

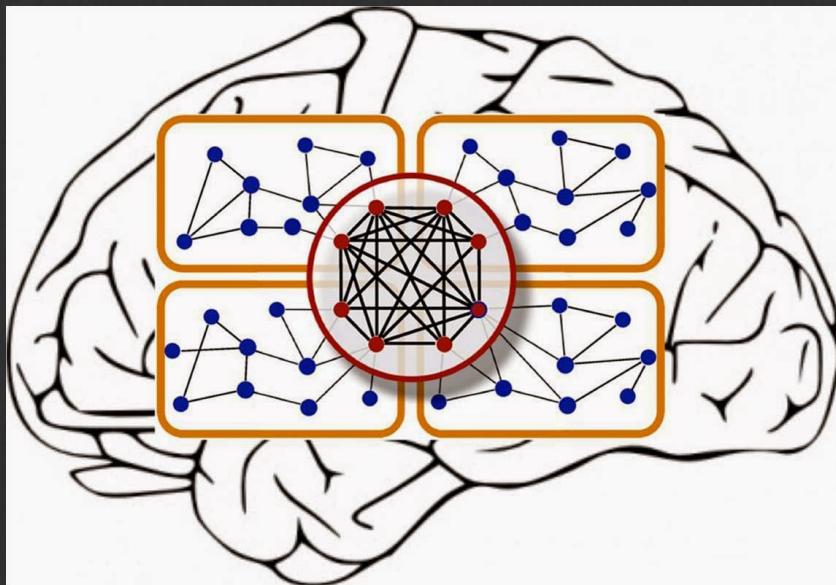
# Prediction Stocks

Mário Thomaz Aprá

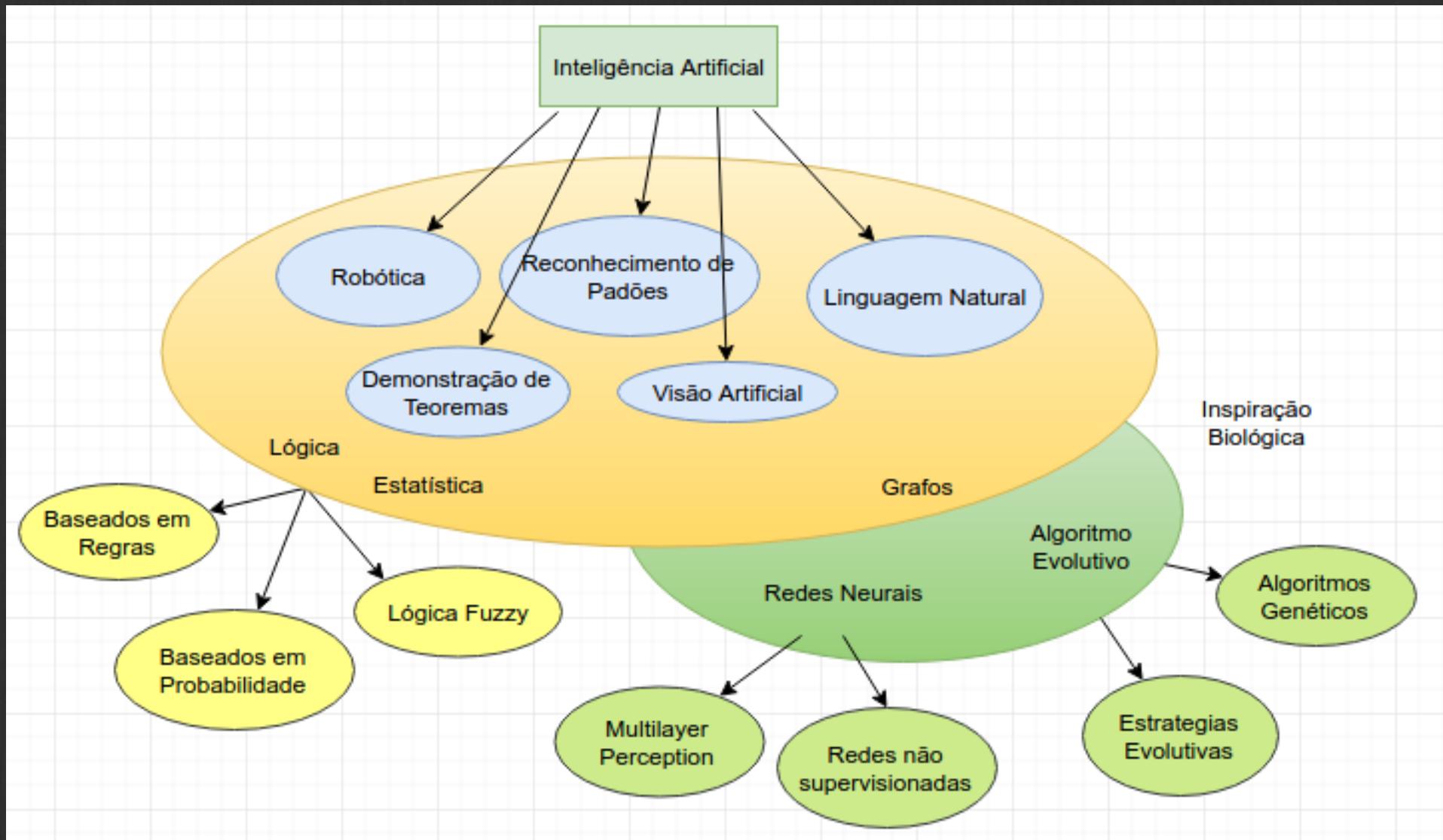
Orientadora: Prof.<sup>a</sup> Dr.<sup>a</sup> Andréia Cristina G. Machion

