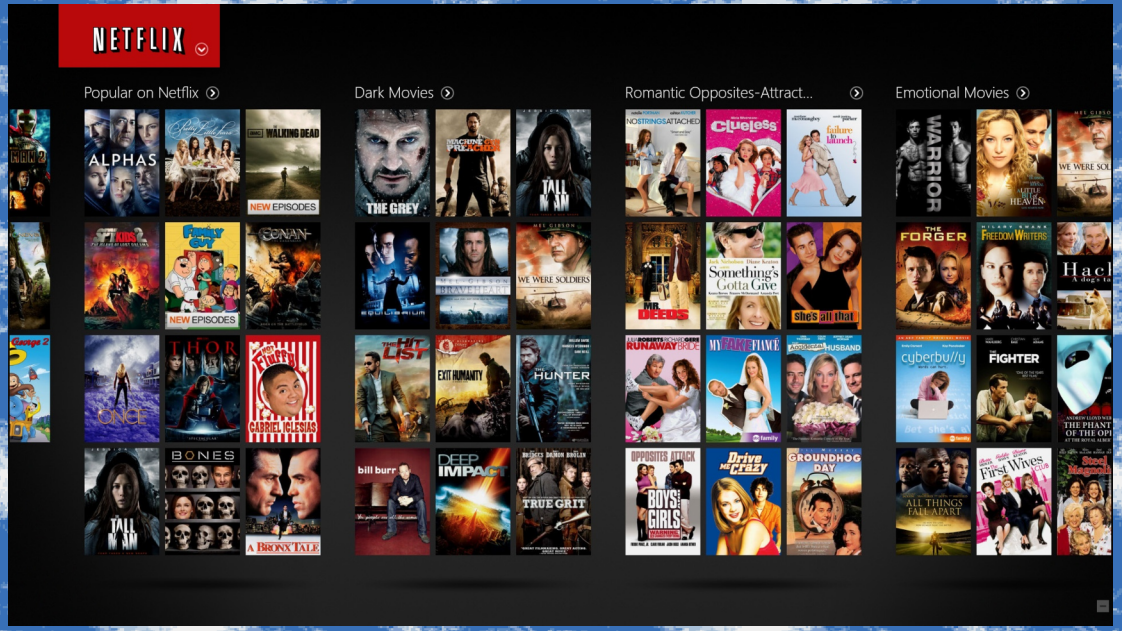
GameDelogger:

Uno strumento di predizione dei gusti di un utente in contesto videoludico

La piaga della paralisi da eccesso di contenuto



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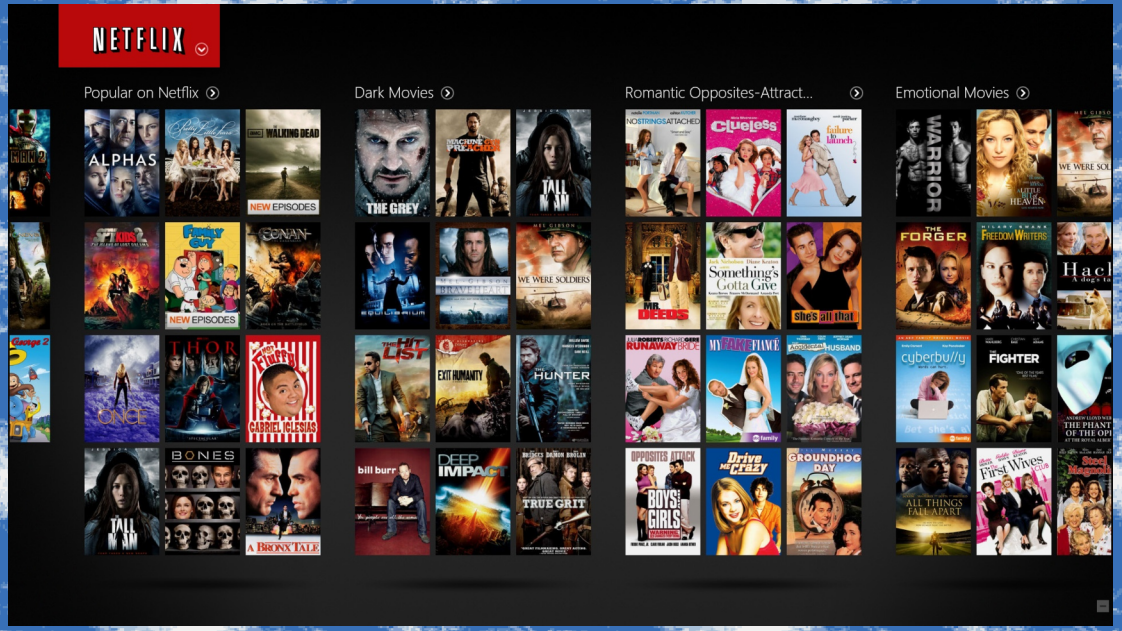

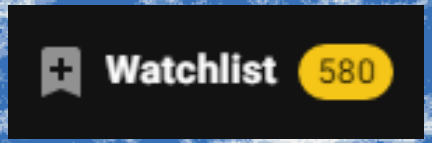

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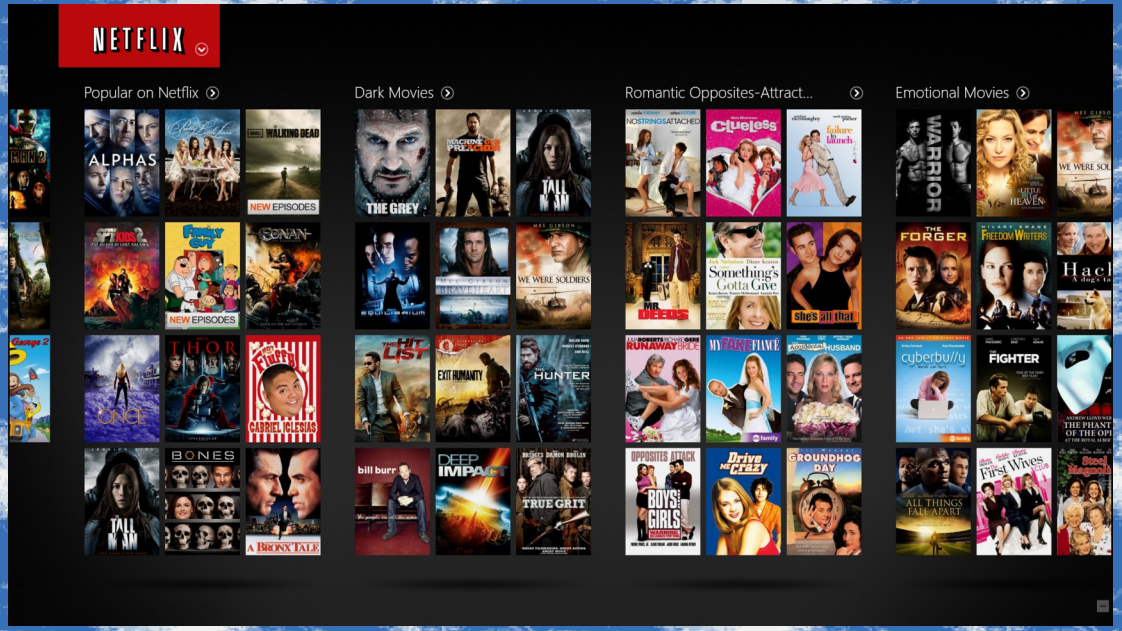

