

**STEERSENSE**

21EEB2EM2E

# ABOUT

- Self Driving Car
- Real World Scenario
- Two Models
  - Basic Model
  - Ethics Model



## BASIC MODEL:

- Basic Rules & Regulations
- Road Safety
- Suggests the best solution

```
% Facts
car_speed(30).
traffic_signal(yellow).
stop_sign(absent).
curr_time(day).
weather(icy).
railroad_gate(up).
want_to_turn(left).
vehicle(opposite_lane, 20, sedan).
sign(yield).
police(absent).
ambulance(absent).
distance_from_light(3000).
```

```
?- query(left, X).
% QUERY: ?- query(left, Var0).

ANSWER: 1 (in 0.39 ms)

MODEL:
{ query(left, go), traffic_signal(y
BINDINGS:
Var0 = go ? ;
```

## Ethical Model:

- Testing ethics for scenario
- Accounts for different possibilities

```
% Facts
car(left, 6).
roadblock(right).
pedestrians(Lane, Num_P) :- num_pedestrians(Lane, Num_P),!.
pedestrians(Lane, 0).
num_pedestrians(left, 5).
animals(Lane, Num_A) :- num_animals(Lane, Num_A),!.
animals(Lane,0).
num_animals(left, 6).
```

```
?- decision(X).
% QUERY:?- decision(Var0).
```

ANSWER: 1 (in 1.409 ms)

MODEL:

```
{ decision(swerve), harm_stay(11), car(left,6), pedestrians_harm
rians(left,5), animals_harmed(left,6), animals(left,6), num_anim
m_swerve(6), opposite_lane(left,right), pedestrians(right,0), ar
roadblock(right) }
```

BINDINGS:

```
Var0 = swerve ? ;
```

# Challenges

- Lots of parameters
- Incorporating each into code

```
% Speed adjustment based on weather conditions
adjust_speed(Speed) :-
    weather(icy), Speed is 20.           % Slow down to 20 km/h if icy

adjust_speed(Speed) :-
    weather(snowy), Speed is 15.        % Slow down to 15 km/h if snowy

adjust_speed(Speed) :-
    weather(foggy), Speed is 25.        % Slow down to visible speed if foggy

adjust_speed(Speed) :-
    weather(rainy), Speed is 30.        % Slow down to 30 km/h if rainy
```

# Future of SteerSense

- Collaboration with Regulatory bodies
- Human vs. Machine
- In-car Ethical Assistance

# THANK YOU!



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