# Introdução

Rede Neural Artificial (RNA) + Mercado Financeiro



# Inteligência Artificial



# Mercado Financeiro

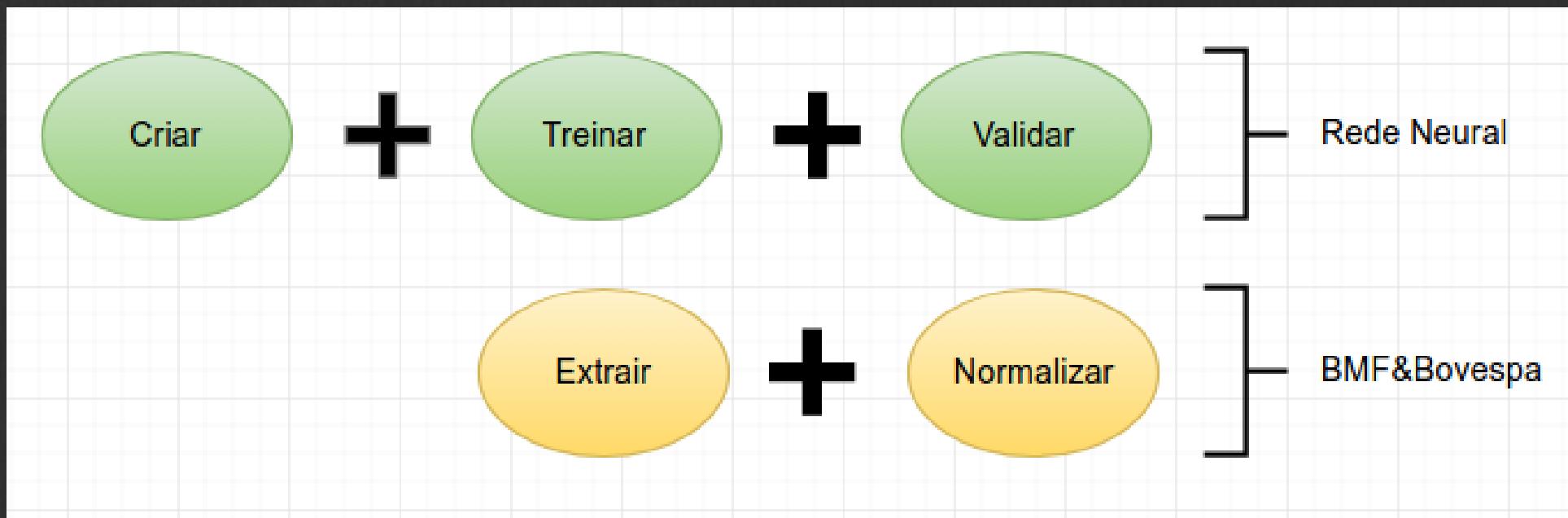
## Análise Técnica

- Movimentos do mercado já descontam tudo.
- Preços se movem em tendencias
- Historia repete a si mesma

