Lesson 3 Acronym Examples

ADS: automated driving systems

AI: artificial intelligence

BEV: battery electric vehicle

DIAL: data information access link

EMS: energy management system

GPS: global positioning system

HEV: hybrid electric vehicle

ISO: International Standards Organization

LCD: liquid crystal display

NHSTA: National Highway Traffic Safety Administration (US)

SAE: Society of Automotive Engineers (US-based)

USD: United States dollars

V2G: vehicle-to-grid (here, the “2” in the acronym is a sound-alike for the word “to”)

V2V: vehicle-to-vehicle (here, the “2” in the acronym is a sound-alike for the word “to”)

WLAN: wireless local area network

ZEV: zero emissions vehicle

Lesson 3 Reading Grammar Guide: Adjective Clauses

Adjective clauses enhance nouns with specific meaning. The chart presents core concepts. Clauses follow the noun that they modify, and therefore can occur in different positions within a sentence. See the sample sentences that follow.

Clause Type	Role	Punctuation	Preferred Relative Pronoun
Non-restrictive	Adds interesting but non-essential information	Is bracketed (set off) by commas	Which / who
Restrictive	Defines the noun; is essential for understanding	Is not set off by commas	That / who

1.Non-restrictive clauses: Sample Sentences

The plan, which we discussed at length, proved to be unworkable. (The main idea is that the plan was unworkable; the additional information does not change the main idea.) ——— I'm sorry that he was disappointed by the plan, which we discussed at length.

The contractor, who began construction last year, is asking for a contract extension. —The contractor, whose efforts were good, is asking for a contract extension. —The contractor, to whom we sent a check yesterday, is asking for a contract extension.

2. Restrictive clauses: Sample Sentences

The plan which we discussed at length proved to be unworkable, but the one that we discussed only briefly was a great success. (There are two plans, each defined by specific information).

The contractor who began construction last year is asking for a contract extension, and the contractors who started this year have not yet proved themselves. (There are several contractors. Each presents a different profile and different needs.)

3. Informal uses of the relative pronouns

While the pronoun *that* is generally preferred for restrictive clauses, and *which* is generally preferred for nonrestrictive clauses, they are sometimes used interchangeably in speech and in informal writing.

Whose is the possessive form of who: Mr. Perkins is the supplier. His sensors are dependable = Mr. Perkins is the supplier whose sensors are dependable.

Whom represents the object form of the noun: They wrote the cost estimate for the manager. The manager is absent today. = The manager for whom they wrote the cost estimate is absent today. Note: *whom* is considered formal usage. In many cases, the word *who* can substitute. *Whom* is used most often when a preposition such as *for* or *to* strongly signals that the noun is serving in an object position: They sent it to a mechanic. He is looking at it now. = The mechanic to whom they sent it is looking at it now.

Lesson 3 Glossary

Listening

Vocabulary

autonomous (adjective): that which can function alone

behemoth (noun): giant; very large entity

categorization (noun): the act of sorting, arranging, or classify a set of items

deployed (verb, past tense): put into action (Note: this word has other meanings, used in other contexts, that are very different.)

directive (noun): an official set of instructions or demands

e|GO: the fictional ADS vehicle named in this course

engagement (noun): interaction with something (Note: this word has other meanings, used in other contexts, that are very different.)

execution (noun): the act of carrying out a task. (Note: this word has other meanings, used in other contexts, that are very different.)

frills (noun): extraneous, unimportant details added to embellish or decorate

guidance systems (noun, plural): technical systems that provide wayfinding capabilities to vehicles

HEVs (noun): acronym for hybrid electric vehicle

integration systems (noun, plural): technical systems that provide bridges and support for one communication system to speak to another

issue (noun): synonym for *problem* (Note: this word has other meanings, used in other contexts, that are very different.)

lay person (noun): nonprofessional; average person not skilled in a particular discipline *lidar* (noun): a surveying system that measures distance to a target by illuminating the target; shortened form of light detection and ranging (familiar form of the acronym)

nil (adjective): not existing; zero

odometry (noun): the use of data from motion sensors to estimate change in position over time

pushback (noun): resistance to an idea

regulations (noun, plural): rules or standards imposed by a supervising body

regulatory (adjevctive): controlled or informed by a supervising body

Idioms and Sayings

[to] dip your toe [into] (idiom): to carefully start a new initiative

*in a nutshell (*idiom): in total; in summary

(to) kick in (verb, idiomatic use): to be implemented; to begin fully functioning

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Lesson 3 Transcript 1

Lesson 3: Listening 1

Good evening. This is Naoke Ishimura, broadcasting directly from the Worldwide ADV Conference in Tokyo. You've heard the slogan repeatedly: "Kioka is not a brand whose reputation is founded on the frills it adds to its products: Kioka is simplicity itself.' Whether it's in Tokyo or New York, Kioka has long promoted that idea for products ranging from skin care to high-concept clothing. But the behemoth enterprise has just now revealed a product that has some experts wondering about the limits to simplicity. That is, Kioka has completed designs for a unique autonomous shuttle bus planned for use in three Finnish cities no later than 2020.

