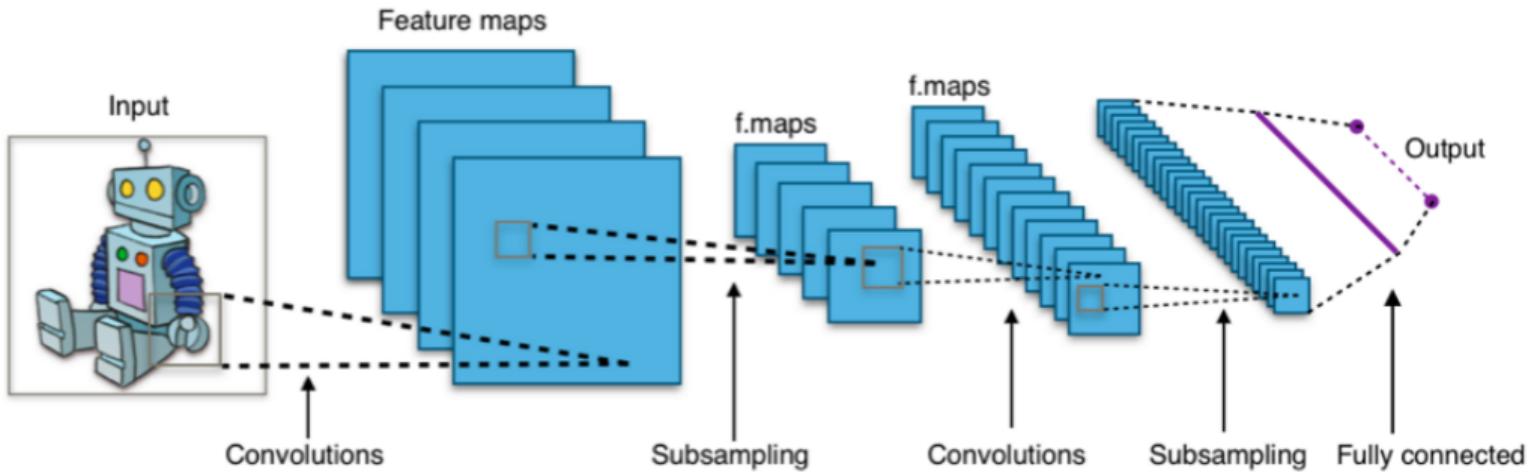
$$o = f\left(\sum_{k=1}^n i_k \cdot W_k\right)$$

$$E = \frac{1}{2}(y - \hat{y})^2$$

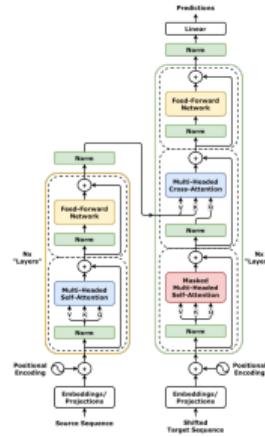
$$\frac{\partial E}{\partial w}$$

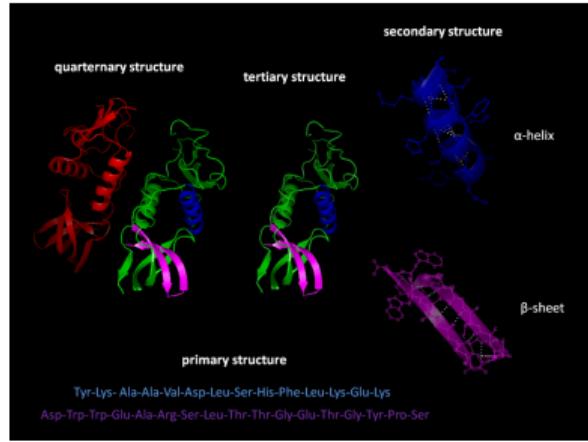
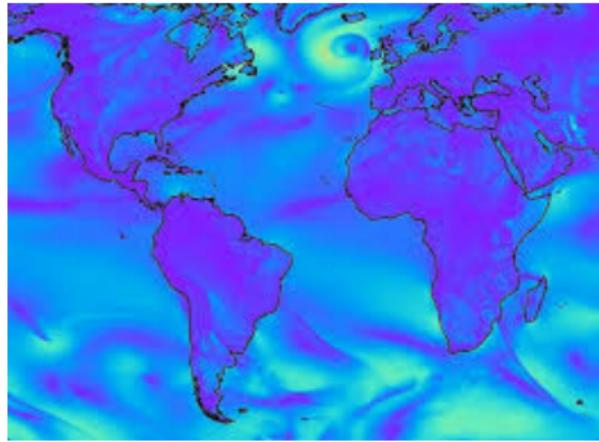


- Grandes bases de dados
- Uso intensivo de GPUs
- Redes profundas (CNNs)



$$\text{Attention}(Q, K, V) = \text{softmax} \left(\frac{QK^T}{\sqrt{d_k}} \right) V$$





GraphCast — previsão meteorológica
AlphaFold — estrutura de proteínas

1950 — Turing
1956 — Dartmouth
1958 — Perceptron
1986 — Backpropagation
2012 — Deep Learning
2017 — Transformer
2021 — Foundation Models
2023 — AI for Science

Estamos vivendo a maior transformação
tecnológica da história.