## Análise Fundamentalista

- Valor financeiro
- Preço justo
- Resultados Financeiros
- Valor intrínseco (valor de mercado não reflete o valor real) (-6%)

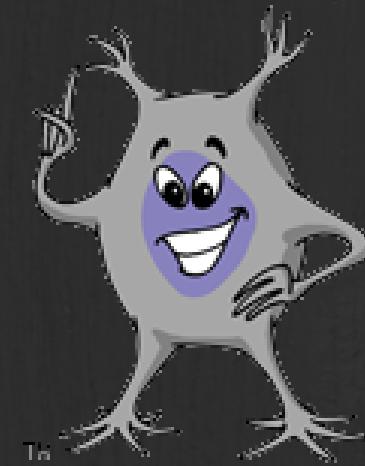
# Objetivo



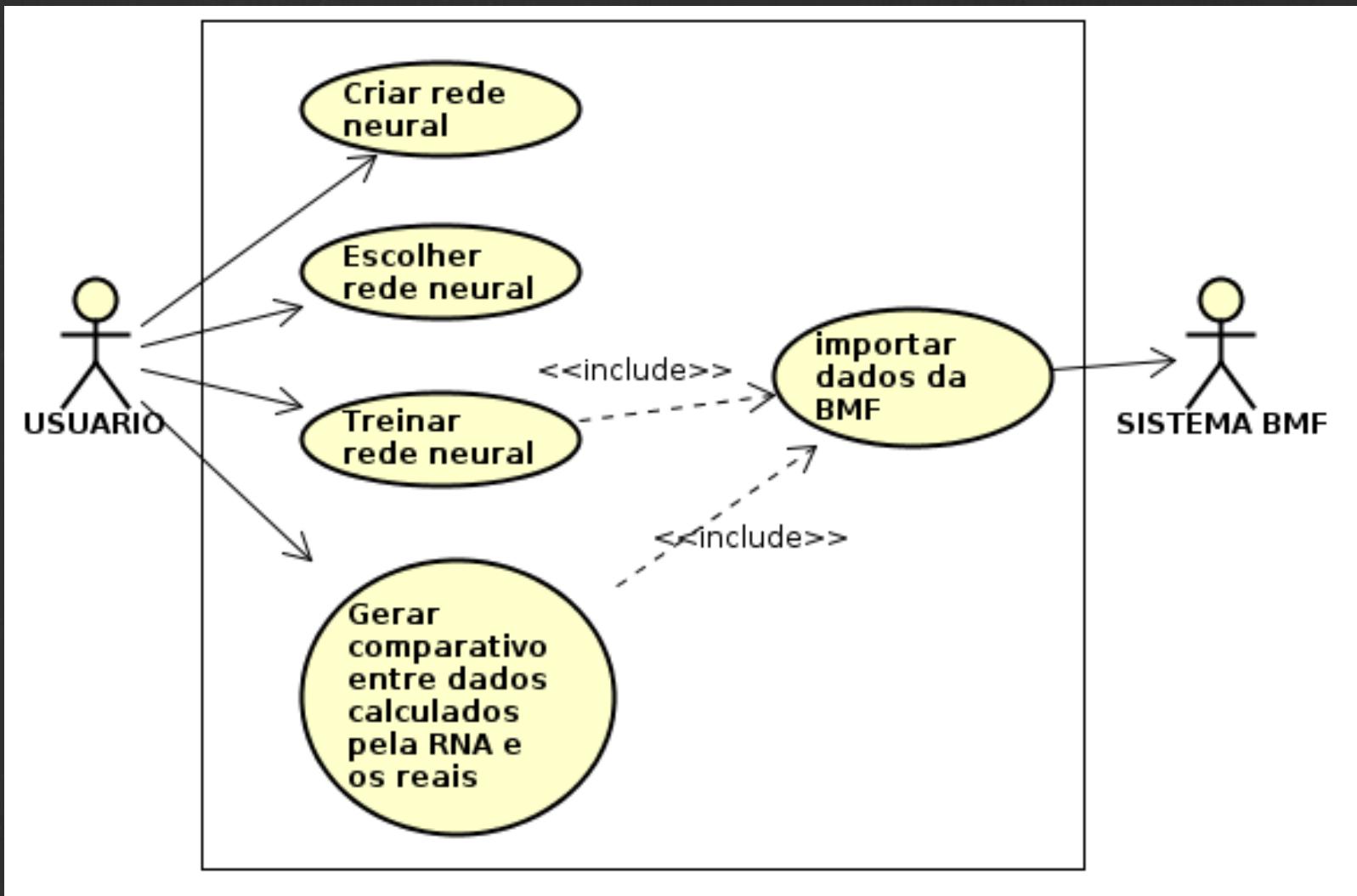
# Justificativa

- RNA são ótimas para generalização
- RNA adaptáveis (mercado financeiro dinamico)
- Series históricas como base para análise técnica
- Capacidade de uma RNA em aprender e prever.
- Lógica > Emoção

