

EXHIBIT K
AUTONOMOUS DEVICES
INFRINGEMENT CONTENTION CHART FOR U.S. PATENT NO. 11,663,474
CHARTED AGAINST TESLA'S MODELS S, 3, X, AND Y

On August 15, 2023, the Court ordered Tesla to produce its source code and source code documents (collectively “SC files”) in their native format. Throughout this litigation and including at the time of service of these preliminary infringement contentions, Tesla produced the SC files in adobe pdf, which the Court found to be “inefficient and cumbersome” and incompatible with “traditional source code review tools and capabilities.” Despite this finding, Tesla still has not produced the SC files in their native format. Tesla also prevented AD lawyers and experts from collaboratively reviewing the SC files, forced AD’s lawyers to destroy their working copies of the SC files and insisted on a byzantine framework for even acquiring the SC files. Despite the Court’s ruling that AD’s lawyers can have multiple dcopies of the SC files—Tesla has not yet complied with its obligations. As a result, AD reserves the right to modify this preliminary chart after Tesla complies with its obligations and AD’s experts have an opportunity to review and process Tesla’s production. Tesla also refused to provide complete responses to AD’s interrogatory requests. AD reserves the right to modify this preliminary chart based on Tesla’s eventual compliance with its discovery obligations.

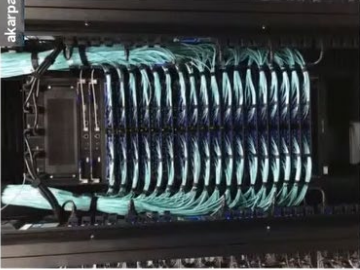
U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff’s Theory(ies) of Infringement¹ against the ‘474 Accused Products²
[45pre] A first device comprising:	The ‘474 Accused Products are devices comprising the limitations below. For example, the 474 Accused Products include individual Tesla vehicles (e.g., Tesla’s Models S, 3, X, and Y) as well as a supercomputer/simulator implements the following limitations.

¹ To the extent that any of the limitations of the asserted claims are not literally infringed as set forth in these contentions, Autonomous Devices reserves the right to amend these disclosures to include a theory under the doctrine of equivalents prior to the final contentions.

² The Accused Products for the ‘474 Patent (herein the “‘474 Accused Products” or “the 474 Accused Products”) comprise at least the Tesla Models S, 3, X, and Y (e.g., individual accused Tesla vehicles or a fleet thereof) executing Software Version 9.0 and beyond (including vehicles with enhanced autopilot and/or full self-driving (FSD)) alone or together with Tesla’s simulator technology.

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In-house supercomputer

Our latest cluster (1 of 3):
720 nodes of 8x A100 80GB. (5760 GPUs total)
1.8 EFLOPS (720 nodes * 312 TFLOPS-FP16-A100 * 8 gpu/nodes)
10 PB of "hot tier" NVME storage @ 1.6 TBps
640 TBps of total switching capacity

Help us build & maintain the cluster! Submit a pull request on GitHub.

(next up: Dojo)

20:01 / 31:31

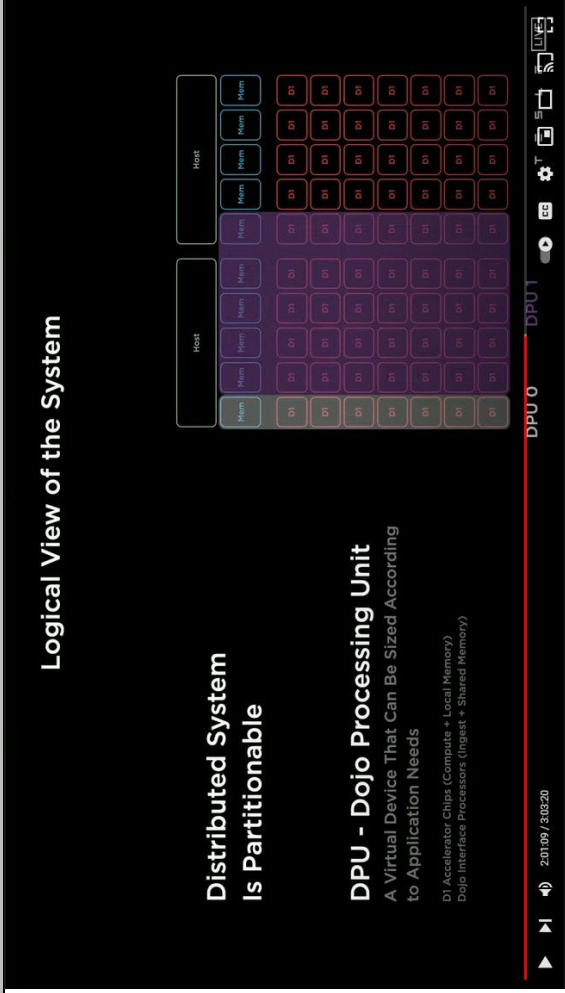
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akarpahy

zoom

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See Tesla AI Day video, available at <https://www.youtube.com/watch?v=j0z4FweCy4M&t=3s>

