STEERSENSE

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

```prolog
% 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).
```

```prolog
?- 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

```prolog
% 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
```

THANK YOU!

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