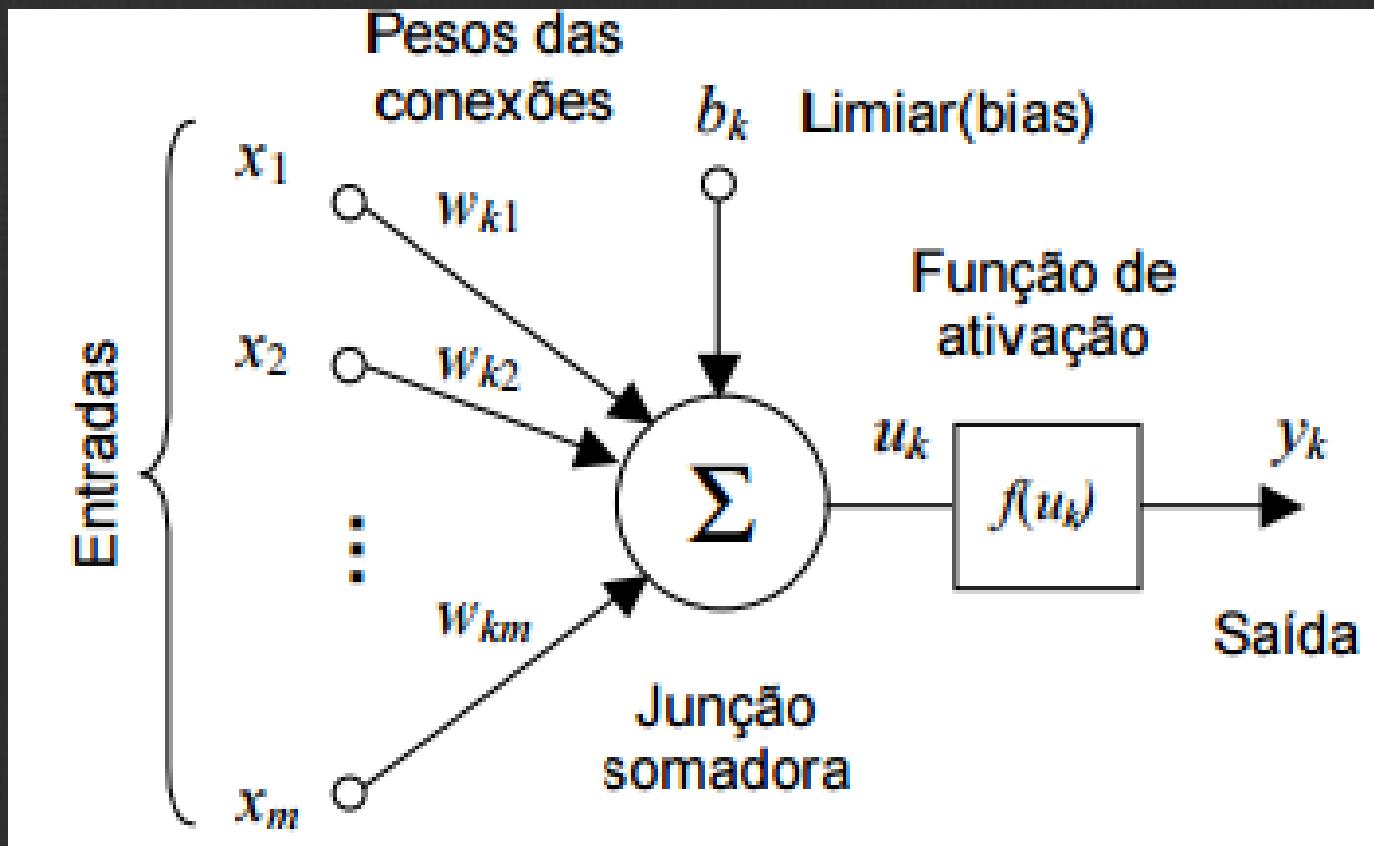
# Recursos Utilizados



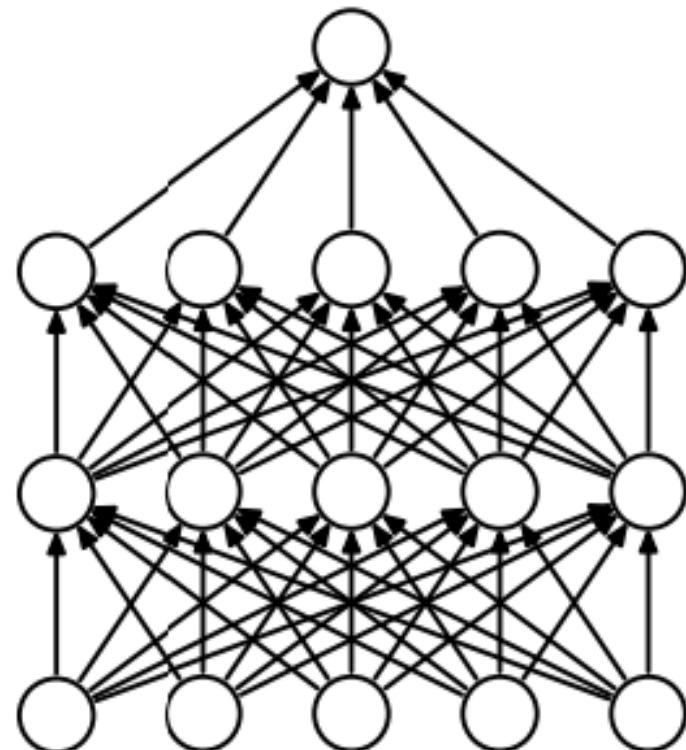
