

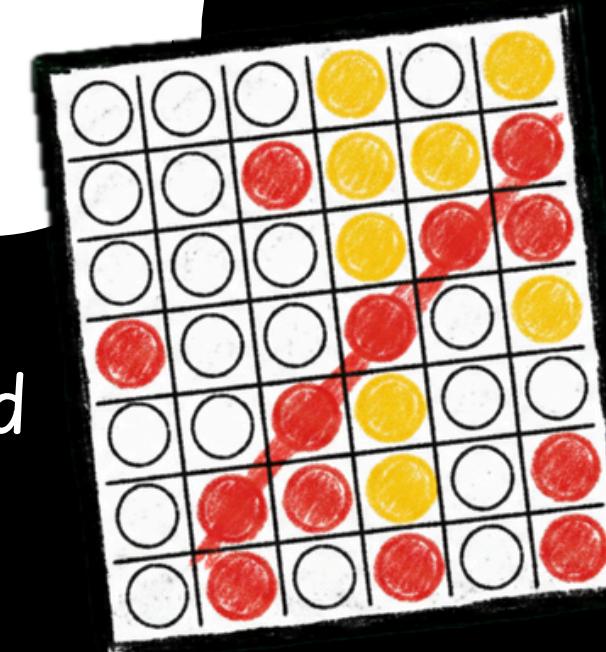
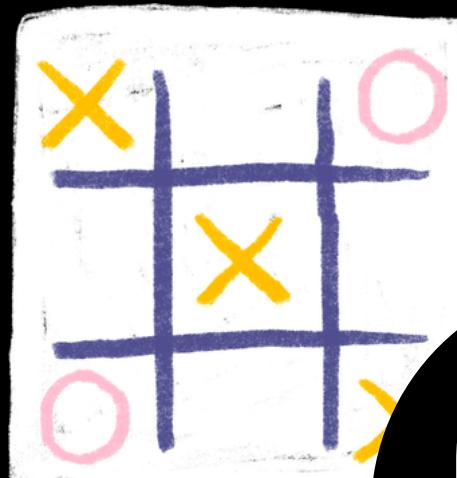


Università degli Studi di Salerno

Fondamenti di Intelligenza Artificiale

T.W.A.I.

Tris Was Already Invented





Cambio di Rotta





*“Non sempre cambiare equivale a
migliorare, ma per migliorare bisogna
cambiare”*