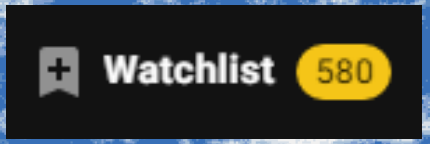

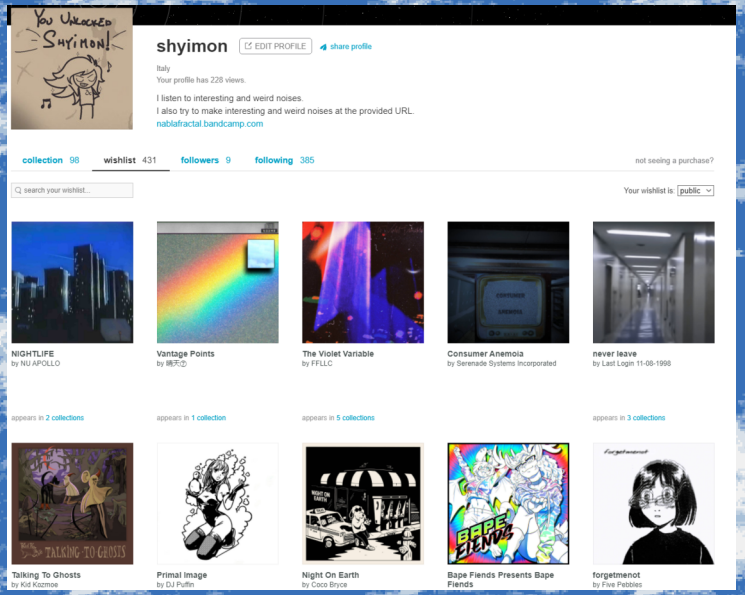

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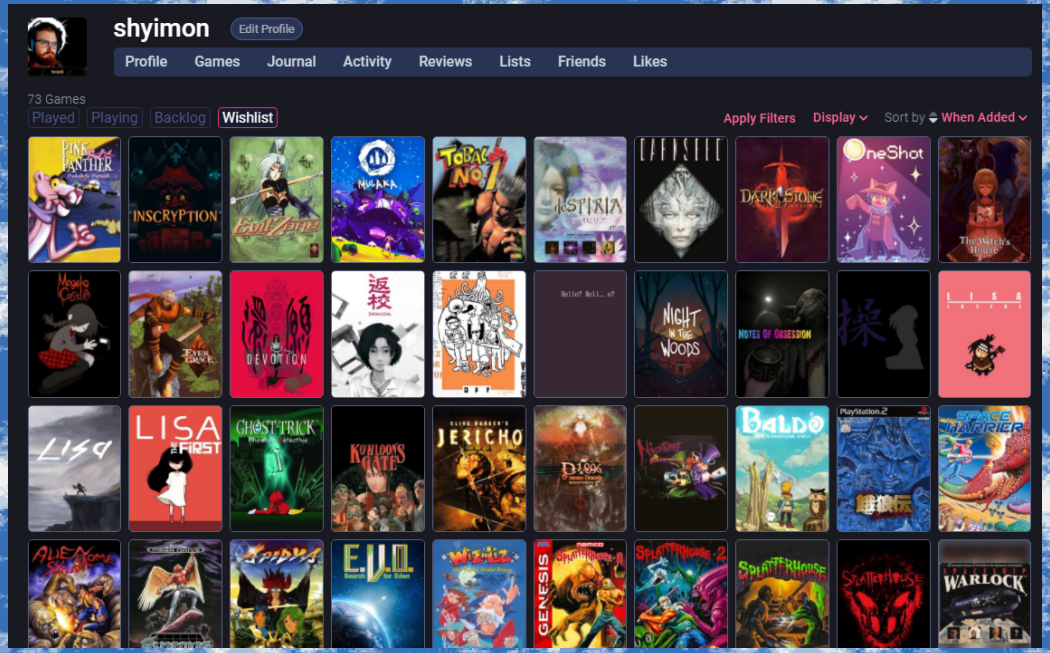

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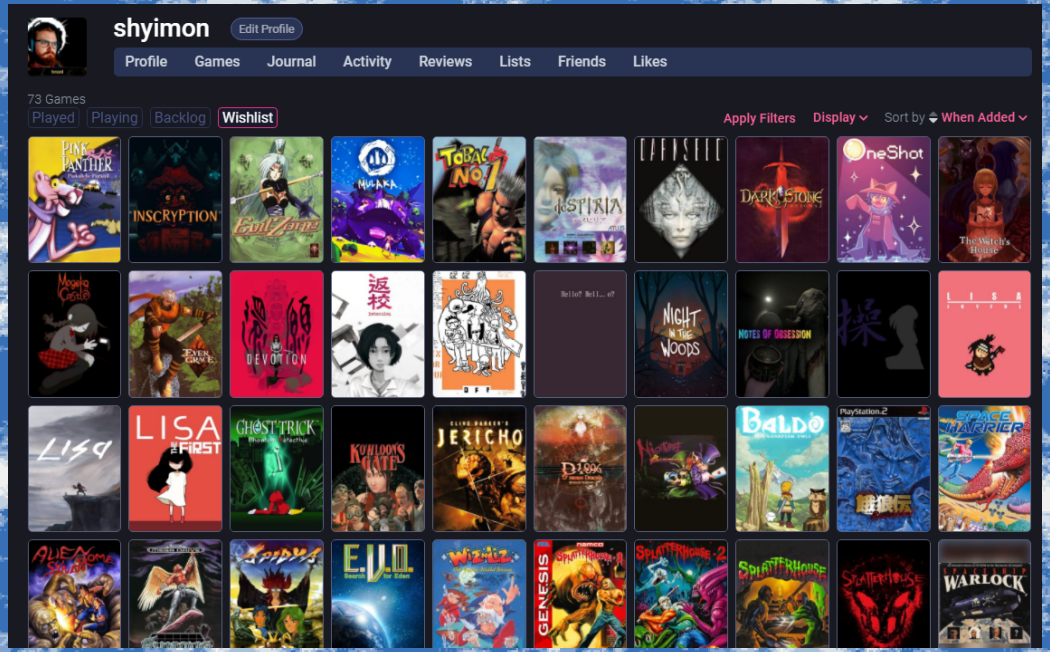

