SOFT COMPUTING

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Indice

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In today's lesson we will see some typical problems.

es. Cruise control.
The problem consist of a given car that:

- has a goal speed as defined;
- wants to stay away from front vehicle.

Lets analyze the possible variable we can have and try to give them a range of possible values:

- V_{des} = desired speed $[km/h]$.
- $DIST$ = distance from front vehicle $[m]$: we hypothesize this variable from $0m$ as a "danger" zone, followed by an "alert" range from $10m$ and $70m$, and, finally, the "safe" zone of $200m$.
- V_{curr} = current velocity $[km/h]$: we hypothesize this variable from 0 to the maximum speed of the car. Analyzing this variable we notice that the $DIST$ variable depends from the current velocity, the danger, safe and alert ranges depends on speed. Because of this problem we introduce three new variable:
- S_{dist} = safety distance $[m] = kV_{curr}$ (this function is just an idea..).
- $\Delta DIST = DIST - S_{dist}[m]$: lets say this variable's range goes from -200 to 50.
- $\Delta VEL = V_{curr} - V_{des}[km/h]$: we hypothesize that our system won't accept values out of the range going from -15 to $+15$.

[another example of a robot that needs to follow a trajectory..]

[another example of a robot that needs to reach a goal, but with an obstacle in the way]

[another example of a job assignment decision problem]