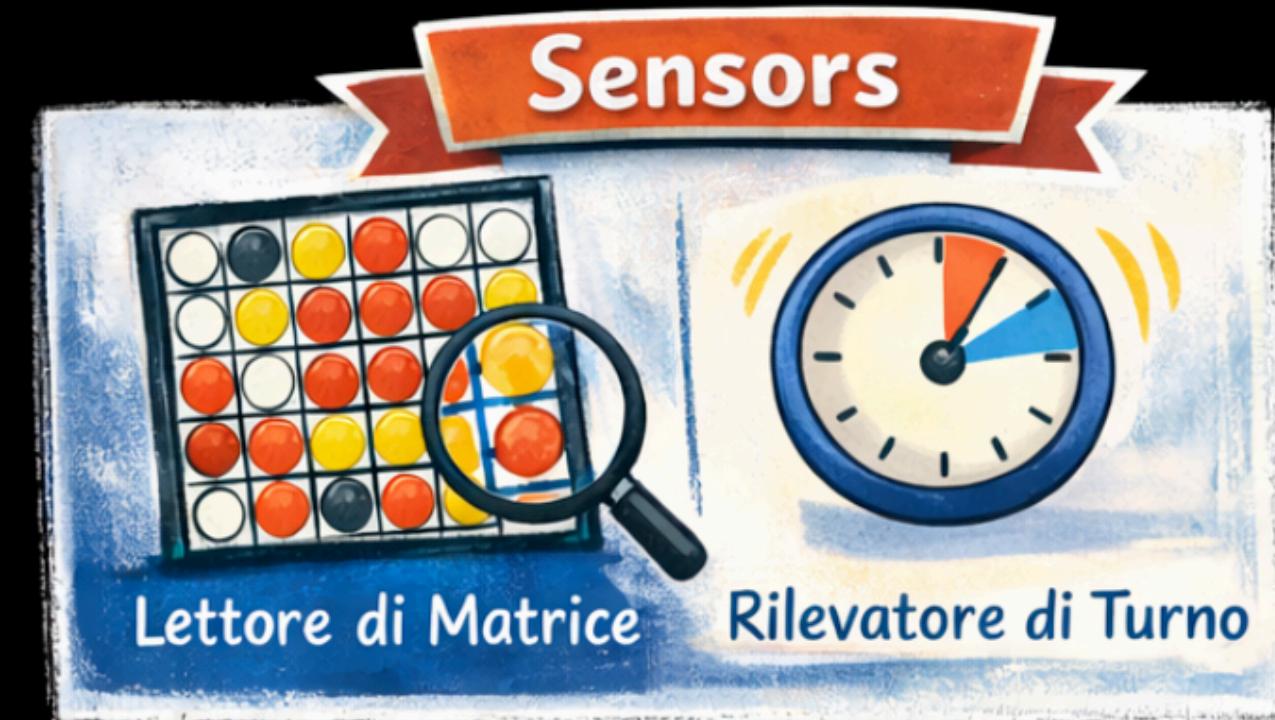
- Sir Winston Churchill

Obiettivi

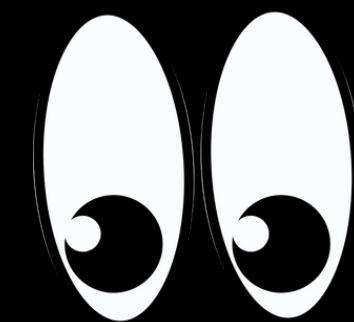
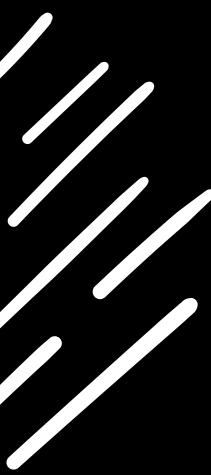
Creare un AI capace di giocare a Forza 4 (Connect-4)