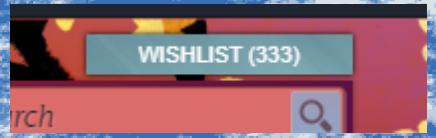

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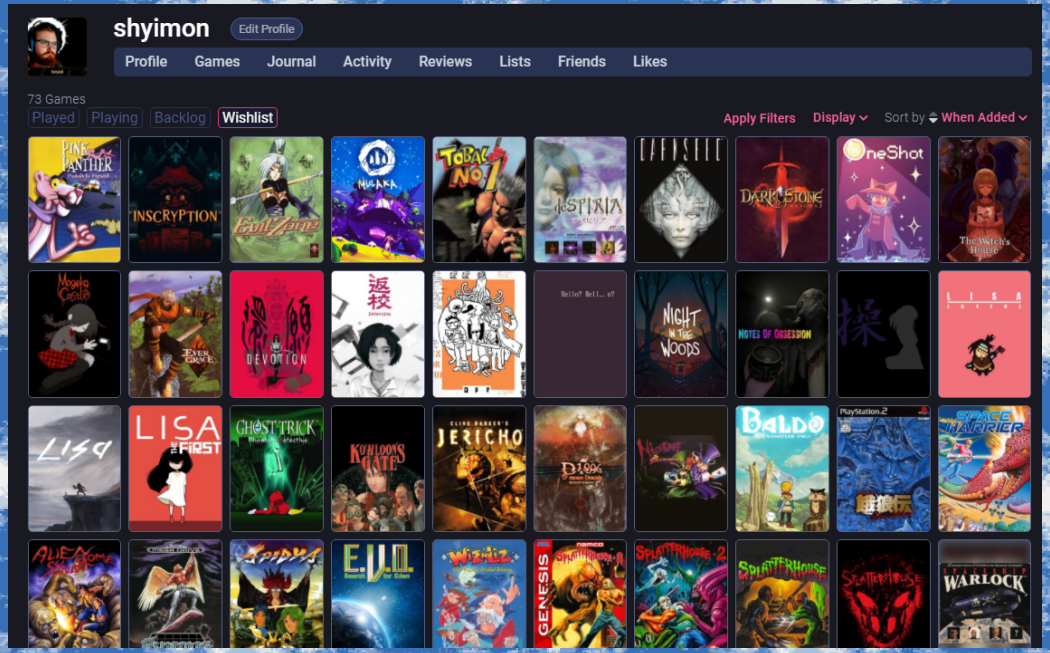
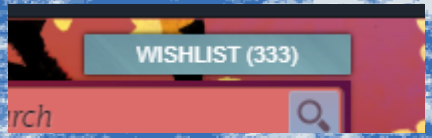
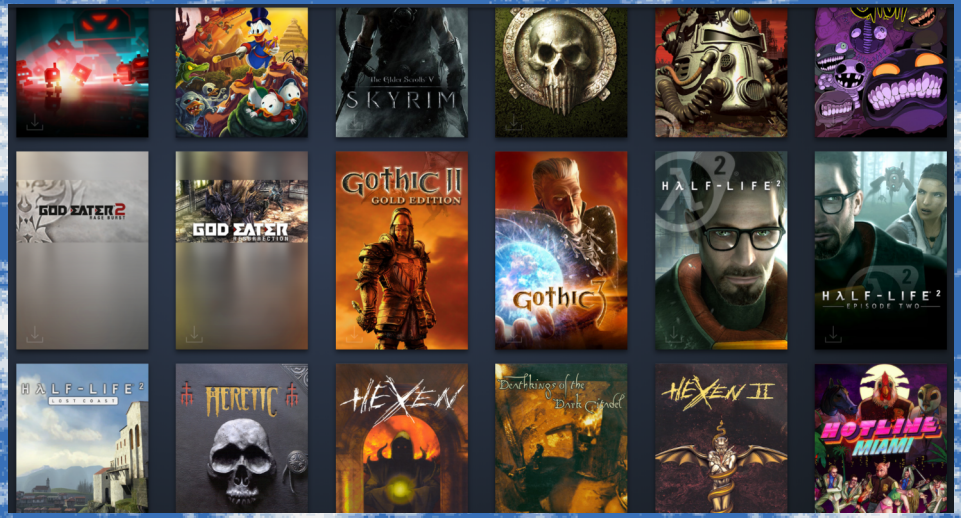
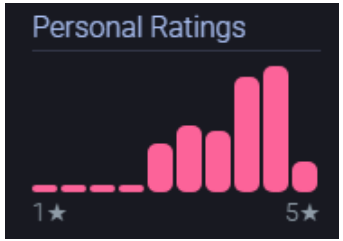




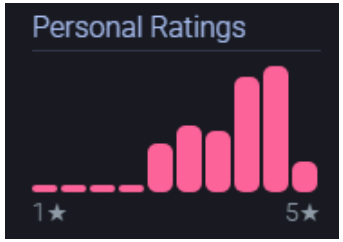


La nostra idea



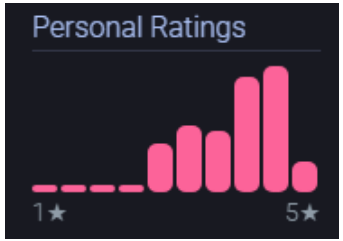
AI

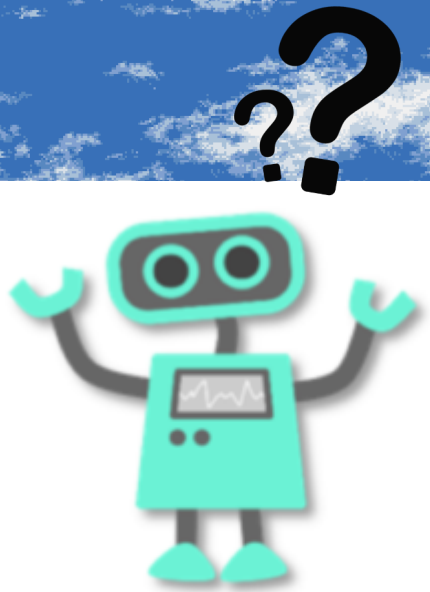
La nostra idea



Hang on!

La nostra idea





Il cambio di direzione: Come definire la similarità fra giochi?

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Il sito da cui abbiamo ricavato i dati

Submit Your Time

God of War (2018)

441 Playing | 4.9K Backlogs | 344 Replays | 1% Retired | 92% Rating | 8.7K Beat

Overview | Forum (0) | Reviews | Playing | Backlogs | Completions | Retired

Main Story	Main + Extras	Completionist	All Styles
21 Hours	32½ Hours	51 Hours	32 Hours

His vengeance against the Gods of Olympus years behind him, Kratos now lives as a man in the realm of Norse Gods and monsters. It is in this harsh, unforgiving world that he must fight to survive… and teach his son to do the same.

When focusing on the main objectives, **God of War** is about **21 Hours** in length. If you're a gamer that strives to see all aspects of the game, you are likely to spend around **51 Hours** to obtain 100% completion.

Platforms:
PC, PlayStation 4

Genres:
Third-Person, Action, Adventure, Role-Playing

Developer:
SIE Santa Monica Studio

Publisher:
Sony Interactive Entertainment

NA:
April 20, 2018

EU:
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Updated:
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Dati utili per possibili sviluppi futuri

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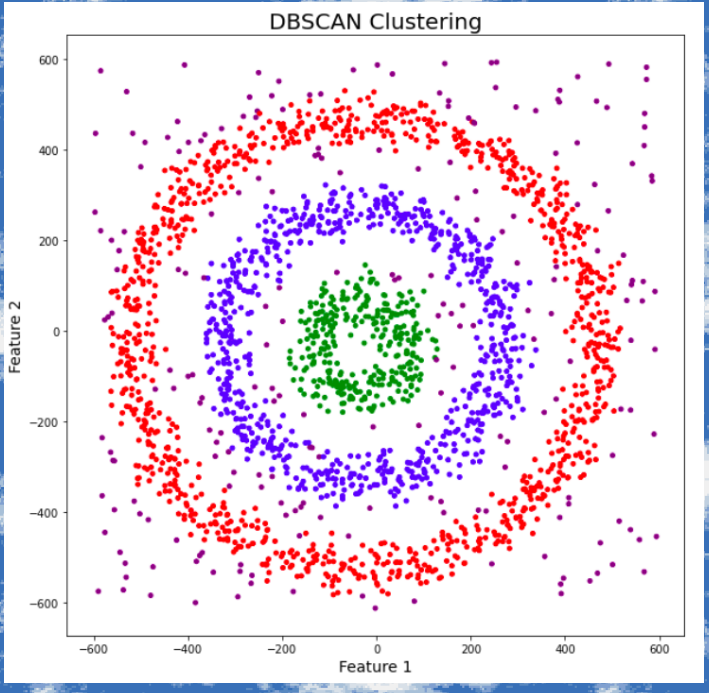
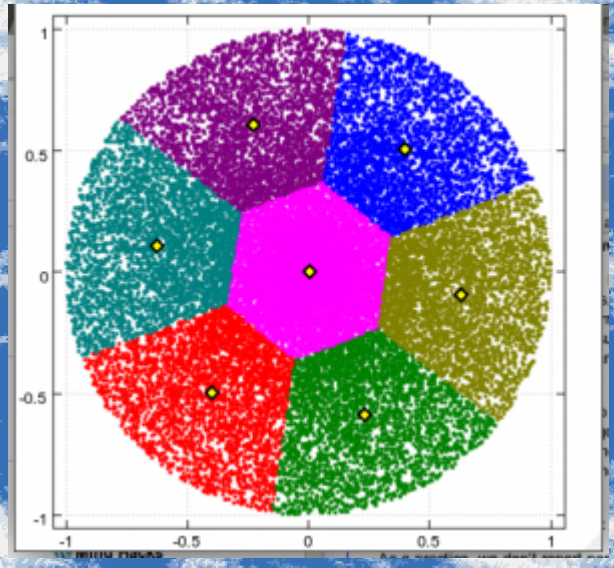
Il dataset ottenuto