ADVs, or autonomous driverless vehicles, are complex, and for good reason: their navigational systems have to compensate on multiple levels for the constant input of experienced human drivers. As licensed drivers are well aware, the challenge is not so much how to get where you plan to go: it's about unanticipated hazards and obstacles along the way, from unexpected detours to the novice driver new to rush-hour traffic. So, then, how do ADVs work--and avoid the risks? I asked Hiroki Niseo, a Kioka spokesperson and automotive engineer, to explain at the recent World ADV Conference in Paris. (hubbub of people in the background)

Ishimura: Thanks for speaking with us today. For the lay person, can you explain a bit about how, exactly, ADVs work? Hydro Electric Vehicles (HEV's) are growing in popularity--and of course, using them is a good way to dip your toe into alternative energy sources. But ADVs seem like a much bigger step in automotive development, and have some people worried.

Niseo: In a nutshell, we've replicated the core functions of the automobile, but we've integrated networks of high capacity sensors that keep human involvement to a minimum. This leaves drivers free to attend to other tasks and minimizes accidents from human error.

Ishimura: Are these sensors that I, as a journalist, would be familiar with?

Niseo: Well, you're already familiar with GPS systems; people use them every time we access a map or guidance system on our phones, for example. For this project, we use a wide range of other sensors including radar, computer vision, LIDAR, sonar, odometry, and inertial measurement units. The control systems identify navigation paths and interpret signage at a highly advanced level, just as a human would. SAE has already determined that the buses are street-ready.

Ishimura: It's reassuring that they've met SAE's demanding automotive standards, but what would you say to a typical driver who is used to full control of the wheel? Can he or she count on still getting access to that model?

Niseo: Well, I can assure you that driver-driven cars aren't going away any time soon. Futurists see four stages ahead: the current one, where drivers have full control; a second one, with more ride sharing and car sharing; a third, with customized personal vehicles catering to individuals with special needs or preferences; and, ultimately, shared autonomous vehicles operated by fleet managers.

Our shuttle buses are a taste of the final stage, when transportation will be faster, cheaper, cleaner and safer, especially in crowded urban areas. We're especially proud that the buses have met ISO standards for each of our components, and accident rates are virtually nil, even in winter driving conditions. Considering the weather in Finland, that's a major achievement.

Ishimura: One last question. Kioka, which is one of Japan's biggest enterprises, claims that it's "all about simplicity." At least, simplicity as the user understands it. Wouldn't you say that an ADV is far from simple?

Niseo: I think you're talking about complexity on the development side. ADV engineers have taken great strides in streamlining sensor systems. And let's face it, sometimes a bit of complexity is worth it. For example, we're talking fewer emissions both because of fuel burning efficiency and because of because of fewer individual drivers on the road. In the future, we see robo-taxis being in constant use, following consistent patterns for maximum efficiency, on predictable schedules that minimize traffic jams.

Ishimura: Impressive! It seems that you've thought of everything: safety, traffic flow, and driver mindset. I'm really looking forward to seeing what develops once private ownership kicks in on a sustainable scale.

Niseo: We think 2019 and 2020 will be the years to watch. Come back and see us then!

Lesson 3 Transcript 2

Lesson 3: Listening 2

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Lesson 3 Reading Excerpt #1

Directive

The United States (US) is moving quickly to define and regulate the meanings for levels of automation in ADS vehicles. Surprisingly, as late as 2019, the European Union, India, Japan, China, and other major industrialized countries have not outlined **regulations** for ADS. Therefore, the US regulations and definitions will be the guidelines for the e|GO project.

Part of our task will be defining our technical work properly. In the popular press, journalists mix up the definitions of “self-driving” and “**autonomous**,” creating confusion for readers and experts alike. Our team cannot have such confusion, so part of our early work is to understand the definitions for such vehicles.

There are accepted definitions and statements which describe six levels of vehicle automation. These have already been released by the Society of Automotive Engineers (SAE) and the US National Highway Traffic Safety Administration (NHTSA). These groups worked together to define the levels of automation for vehicles. Part of their statement reads as follows:

> NHTSA is committed to saving lives, removing **regulatory** barriers to innovative safety technology, and facilitating the safe testing of self-driving technology. That includes ensuring that this technology undergoes laboratory testing, simulations, and testing on tracks before these vehicles are **deployed** on public roads.
>
> Automated Vehicles 3.0: Preparing for the Future of Transportation 3.0 builds upon DOT’s 2.0: A Vision for Safety and provides guidance for states to consider for the training and licensing of drivers. It also offers guidance for testing entities to consider driver **engagement** methods during tests.
>
> More information can be found at https://www.nhtsa.gov/sites/nhtsa.dot.gov.