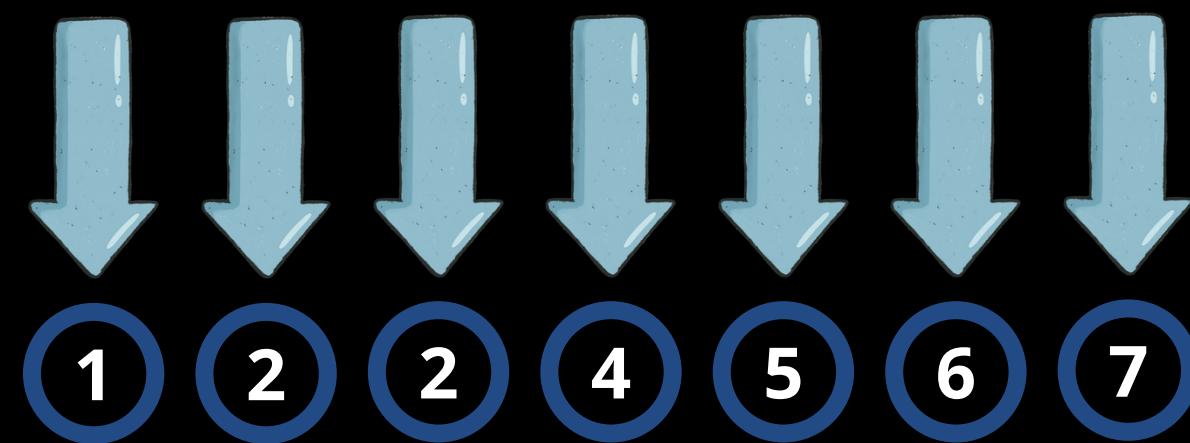
Specifiche PEAS



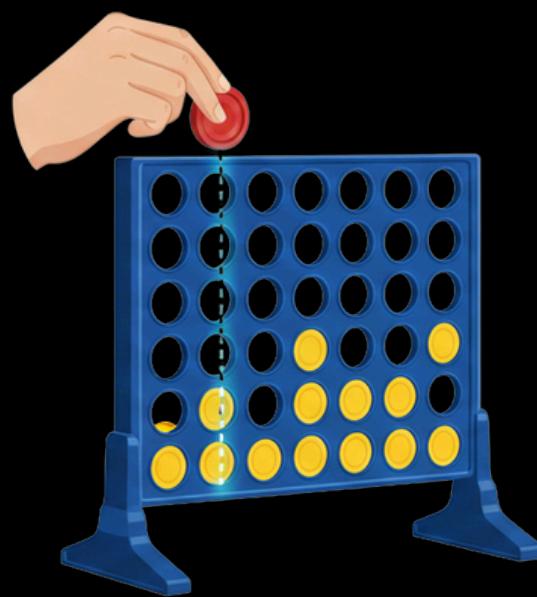
Caratteristiche dell'ambiente



Completamente
Osservabile



Discreto



Deterministico

4.500.000.000.000

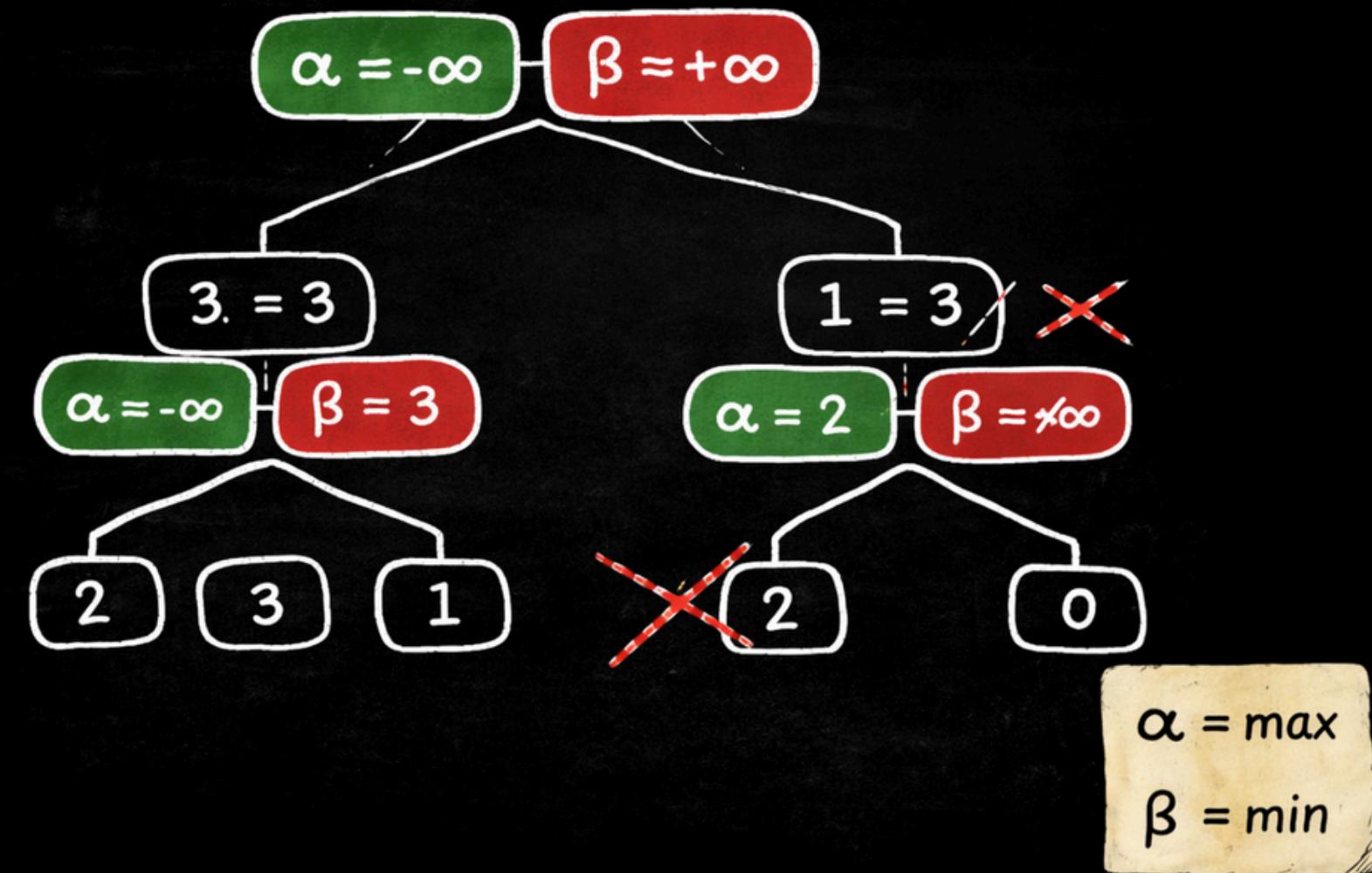
(4.5 Trillioni)