name	time	generes	developer	anno
Horizon Zero Dawn - Complete Edition	55	Third-Person, Action, Adventure, Open World, Role-Playing	Guerrilla Games	2017
Star Wars Jedi: Fallen Order	21.5	Action, Adventure	Respawn Entertainment	2019
BioShock Infinite	15.5	First-Person, Action, Shooter	Irrational Games	2013
Pokémon Brilliant Diamond and Shining Pe	37	Role-Playing	ILCA	2021
Tomb Raider (2013)	15.5	Third-Person, Action, Adventure, Platform, Shooter	Crystal Dynamics, Eidos Montreal, Nixxes Software BV, United Front Games	2013
Marvel's Guardians of the Galaxy	19.5	Third-Person, Action, Adventure	Eidos Montreal	2021
Hades	45.5	Action, Roguelike, Role-Playing	Supergiant Games	2020
Shadow of the Tomb Raider	22.5	Action, Adventure	Crystal Dynamics, Eidos-Montréal	2018
It Takes Two	13.5	Action, Adventure	Hazelight	2020
Final Fantasy VII Remake	42	Third-Person, Action, Adventure, Role-Playing	Square Enix	2019
Metroid Dread	10.5	Side, Scrolling, Action, Platform	MercurySteam, Nintendo EPD	2021
Portal 2	13.5	First-Person, Platform, Puzzle	Valve Corporation	2011
Portal	5	First-Person, Platform, Puzzle	Valve Corporation	2007
Halo Infinite	17.5	First-Person, Shooter	343 Industries	2021
Grand Theft Auto V	48	First-Person, Third-Person, Action, Open World, Racing/Driving, Shooter	Rockstar North	2013
Cyberpunk 2077	59.5	First-Person, Action, Role-Playing, Shooter	CD Projekt RED	2020
Red Dead Redemption 2	79	Third-Person, Action, Adventure, Open World, Shooter	Rockstar Studios	2018
The Witcher 3: Wild Hunt	103	Third-Person, Action, Open World, Role-Playing	CD Projekt RED	2015
Hollow Knight	40	Action, Adventure	Team Cherry	2017
BioShock	15.5	First-Person, Action, Horror, Shooter	Irrational Games, 2K Marin, 2K Australia, Digital Extremes	2007
Disco Elysium	31	Adventure, Role-Playing	ZA/UM	2019
God of War (2018)	32.5	Third-Person, Action, Adventure, Role-Playing	SIE Santa Monica Studio	2018
Yakuza 0	65	Action, Adventure	Sega	2015

Prima Soluzione: Clustering

L’individuazione di cluster contenenti giochi simili sembrava adattarsi bene al nostro problema





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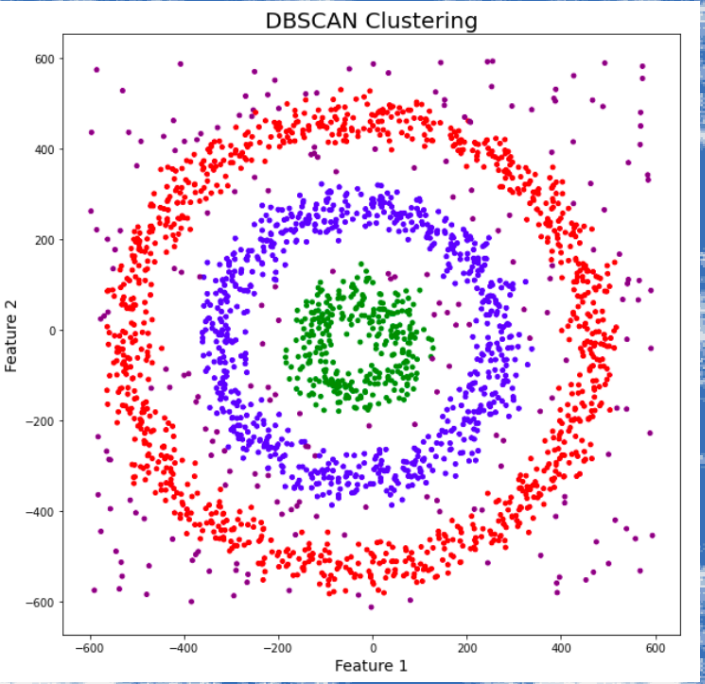

L’algoritmo DBSCAN in particolare è resistente agli outliers e a cluster non omogenei.
Ciò si adatta particolarmente bene al nostro spazio delle soluzioni.

Problema: Come definire la similarità fra i valori testuali?

Distanze di edit fra stringhe non sono d'aiuto in quanto la differenza è più semantica che testuale.

	generes	developer
	Third-Person, Action, Adventure, Open World, Role-Playing	Guerrilla Games
	Action, Adventure	Respawn Entertainment
	First-Person, Action, Shooter	Irrational Games
	Role-Playing	ILCA
	Third-Person, Action, Adventure, Platform, Shooter	Crystal Dynamics, Eidos Montreal, Nixxes Software BV, United Front Games
	Third-Person, Action, Adventure	Eidos Montreal
	Action, Roguelike, Role-Playing	Supergiant Games
	Action, Adventure	Crystal Dynamics, Eidos-Montréal
	Action, Adventure	Hazelight
	Third-Person, Action, Adventure, Role-Playing	Square Enix
	Side, Scrolling, Action, Platform	MercurySteam, Nintendo EPD
	First-Person, Platform, Puzzle	Valve Corporation
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	First-Person, Shooter	343 Industries
	First-Person, Third-Person, Action, Open World, Racing/Driving, Shooter	Rockstar North
	First-Person, Action, Role-Playing, Shooter	CD Projekt RED
	Third-Person, Action, Adventure, Open World, Shooter	Rockstar Studios
	Third-Person, Action, Open World, Role-Playing	CD Projekt RED
	Action, Adventure	Team Cherry
	First-Person, Action, Horror, Shooter	Irrational Games, 2K Marin, 2K Australia, Digital Extremes
	Adventure, Role-Playing	ZA/UM
	Third-Person, Action, Adventure, Role-Playing	SIE Santa Monica Studio
	Action, Adventure	Sega

Problema: Come definire la similarità fra i valori testuali?

