



Veicoli automatici
L'importanza di dare un significato
ad un termine ormai noto

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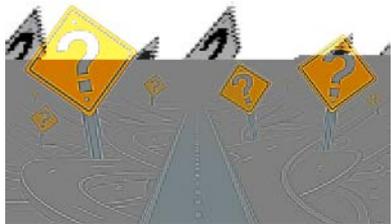
Venerdì 2 febbraio 2018



Argomenti



Che cos'è un veicolo autonomo



Livello di automazione e roadmap



Benefici, rischi ed aspetti etici



Che cos'è un veicolo autonomo



Livello di automazione e roadmap



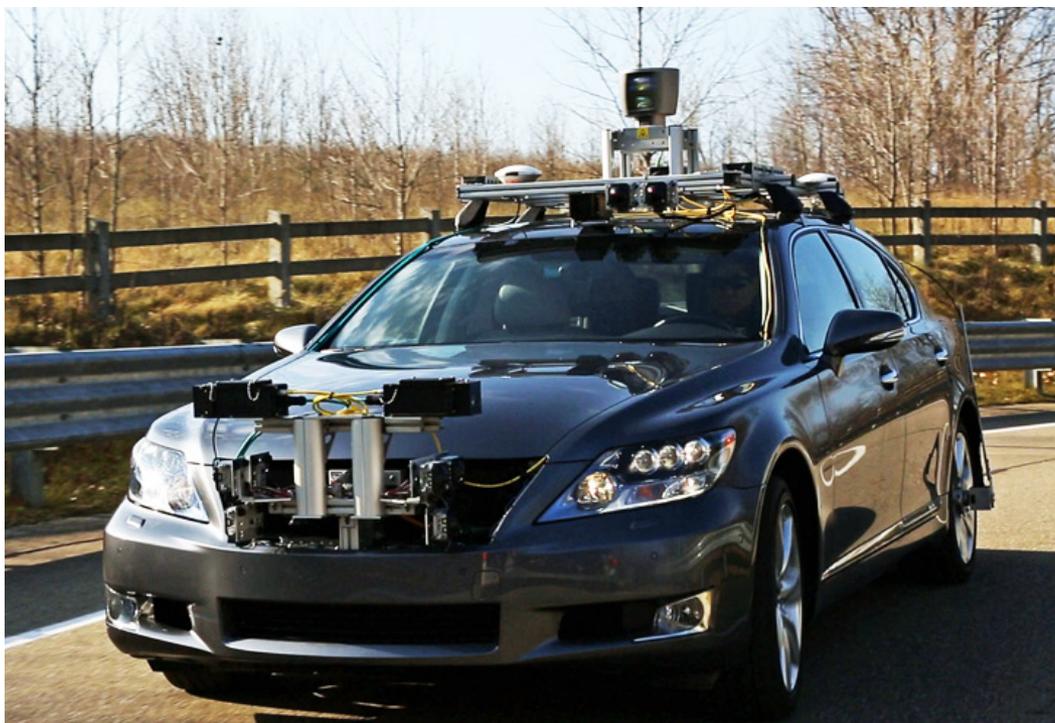
Benefici, rischi ed aspetti etici

Veicolo autonomo

Automated car

Autonomous car

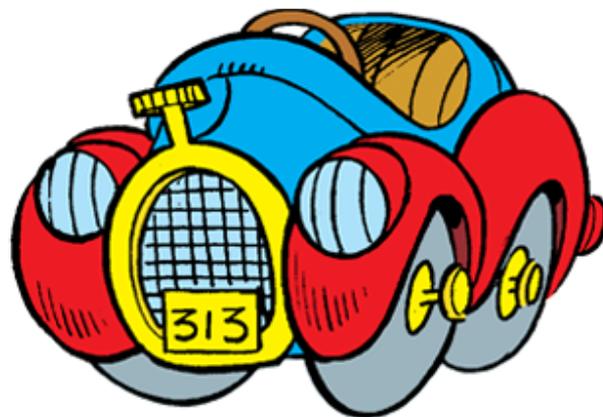
Driverless car



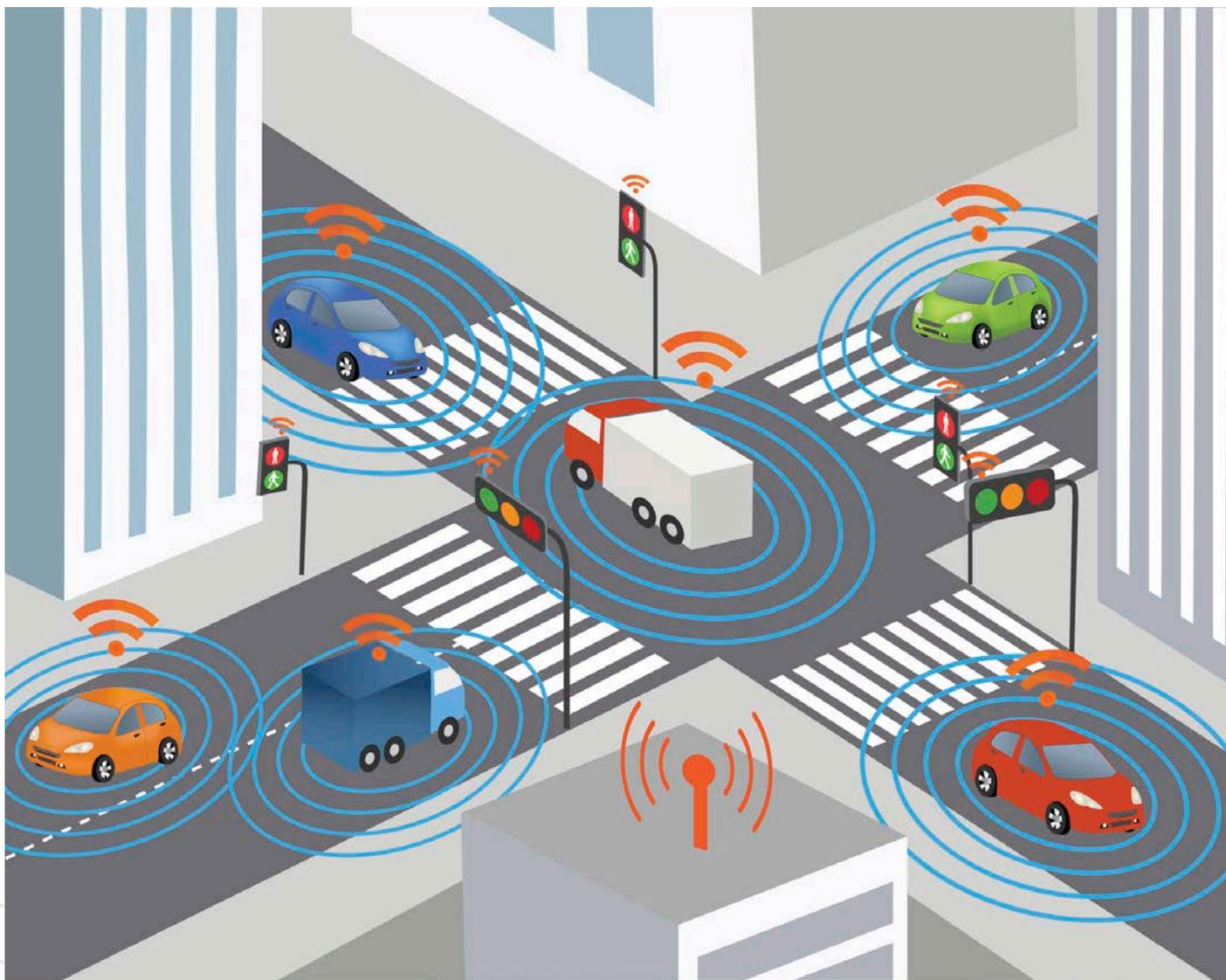
Robotic car

Self-driving car

Cos'è un veicolo autonomo?



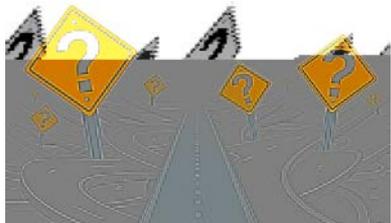
Cos'è un veicolo autonomo?