Se aveste iniziato a giocare a Forza 4 quando l'Homo Sapiens è apparso sulla Terra, analizzando una mossa al secondo, oggi non avreste ancora finito.



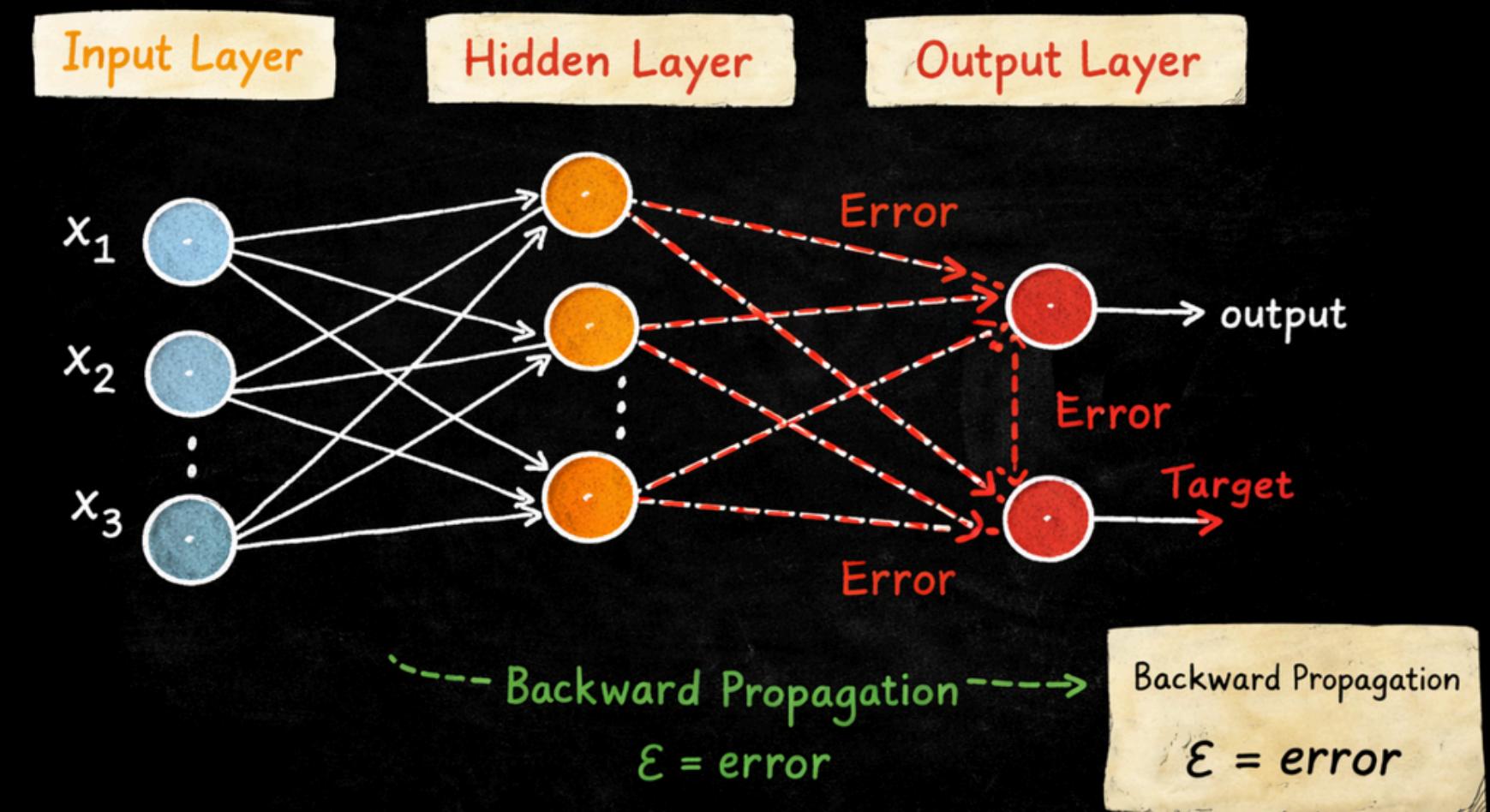
Due Approcci

Alpha-Beta Pruning Minimax Algorithm



Ricerca

MLP Neural Network with Backpropagation



Apprendimento

Ottimizzazione: Ordinamento delle Mosse

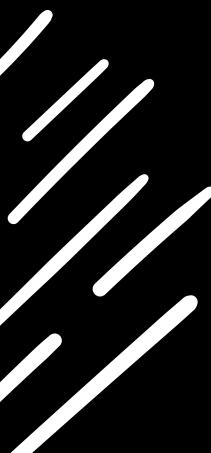


0,2858 s

(a profondità 6)



0,1328 s