E soprattutto, come possiamo posizionare su un piano un singolo gioco?
Esso acquisisce significato solo se rapportato ad altri giochi.

	generes
	Third-Person, Action, Adventure, (
	Action, Adventure
	First-Person, Action, Shooter
	Role-Playing
	Third-Person, Action, Adventure, F
	Third-Person, Action, Adventure
	Action, Roguelike, Role-Playing
	Action, Adventure
	Action, Adventure
	Third-Person, Action, Adventure, F
	Side, Scrolling, Action, Platform
	First-Person, Platform, Puzzle
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	First-Person, Third-Person, Action
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	Third-Person, Action, Adventure, (
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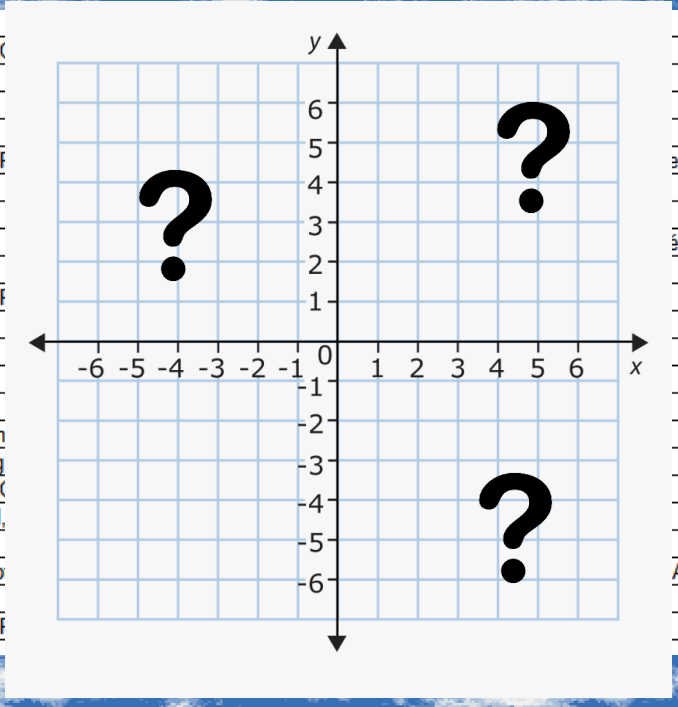

eal, Nixxes Software BV, United Front Games
éal
Australia, Digital Extremes

Problema: Come definire la similarità fra i valori testuali?

Dovremmo definire una distanza custom da calcolare per ogni coppia di elementi. Questo oltre a essere fonte di inefficienza, sembrerebbe più adatto a tecniche di regressione.

	generes	
	Third-Person, Action, Adventure, (	
	Action, Adventure	
	First-Person, Action, Shooter	
	Role-Playing	
	Third-Person, Action, Adventure, F	eal, Nixxes Software BV, United Front Games
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	Action, Adventure	éal
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	Third-Person, Action, Adventure, F	
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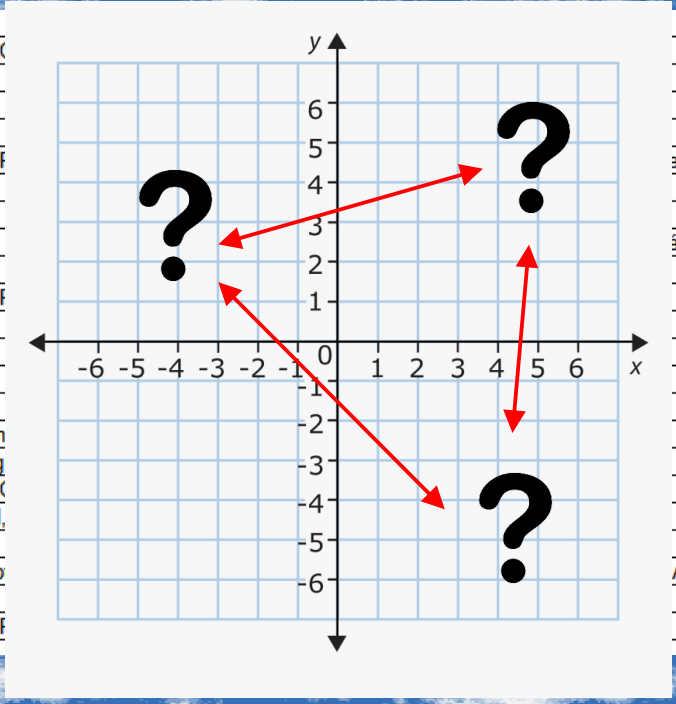


Seconda Soluzione: Regressione

La definizione della similarità di una coppia di giochi come valore predetto dalle sue caratteristiche è una soluzione intuitiva e più semplice della precedente.

predittore1

predittore2

predittore3

= 3

La definizione della similarità di una coppia di giochi come valore predetto dalle sue caratteristiche è una soluzione intuitiva e più semplice della precedente.

Come possiamo però addestrare questo modello?
I valori noti non sono in nessun dataset noto e ottenerli tramite reinforcement learning sarebbe ottimale quanto impossibile nel contesto del nostro progetto.

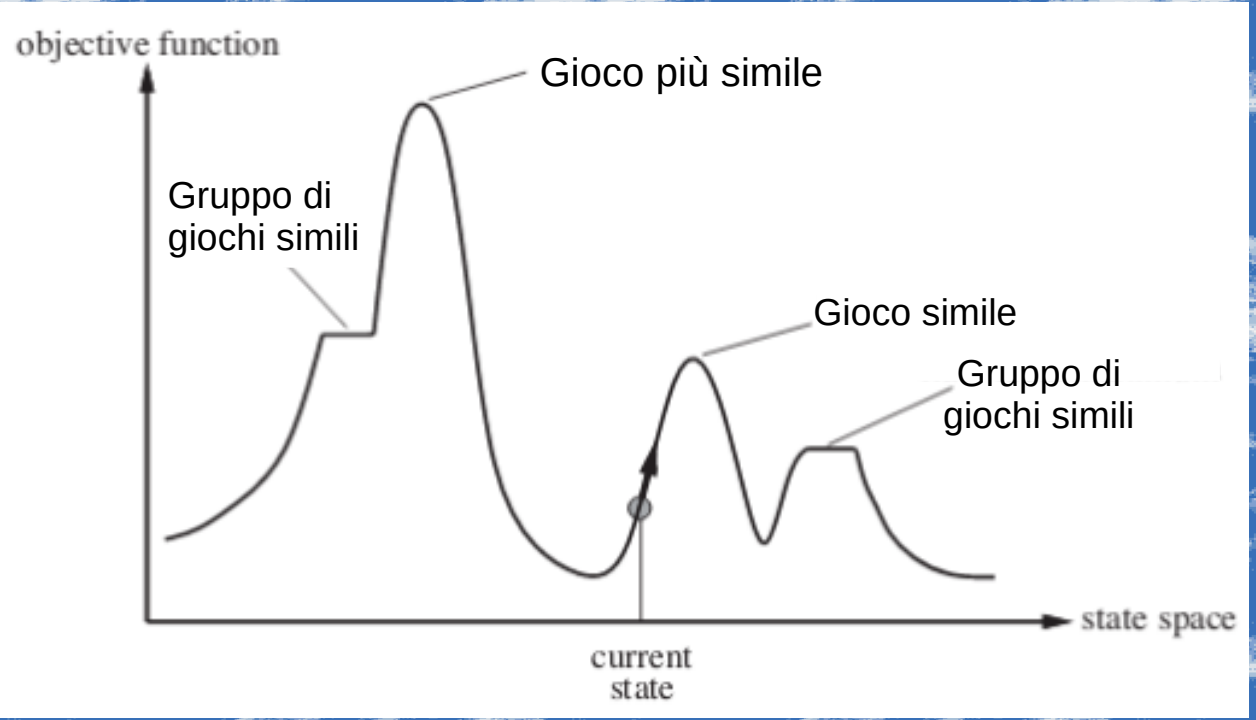
La definizione della similarità di una coppia di giochi come valore predetto dalle sue caratteristiche è una soluzione intuitiva e più semplice della precedente.

Dovremmo dunque fare delle assunzioni che ci porterebbero a definire una semplice equazione, rimuovendo la componente di apprendimento (in quanto ci mancano i dati da cui apprendere in primo luogo).

