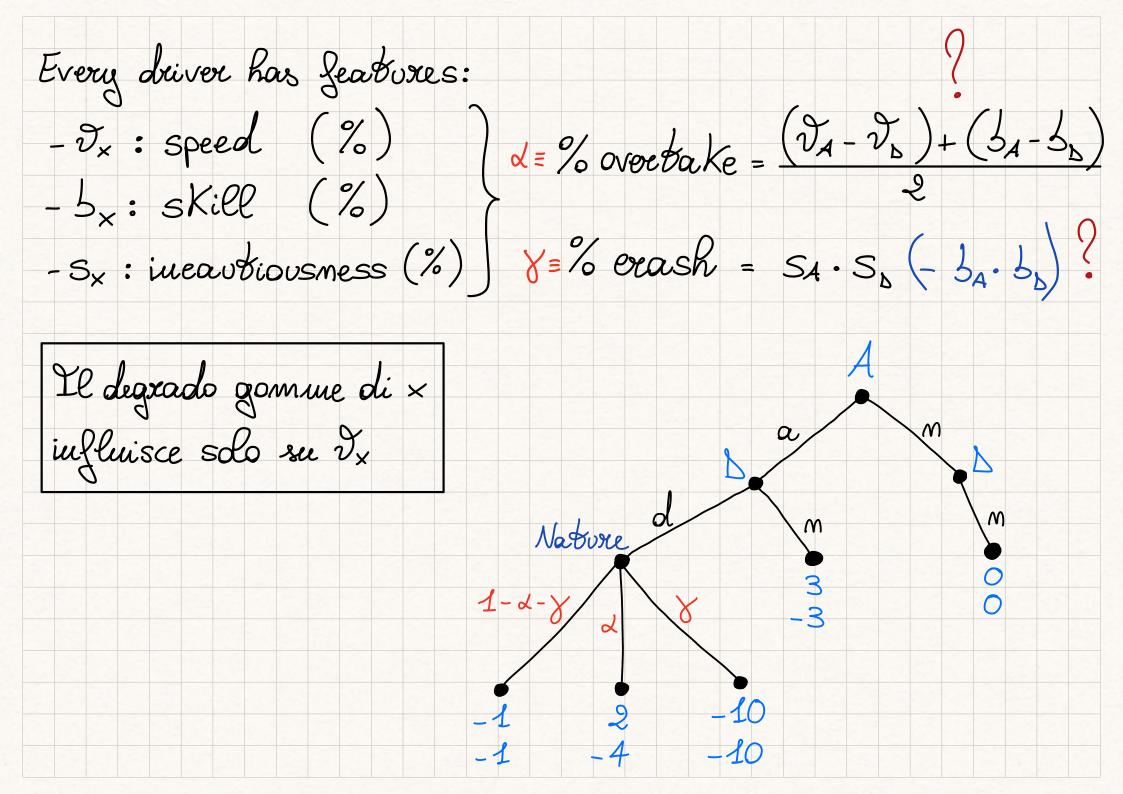Simulatore che ad ogni iterazione usa concetti di Game Theory.

Andamento della complessità al variare del numero di piloti e/o di giri.

Attacker (A) can :

o attack (if higher or equal speed) ⓐ

o nothing (if slower) ⓜ

Defender (D) can :

• defend ⓓ

• nothing (if much slower) ⓜ

— a or d $\Rightarrow$ tyre wear $\Rightarrow \mu_A = \mu_D = -1$

and slower lap

— overtake $\Rightarrow \mu_A = -\mu_D = 3$ (qui si potrebbero usare gli effettivi punti relativi alla posizione in griglia)

- crash $\to \mu_x = -10 \; \forall x$ (oppure, anche qui, i punti persi)

$* \; ad \Rightarrow \begin{cases} \text{overtake} & \to \mu_A = 2 \; ; \; \mu_D = -4 \\ \text{nothing} & \to \mu_A = -1 \; ; \; \mu_D = -1 \\ \text{crash} & \to \mu_A = -10 \; ; \; \mu_D = -10 \end{cases}$

$* \; am \Rightarrow \mu_A = +3 \; , \; \mu_D = -3$

$* \; mm \Rightarrow \mu_A = \mu_D = 0$

Every driver has features:

- ϑ_x : speed (%)
- b_x : skill (%)
- s_x : incautiousness (%)

$\alpha \equiv \%\ \text{overtake} = \dfrac{(\vartheta_A - \vartheta_D) + (b_A - b_D)}{2}$?

$\gamma \equiv \%\ \text{crash} = s_A \cdot s_D \left(- b_A \cdot b_D\right)$?

Il degrado gomme di x influisce solo su ϑ_x

If A plays "a", when does B play "d" ?

I have two ideas:

~~1)~~ B plays "d" only if $1-\alpha-\gamma \geqslant \delta$ (e.g. $1-\alpha-x \geqslant 30\%$; we could introduce another parameter that describe how "brave" each driver is, so that δ depend on it)

2) We compute the weighted average payoff of playing "d"

The right thing to do is to compute the average payoff, since all depends on casuality and no player moves after Nature's choice.

Other ideas to complicate things:

if "too many failed overtake" => try undercut => PIT-STOP
$$\Downarrow$$
-x positions

if "too much tyre wear" => PIT-STOP => -x positions

Probabilità Pit-Stop sbagliato   Utility
$$\downarrow$$
Rientrare o no ? < Quello davanti é lento —> Tempo sul giro
                    Undercut

Modellizzare il fatto che con meno carburante =>
=> piú velocità