# Casos de uso



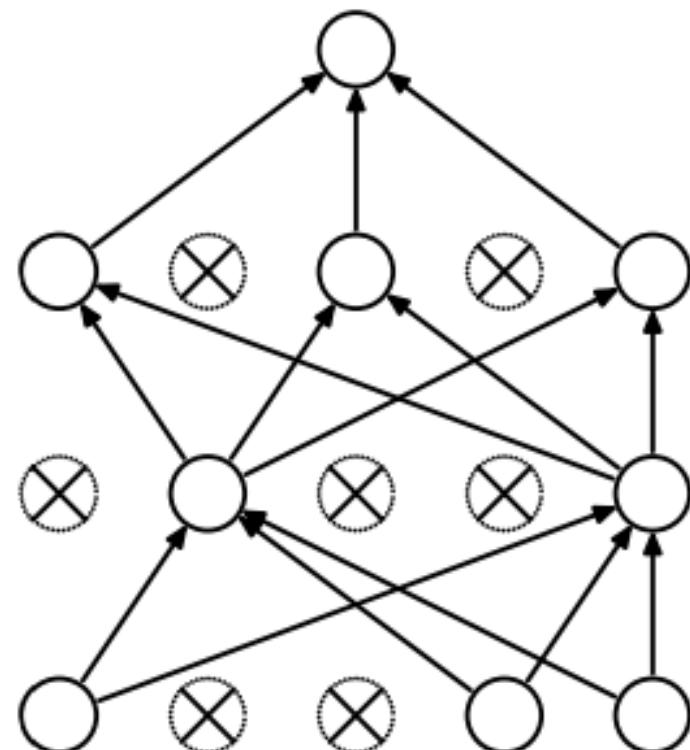
# Neurônio Artificial



# Topologia

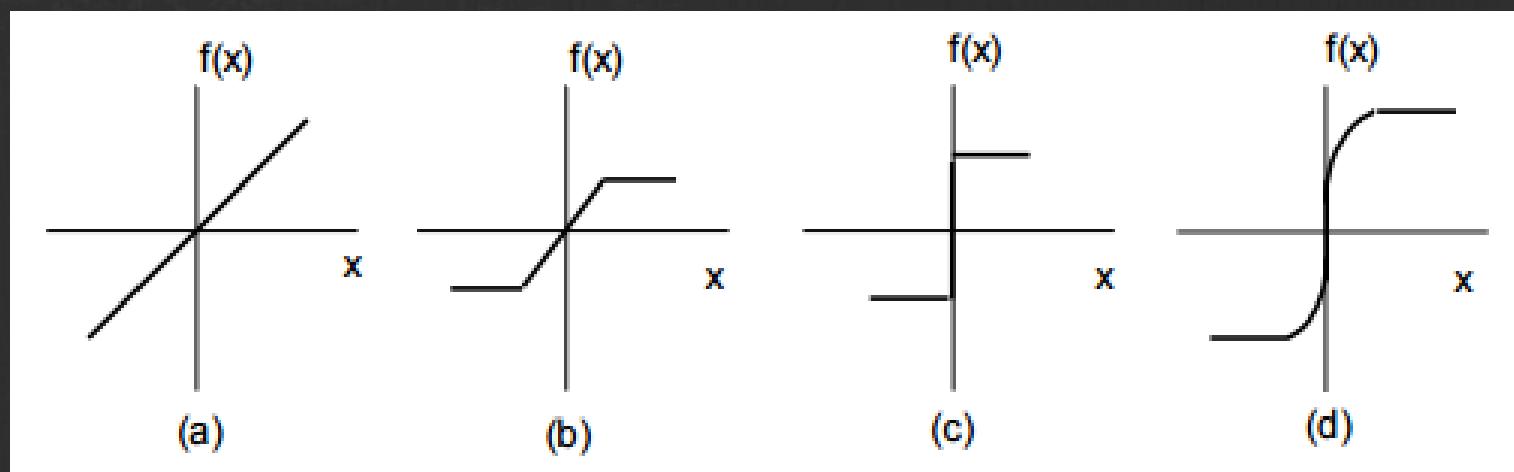