Terza Soluzione:
Algoritmi di Ricerca

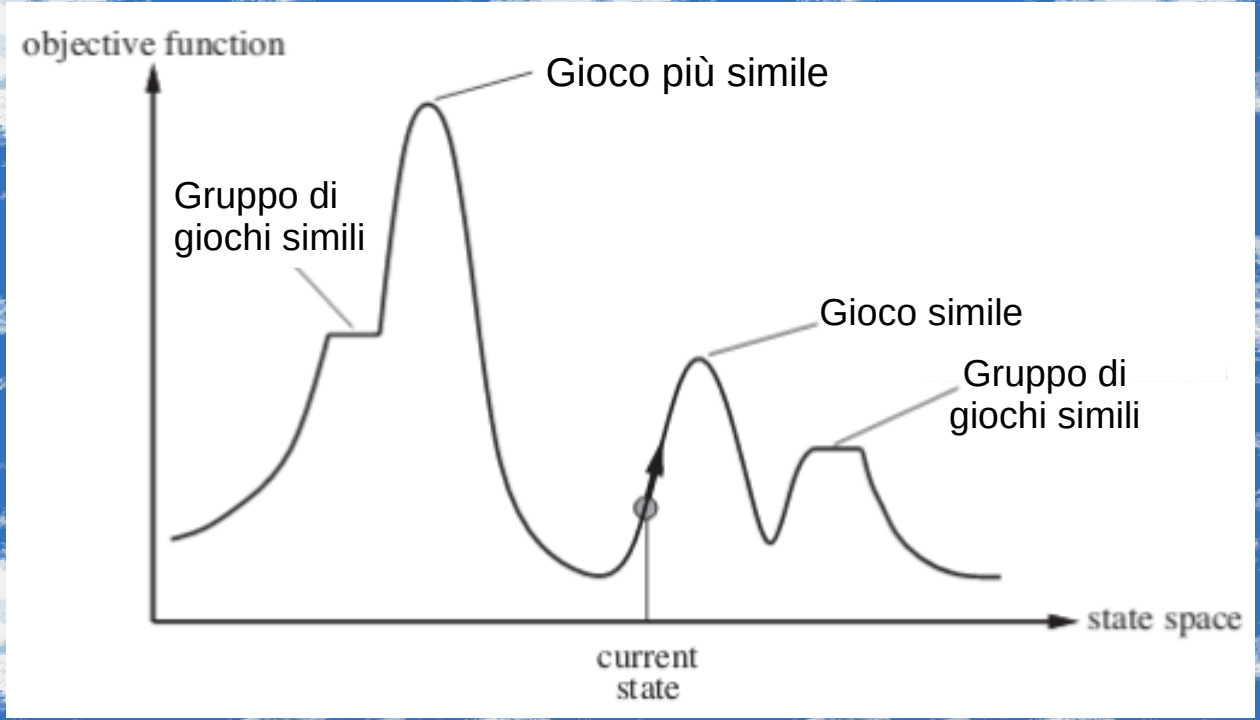
Ricerca Locale: Come abbiamo adattato lo spazio delle soluzioni al nostro ambiente

Sarebbe di nostro interesse restituire gli ottimi locali, in modo da avere un gruppo di giochi simili ma non identici a quelli graditi dall'utente



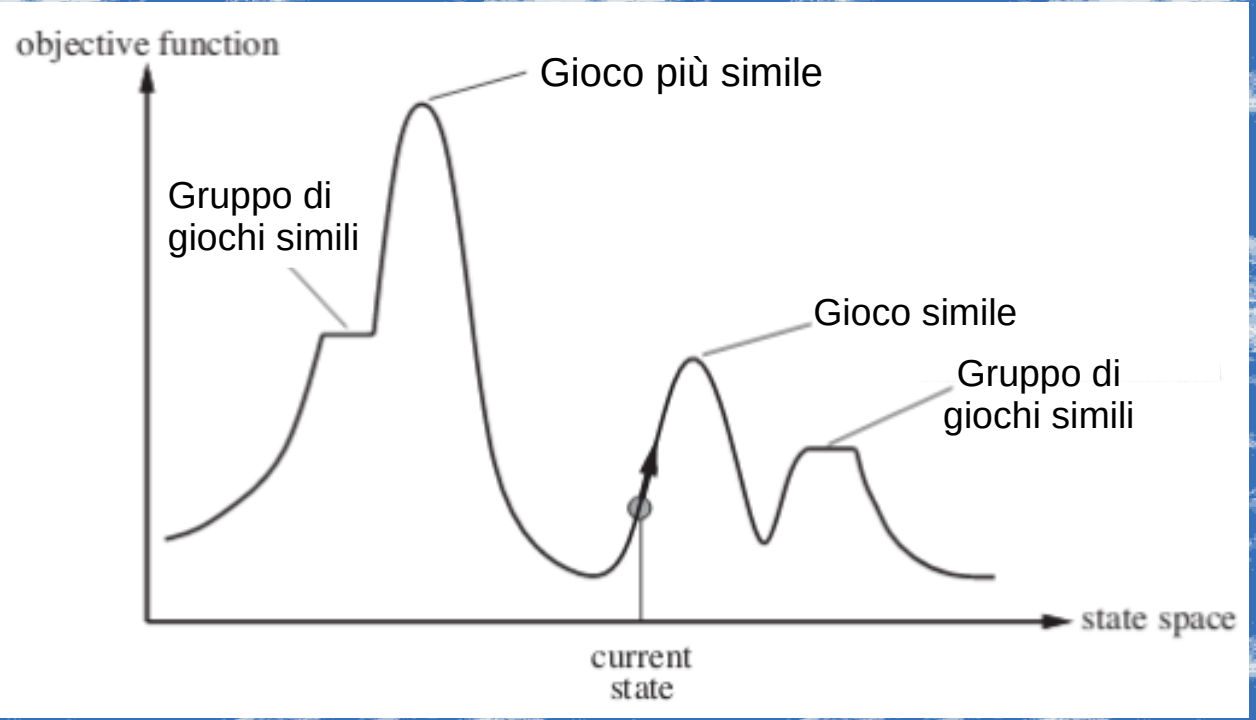
Ricerca Locale: Come abbiamo adattato lo spazio delle soluzioni al nostro ambiente

Una tecnica ottimale per trovare multipli obiettivi sub-ottimi è quella degli algoritmi genetici.



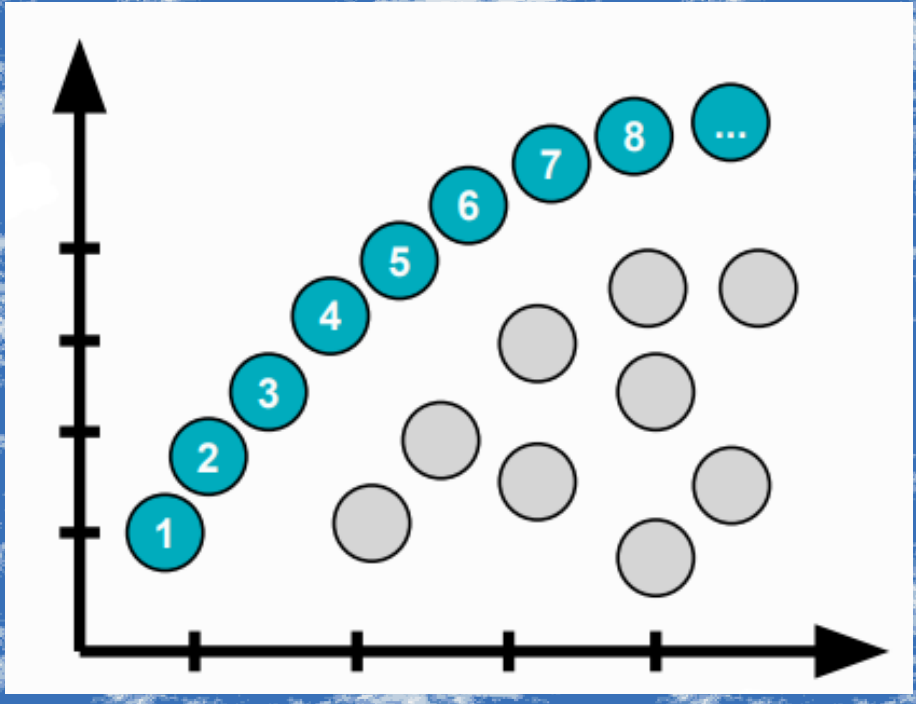
Ricerca Locale: Come abbiamo adattato lo spazio delle soluzioni al nostro ambiente

Questo è palesemente un problema di ottimizzazione multi-obiettivo.