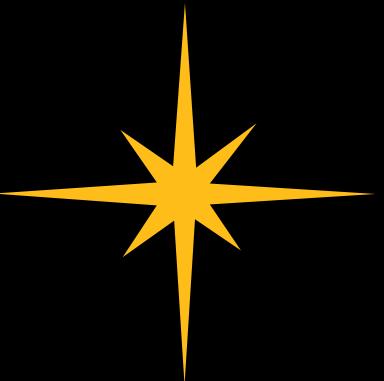
Dataset e Data Engineering

Rete Neurale



Minimax

Rete Neurale (MLP)



80.000

Training Set

100.000

(campioni)



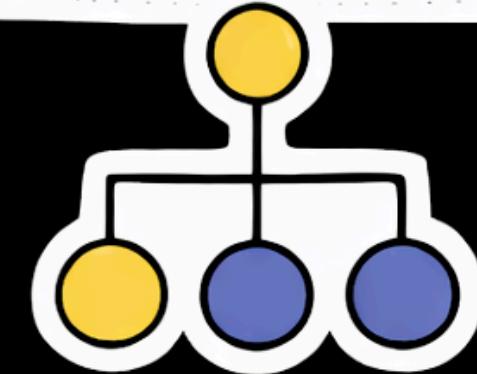
20.000

Test Set

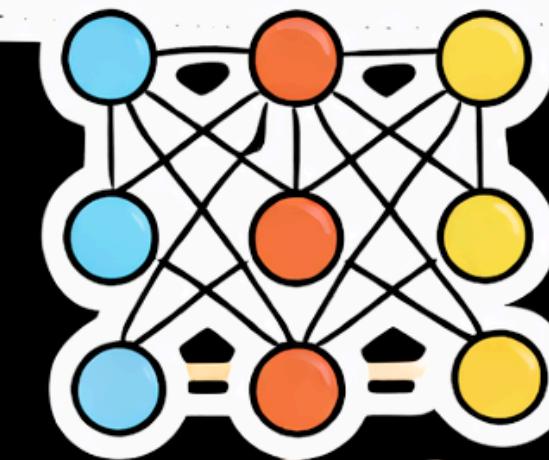
Classe	Precision	Recall	F1-Score	Support
AI Wins (-1)	0.78	0.74	0.76	3946
Draw / Uncertain (0)	0.90	0.91	0.90	10110
Player Wins (1)	0.82	0.85	0.83	5944
Weighted Avg	0.86	0.86	0.86	20000