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SAE standard J3016

SAE level	Name	Narrative Definition	Execution of Steering and Acceleration/Deceleration	Monitoring of Driving Environment	Fallback Performance of Dynamic Driving Task	System Capability (Driving Modes)
Human driver monitors the driving environment						
0	No Automation	the full-time performance by the <i>human driver</i> of all aspects of the <i>dynamic driving task</i> , even when enhanced by warning or intervention systems	Human driver	Human driver	Human driver	n/a
1	Driver Assistance	the <i>driving mode</i> -specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	Human driver and system	Human driver	Human driver	Some driving modes
2	Partial Automation	the <i>driving mode</i> -specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the <i>human driver</i> perform all remaining aspects of the <i>dynamic driving task</i>	System	Human driver	Human driver	Some driving modes
Automated driving system ("system") monitors the driving environment						
3	Conditional Automation	the <i>driving mode</i> -specific performance by an <i>automated driving system</i> of all aspects of the dynamic driving task with the expectation that the <i>human driver</i> will respond appropriately to a <i>request to intervene</i>	System	System	Human driver	Some driving modes
4	High Automation	the <i>driving mode</i> -specific performance by an automated driving system of all aspects of the <i>dynamic driving task</i> , even if a <i>human driver</i> does not respond appropriately to a <i>request to intervene</i>	System	System	System	Some driving modes
5	Full Automation	the full-time performance by an <i>automated driving system</i> of all aspects of the <i>dynamic driving task</i> under all roadway and environmental conditions that can be managed by a <i>human driver</i>	System	System	System	All driving modes

Argomenti



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Benefici, rischi ed aspetti etici

Opportunità



Riduzione congestione da traffico
(guida più uniforme)



Migliore efficienza energetica
(consumi, costi, ambiente)

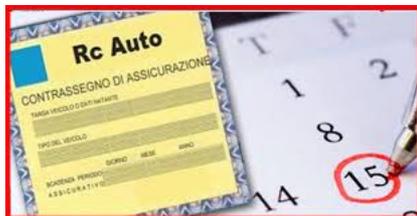
Opportunità



Riduzione # incidenti



Riduzione costi sociali



RIDUZIONE COSTI ASSICURATIVI

Auto privata → Auto condivisa



- Malfunzionamento
- Interazione tra veicoli autonomi e tradizionali
- Funzionamento in tutte le condizioni ambientali?
- Infrastruttura (V2I)
- Aumento del traffico
- Interazione uomo-macchina (SAE level 3)