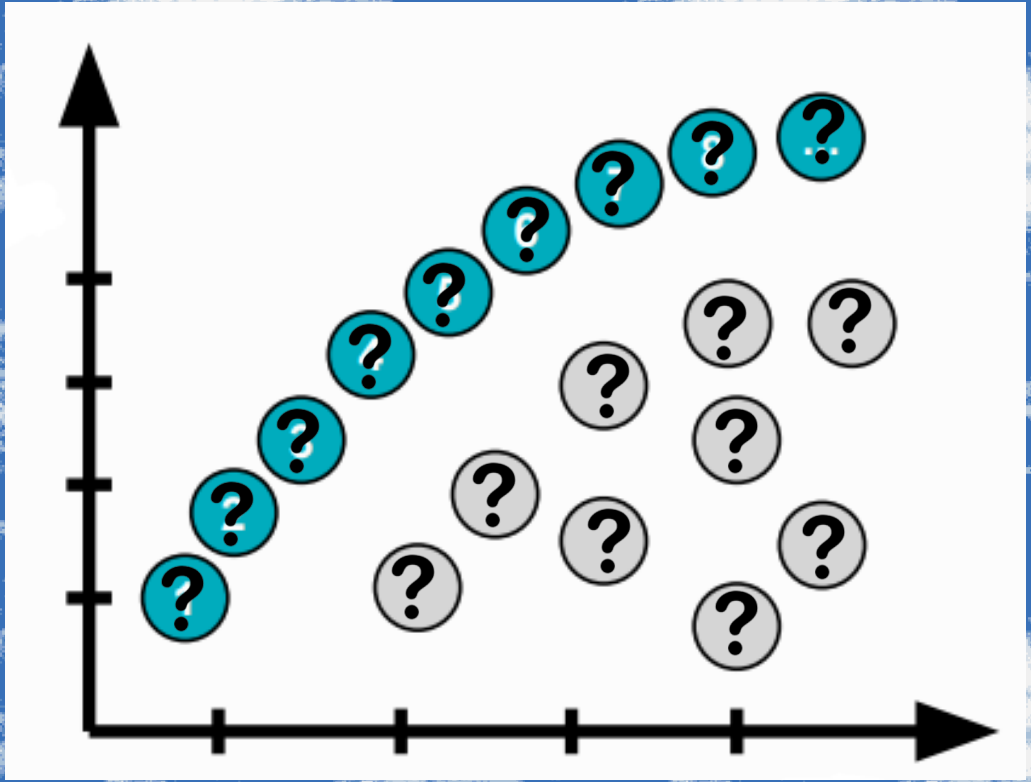
Ricerca Locale: Come abbiamo adattato lo spazio delle soluzioni al nostro ambiente

Ciò si sposa bene con il tipo di insieme che vogliamo restituire: Possiamo infatti restituire individui appartenenti al fronte di Pareto.



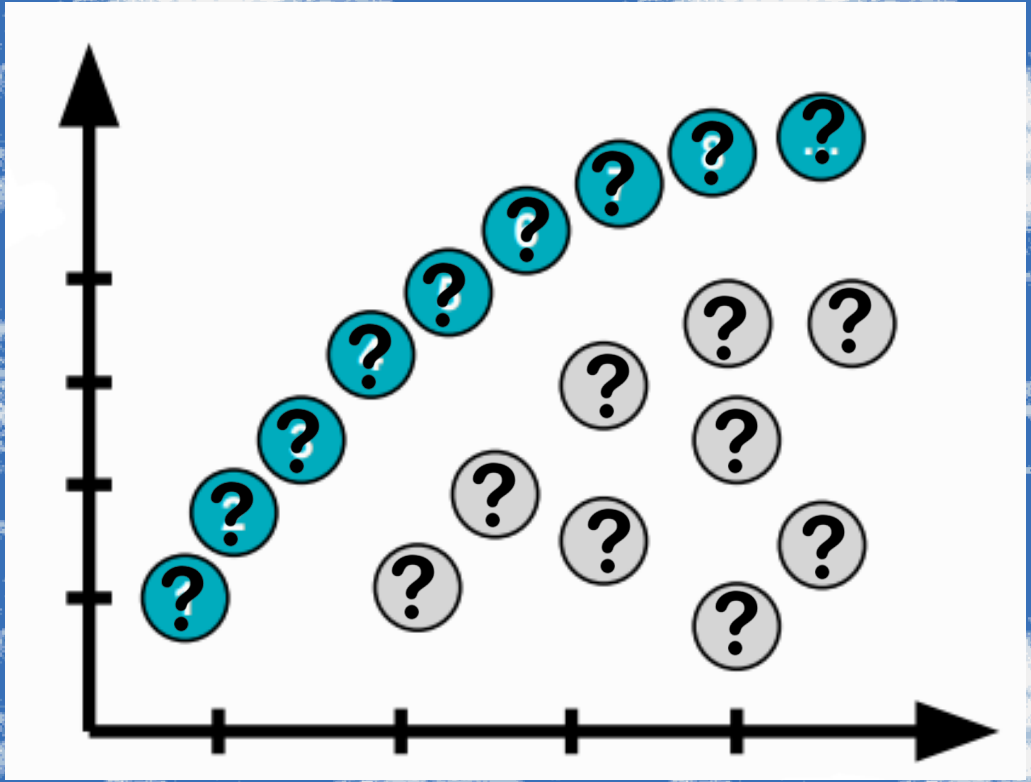
Problemi relativi agli Algoritmi Genetici

Come possiamo definire operazioni di crossover e mutazione su individui pre-esistenti?



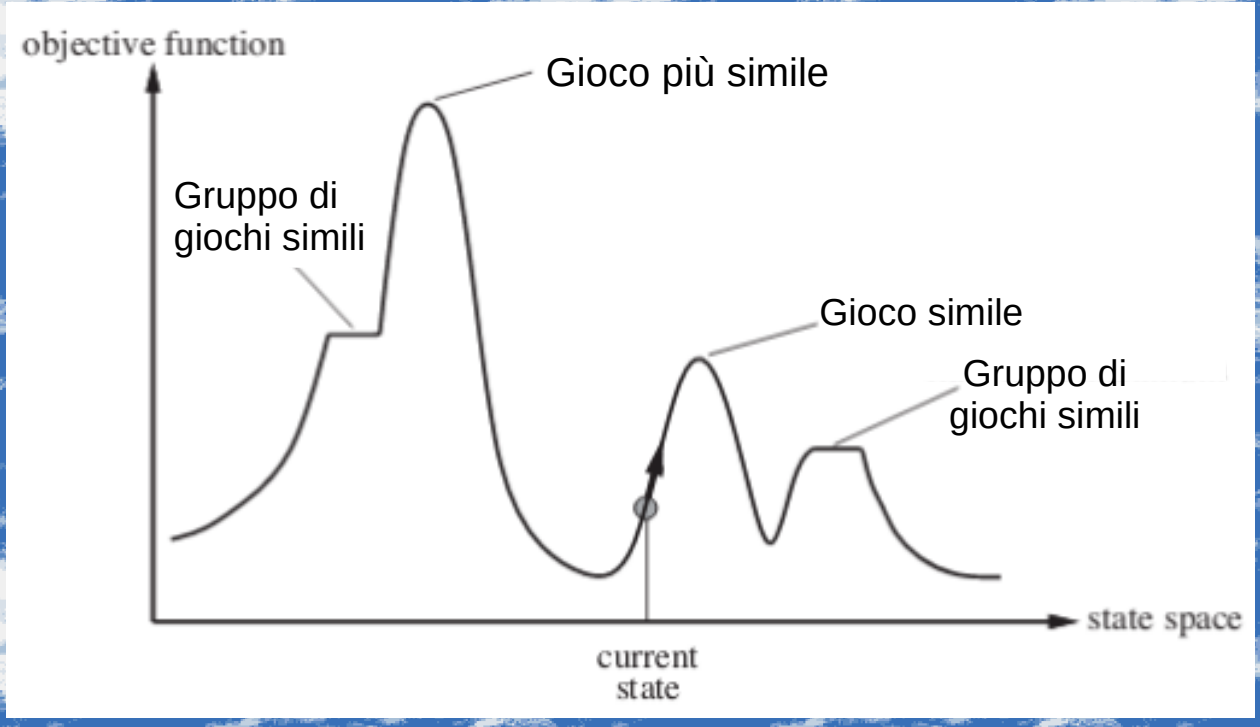
Problemi relativi agli Algoritmi Genetici