All engineers in the associated ADS work teams should become very familiar with NHTSA’s definitions and categorization of automated vehicles; Logrify’s contracts with the **e|GO** project will rely on your consistent use of NHTSA’s definitions and guidelines.

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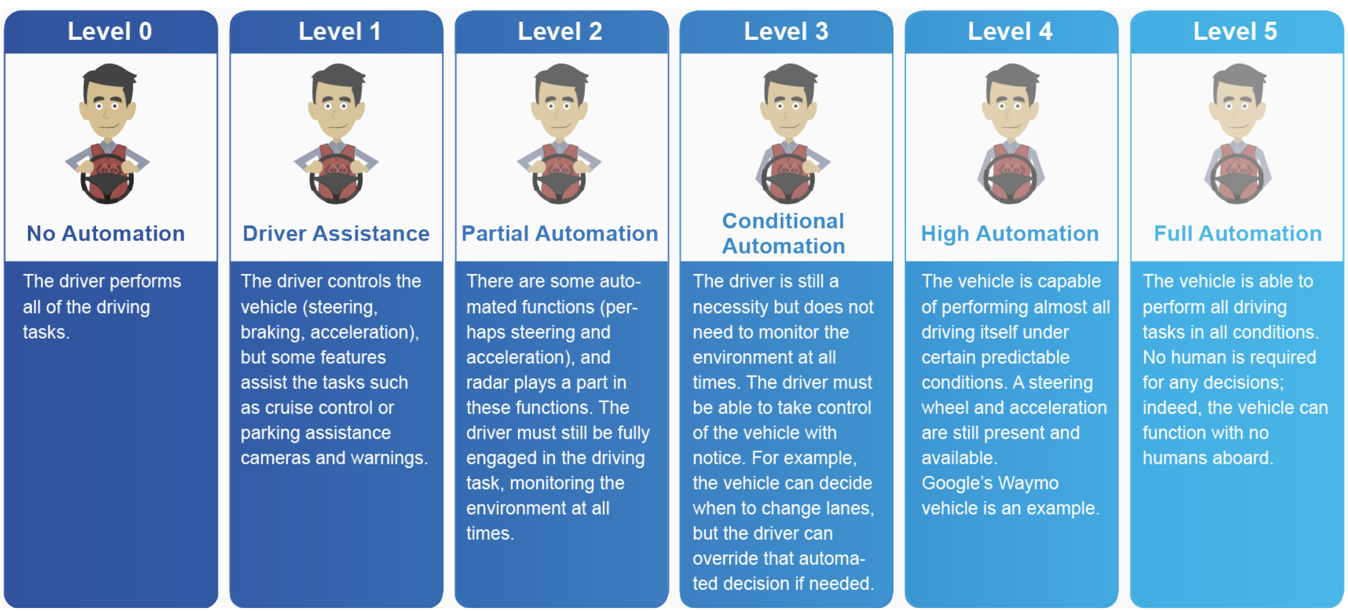
Lesson 3 Reading Excerpt #2

logrify

Directive (continued)

Car makers entering the ADS market must define the levels of interaction between the vehicle and the driver. As of this writing, there are six levels that have been codified for ADS vehicle development. The levels begin with “0” and go to “5.”



- Level 0--No Automation. The driver performs all of the driving tasks.
- Level 1--Driver Assistance. The driver controls the vehicle (steering, braking, acceleration), but some features assist the tasks such as cruise control or parking assistance cameras and warnings.
- Level 2--Partial Automation. There are some automated functions (perhaps steering and acceleration), and radar plays a part in these functions. The driver must still be fully engaged in the driving task, monitoring the environment at all times.
- Level 3--Conditional Automation. The driver is still a necessity but does not need to monitor the environment at all times. The driver must be able to take control of the vehicle with notice. For example, the vehicle can decide when to change lanes, but the driver can override that automated decision if needed.

- Level 4--High Automation. The vehicle is capable of performing almost all driving itself under certain predictable conditions. A steering wheel and acceleration are still present and available. Google's Waymo vehicle is an example.
- Level 5--Full Automation. The vehicle is able to perform all driving tasks in all conditions. No human is required for any decisions; indeed, the vehicle can function with no humans aboard.

Lesson 3 Speaking Transcript

Part of our task will be defining our technical work properly. In the popular press, journalists mix up the definitions of “self-driving” and “autonomous,” creating confusion for readers and experts alike. Our team cannot have such confusion, so part of our early work is to understand the definitions for such vehicles.