Rischi



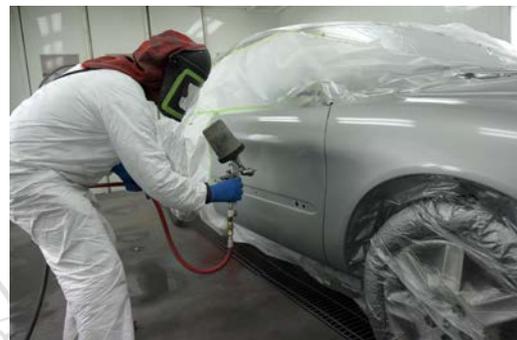
Rischi



Eliminazione guidatori
professionali



Meno lavoro per le assicurazioni



Meno lavoro per i carrozzieri

Rischi



Privacy: V2V and V2I

Attacchi hacker



Attacchi terroristici

Accettabilità

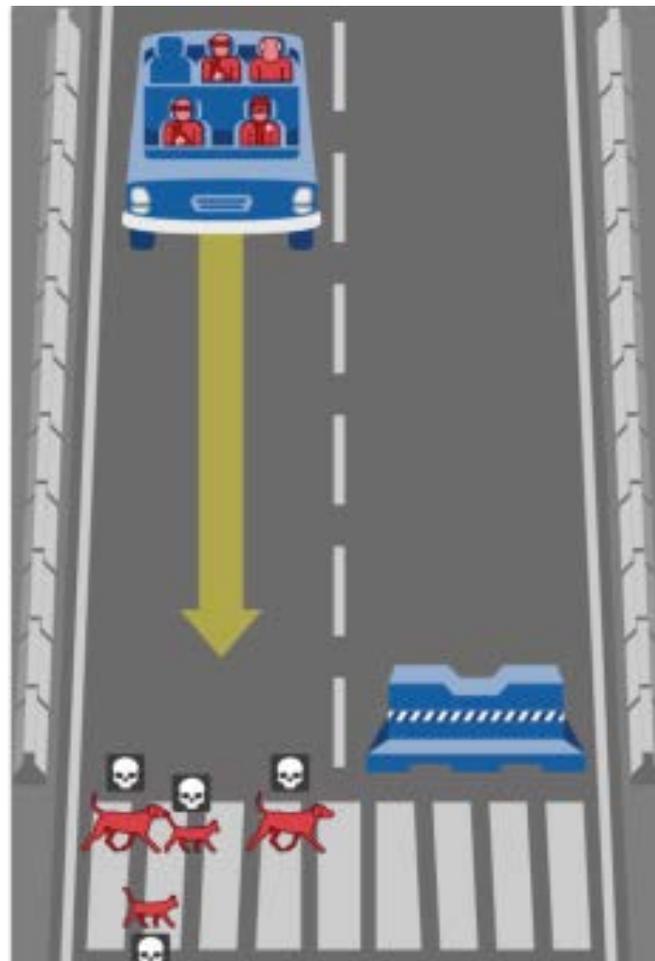
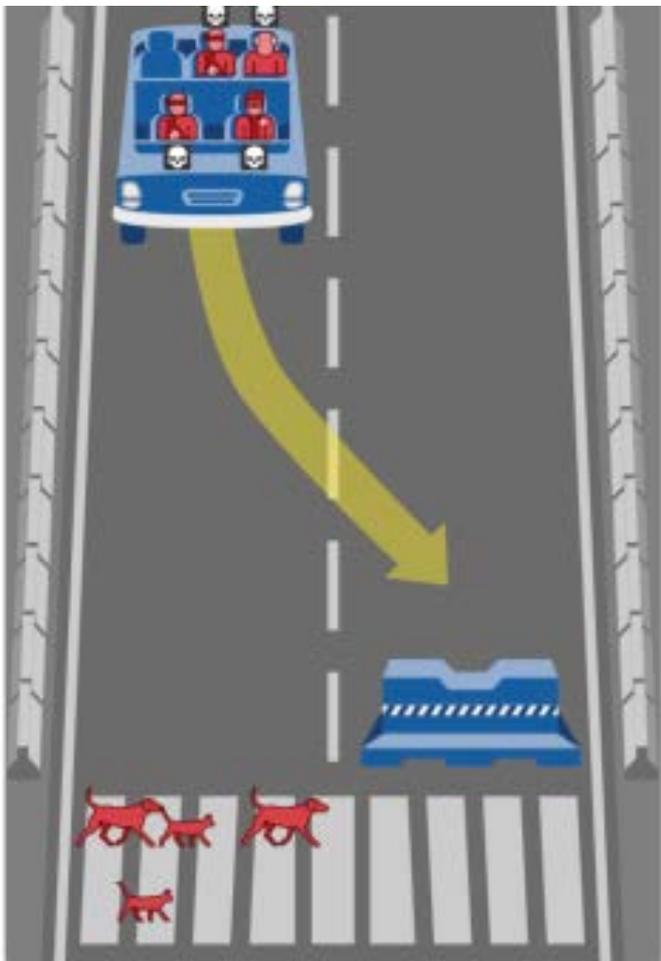