Le limitazioni che andremmo a imporre per far restare i nuovi individui nel dominio delle soluzioni sarebbero limitanti nei confronti dell'algoritmo.



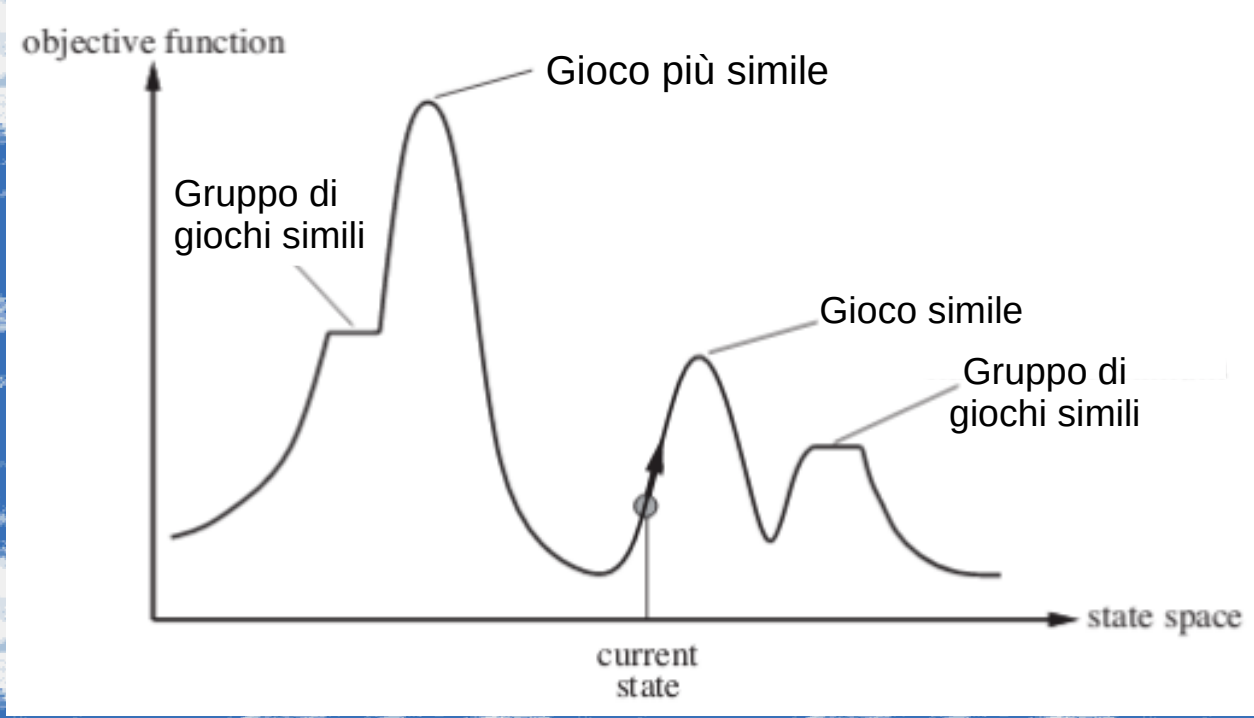
Problemi relativi agli Algoritmi Genetici

Problemi riscontrati in precedenza si ripresenterebbero qualora andassimo a considerare un algoritmo di ricerca locale: le similarità fra generi e sviluppatori renderebbero estremamente irregolare lo spazio delle soluzioni.



Problemi relativi agli Algoritmi Genetici

Pur supponendo di riuscire a stabilire un grado di similarità, incorriamo in un ulteriore problema: non potremmo migliorare iterativamente la soluzione.



Conclusioni e possibili sviluppi futuri

Una soluzione più semplice

$$simGiochi = w(simD) + x(simA) + y(simG) + z(simS)$$

Come abbiamo detto, una semplice equazione può fare le veci di un Agente Intelligente in maniera più efficiente e compresibile.

Il risultato è una semplice somma pesata, in cui andiamo a definire i quattro valori di similarità come segue:

Una soluzione più semplice

$$simD(gioco_1, gioco_2) = \frac{min(durataGioco_1, durataGioco_2)}{max(durataGioco_1, durataGioco_2)}$$

Una soluzione più semplice

$$simD(gioco_1, gioco_2) = \frac{min(durataGioco_1, durataGioco_2)}{max(durataGioco_1, durataGioco_2)}$$

$$simA(gioco_1, gioco_2) = \frac{min(annoGioco_1, annoGioco_2) - minAnno}{max(annoGioco_1, annoGioco_2) - minAnno}$$

Una soluzione più semplice

$$simD(gioco_1, gioco_2) = \frac{min(durataGioco_1, durataGioco_2)}{max(durataGioco_1, durataGioco_2)}$$

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$$simG(gioco_1, gioco_2) = \frac{numGeneriInComune}{max(numGeneriGioco_1, numGeneriGioco_2)}$$

Una soluzione più semplice

$$simD(gioco_1, gioco_2) = \frac{min(durataGioco_1, durataGioco_2)}{max(durataGioco_1, durataGioco_2)}$$

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$$simG(gioco_1, gioco_2) = \frac{numGeneriInComune}{max(numGeneriGioco_1, numGeneriGioco_2)}$$

Definita in maniera booleana come $simS$

Una soluzione più semplice

$$simGiochi = w(simD) + x(simA) + y(simG) + z(simS)$$

Tutti i valori di similarità, per come sono stati definiti, sono compresi fra 0 e 1.

Di conseguenza se poniamo

$w + x + y + z = 1$

Abbiamo $simGiochi$ compreso fra 0 e 1.

Possibili sviluppi del progetto

$$simGiochi = w(simD) + x(simA) + y(simG) + z(simS)$$

Questa soluzione, nonostante sia più semplice, resta parziale, a causa di una mancanza di dati irrisolvibile con gli strumenti a disposizione.

Proponiamo quindi due modi ideali di ultimare il progetto, uno dei quali fa uso di strumenti di Intelligenza Artificiale, l'altro no.

Possibili sviluppi del progetto

$$simGiochi = w(simD) + x(simA) + y(simG) + z(simS)$$

Un'analisi di mercato potrebbe suggerire i valori delle quattro variabili. Questo darebbe una soluzione immutabile e non legata a nessun utente specifico.

In alternativa potremmo trasformare la funzione di similarità in una funzione di affinità.
In questo caso le quattro variabili verrebbero calcolate in base al feedback utente.

ANIELLO PIO LA PIETRA
ANTONIO IODICE
COSIMO BOTTICELLI