

CSC 144V: Autonomous Vehicles

Lecture 1.1

Introduction Exercises Solution

Department of Computer Science,
Hofstra University

Exercise: SAE levels

For each description, state the **SAE level** of automation (0–5) and who is responsible for **monitoring the driving environment** while the feature is engaged (human or system).

#	Description	SAE level	Who monitors the environment?
1	A highway package that keeps the lane and the speed at the same time. The driver must keep eyes on the road and be ready to steer at any moment.		
2	A traffic-jam pilot that drives itself below 60 km/h. The driver may read a book, but must take over when the system issues a takeover request.		
3	A driverless robotaxi without a safety driver that operates only inside a geo-fenced downtown area, in daylight and good weather.		
4	A vehicle that can drive anywhere and in any condition a human driver can, with no steering wheel and no pedals.		

Exercise Solution: SAE levels

#	Description	SAE level	Who monitors the environment?
1	A highway package that keeps the lane and the speed at the same time. The driver must keep eyes on the road and be ready to steer at any moment.	Level 2	Human
2	A traffic-jam pilot that drives itself below 60 km/h. The driver may read a book, but must take over when the system issues a takeover request.	Level 3	System (human must be ready to take over)
3	A driverless robotaxi without a safety driver that operates only inside a geo-fenced downtown area, in daylight and good weather.	Level 4	System
4	A vehicle that can drive anywhere and in any condition a human driver can, with no steering wheel and no pedals.	Level 5	System

- **Level 2:** the system steers and controls speed, but the human supervises (monitors) at all times.
- **Level 3:** the system monitors while engaged, but may ask the human to intervene (takeover request).
- **Level 4:** no human fallback, but limited to its ODD (geo-fence, daylight, good weather).
- **Level 5:** unlimited ODD — drives anywhere a human can.