Aspetti etici

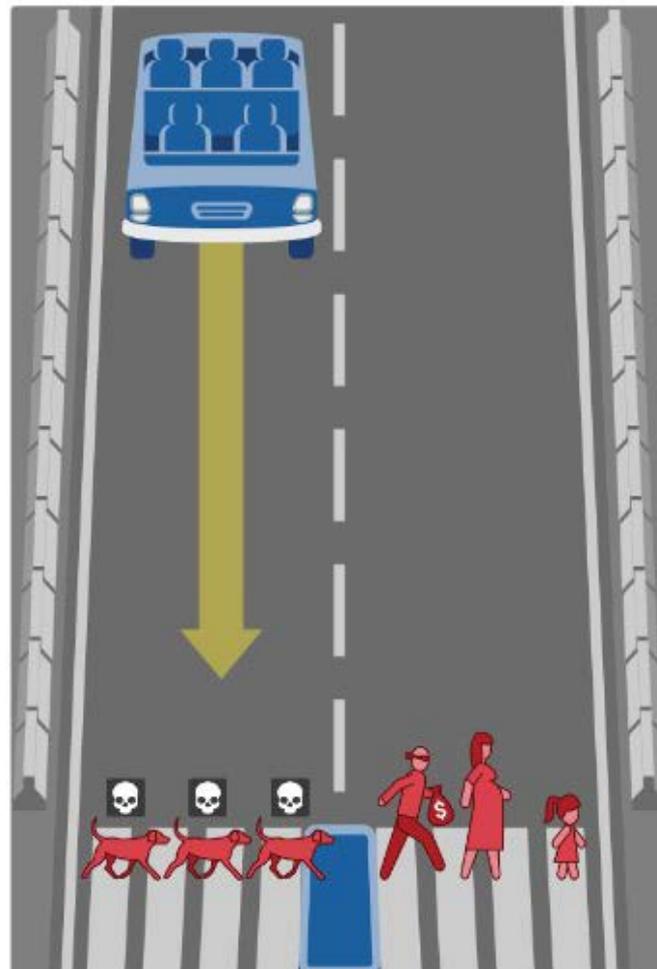
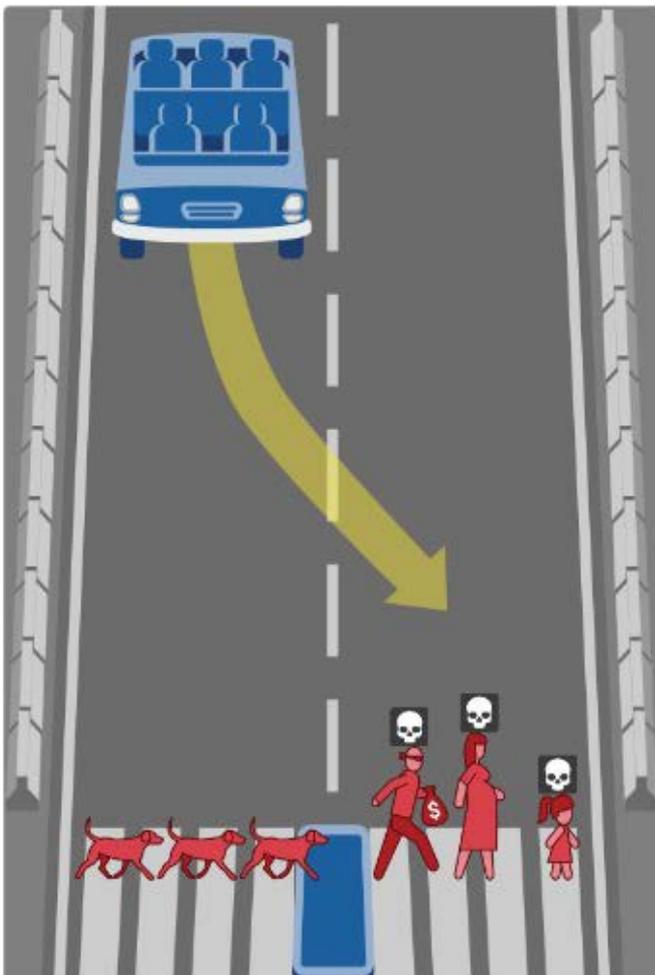
- Quale scelta?
- Studio di Iyad Rahwan (MIT)