Conclusioni

**MINIMAX
ALGORITHM**

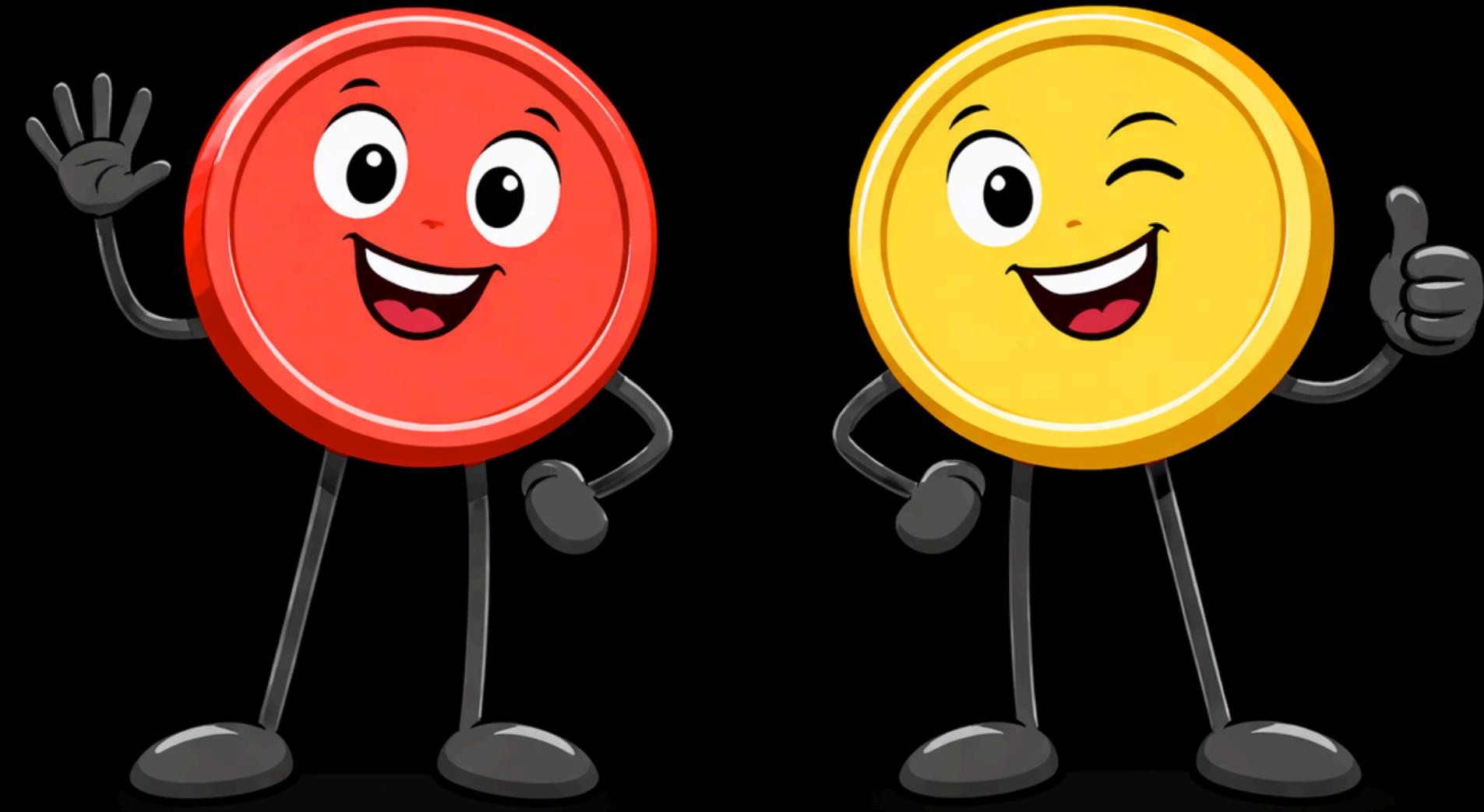


**MLP NEURAL
NETWORK**



Dipende!

Team



Tozza Gennaro Carmine

Matricola: 0512120382

Valva Lorenzo

Matricola: 0512119639

GitHub: <https://github.com/gennarocarmine/TWAI.git>

-- SLIDE DI BACKUP --

Tecnologie Utilizzate