(a) Standard Neural Net

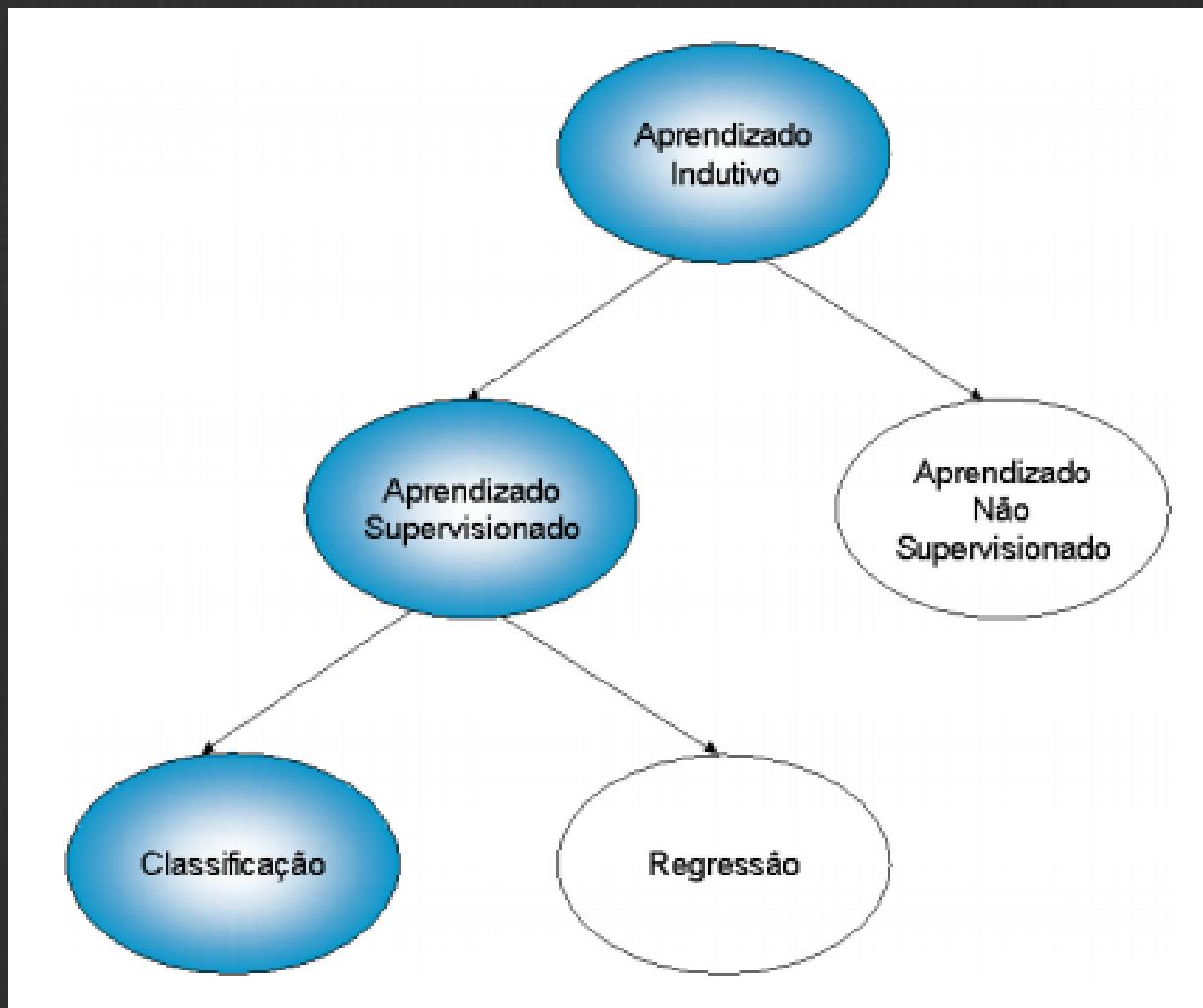


(b) After applying dropout.