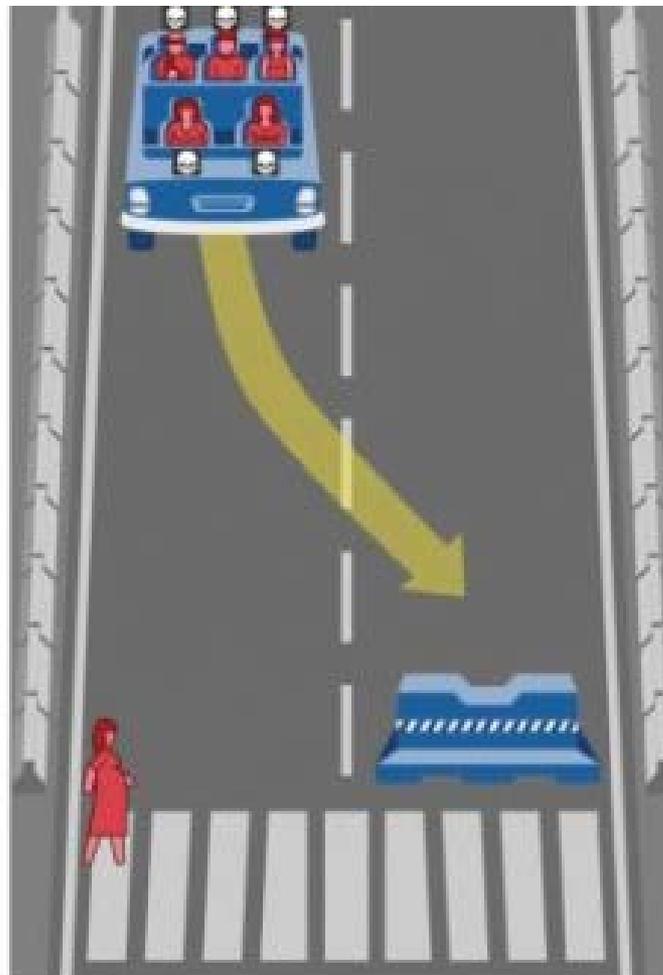
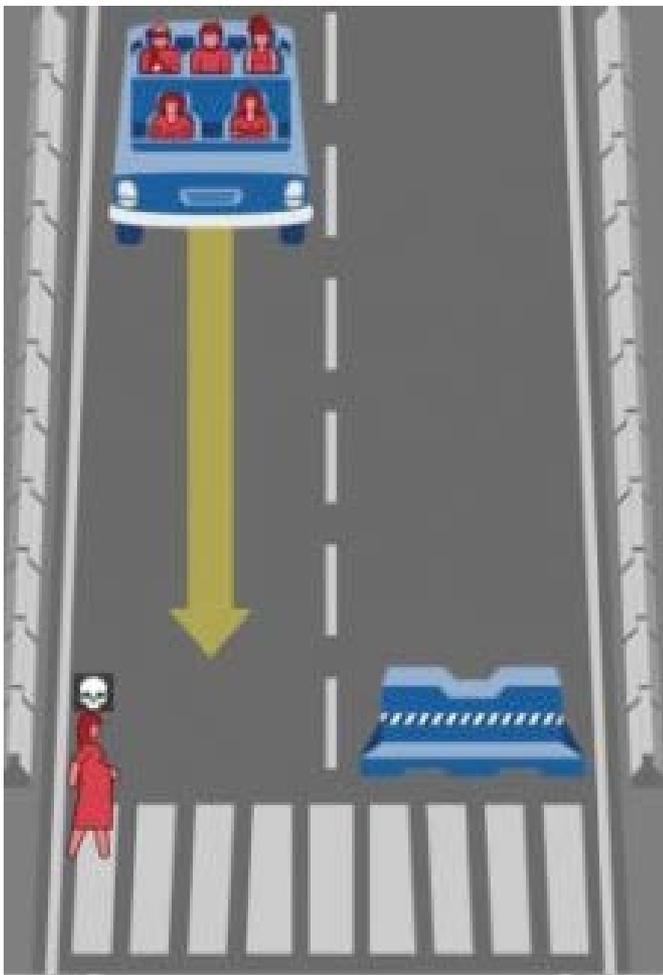
Quale scelta?



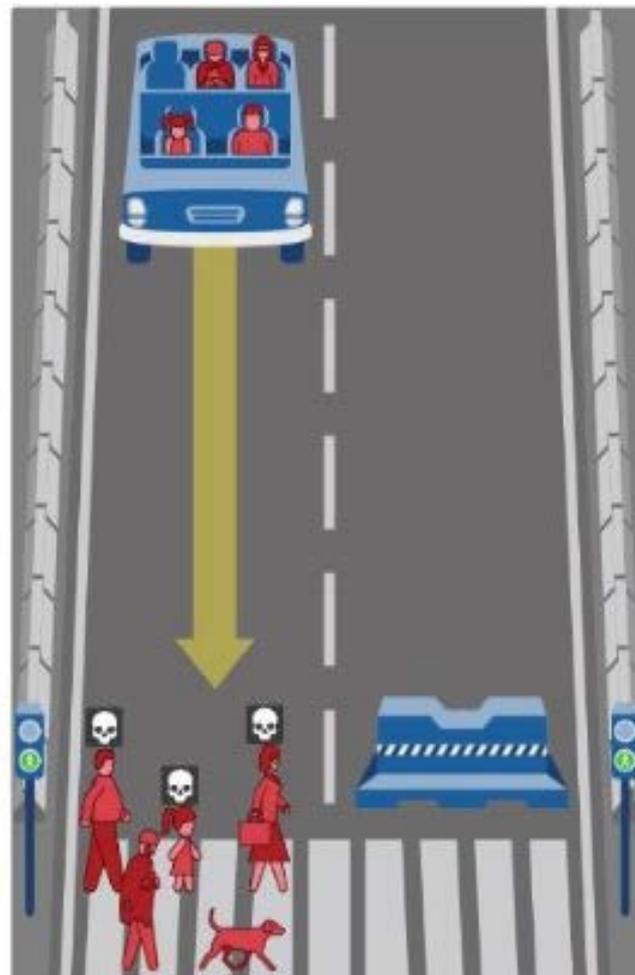
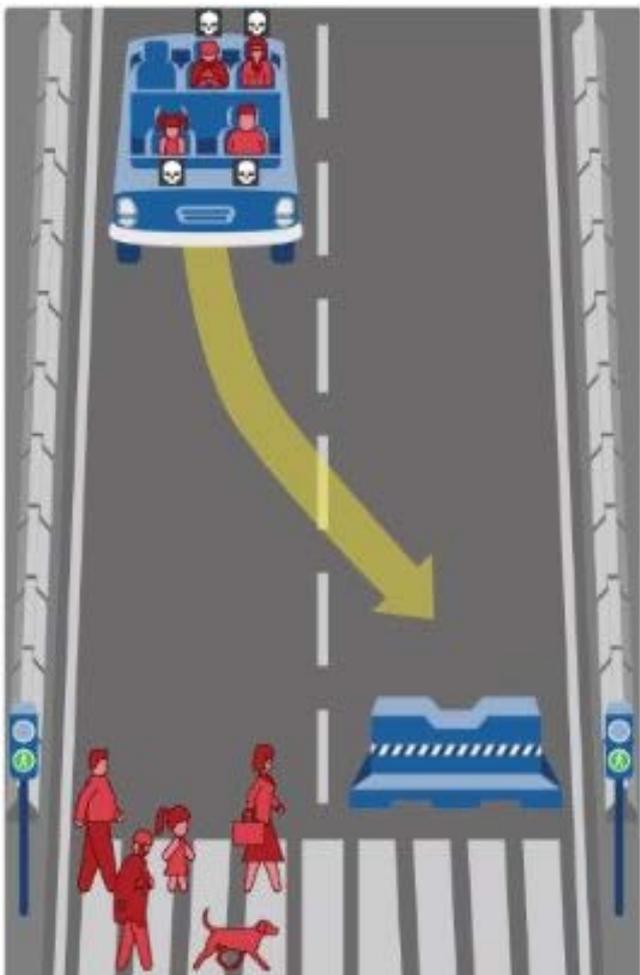
Quale scelta?