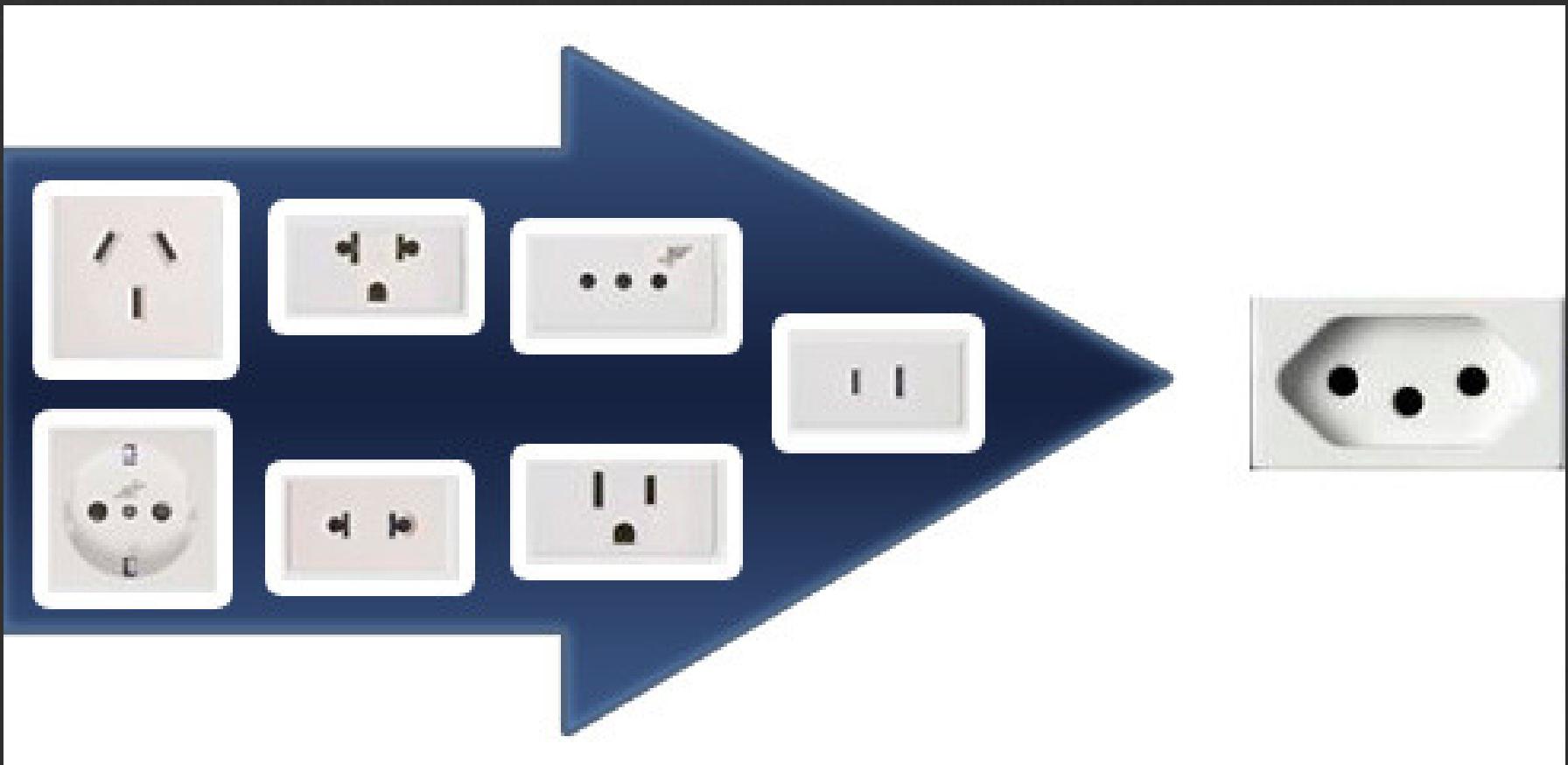
# Função de Ativação



# Aprendizagem



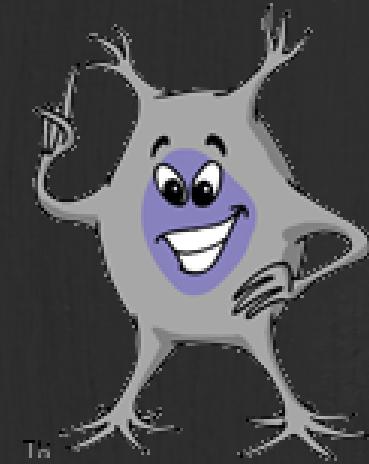
# Normalização



# Demonstração



# Considerações Finais



# Trabalhos Futuros

- Graficos com alguma biblioteca mais potente
- Comparação entre as RNAS
- Base de dados (outras fontes e outros tipos)
- Outros relatórios (carteira ficticia, tendencias)
- Layout

# Referências

- RUSSELL, S. J.; NORVIG, P. Artificial Intelligence: a modern approach. 3<sup>a</sup>. ed. New Jersey: Prentice Hall, 2005.
- TURING, A. M. Computing machinery and intelligence. *Mind*, v. 59, n. 236, p. 433-460, 1950.
- HAYKIN, S. Neural networks and learning machines. Third Edition. ed. Upper Saddle River, NJ, USA: Pearson, 2009.
- FAHLMAN, S. E. An empirical study of learning speed in back-propagation networks. Carnegie Mellon University: Research Showcase, 1988.
- CHAUVIN, Y.; RUMELHART, D. E. Backpropagation: theory, architectures, and applications. New Jersey: Psychology Press, 1995.
- CHABOUD, A. P. et al. Rise of the machines: Algorithmic trading in the foreign exchange market. *The Journal of Finance*, v. 69, n. 5, p. 2045-2084, 2014.
- CONNOR, J. T.; MARTIN, D.; ATLAS, L. E. Recurrent Neural Networks and Robust Time Series Prediction. *IEEE TRANSACTIONS ON NEURAL NETWORKS*, v. 5, n. 2, p. 240-254, Março 1994.