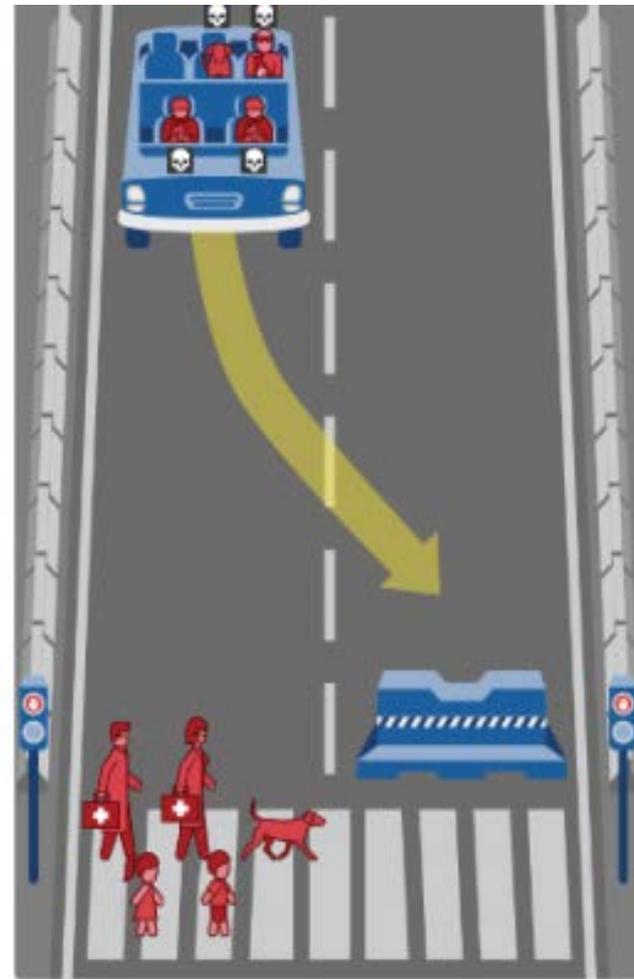
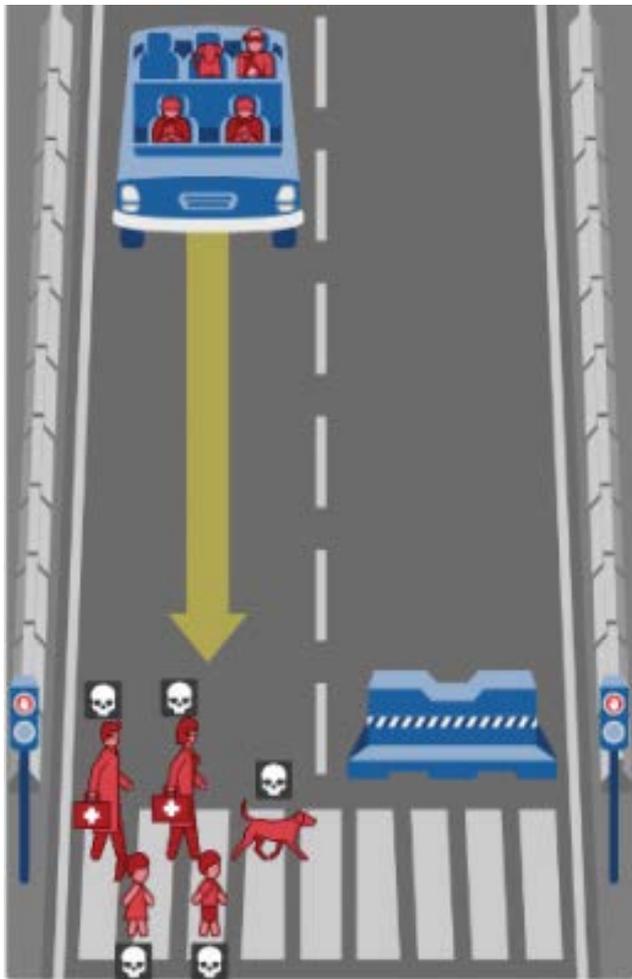
Quale scelta?



Quale scelta?



Quale scelta?





Sondaggio

- Principio dell'utilitarismo
- L'autovettura deve prendere la decisione che minimizza le lesioni complessive





Sondaggio

- Voi la comprereste?
- Assolutamente no. Voglio comprare un'auto che mi protegge al meglio
- Ma gli altri dovrebbero comprare tale autovettura





grazie

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