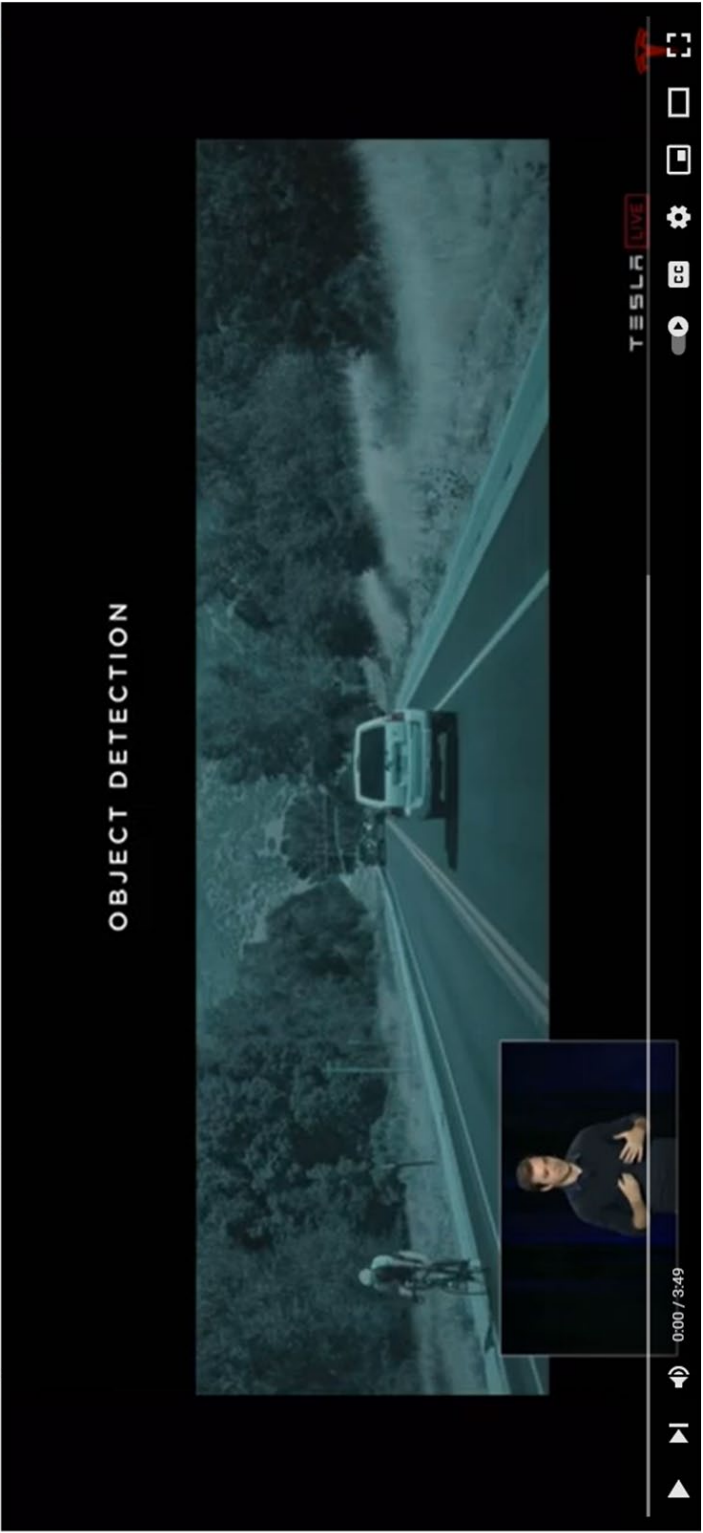
"We do have a major program at Tesla which we don't have enough time to talk about today called "Dojo". That's a super powerful training computer. The goal of Dojo will be to be able to take in vast amounts of data and train at a video level and do unsupervised massive training of vast amounts of video with the Dojo program – or Dojo computer."

[Elon Musk hints at Tesla's not-so-secret Dojo AI-training supercomputer capacity – Electrek](#)

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	Karpathy commented on the effort: <i>"We have a neural net architecture network and we have a data set, a 1.5 petabytes data set that requires a huge amount of computing. So I wanted to give a plug to this insane supercomputer that we are building and using now. For us, computer vision is the bread and butter of what we do and what enables Autopilot. And for that to work really well, we need to master the data from the fleet, and train massive neural nets and experiment a lot. So we invested a lot into the compute. In this case, we have a cluster that we built with 720 nodes of 8x A100 of the 80GB version. So this is a massive supercomputer. I actually think that in terms of flops, it's roughly the number 5 supercomputer in the world."</i> https://www.inputmag.com/tech/tesla-showed-off-its-massive-supercomputer-for-self-driving- data-processing
[45a]. a knowledgebase that includes one or more inputs for inputting at least a portion of a circumstance representation, wherein the one or more inputs are correlated with one or more instruction sets for operating a second device;	The '474 Accused Products are devices further comprising a knowledgebase that includes one or more inputs for inputting at least a portion of a circumstance representation, wherein the one or more inputs are correlated with one or more instruction sets for operating a second device. For example, the 474 Accused Products include a knowledgebase based on circumstance representations (or circumstances). To form/generate circumstances, Tesla vehicles, including those vehicles with enhanced autopilot and/or full self-driving (FSD), alone or in combination with the supercomputer/simulator, are equipped with a multitude of sensors (see, [45b] below for more info about the sensors included in Tesla vehicles). These sensors capture data which is then uploaded as an input to the simulator, e.g., via an internet uplink. Once uploaded/input to the simulator, the circumstances re correlated with instruction sets which are shared with the fleet, for example, also via an internet connection. At a high level, an example of a circumstance representation may be making a left-hand turn at a particular intersection. One or more object representations may be included within a circumstance representation. Examples of object representations that may be present within a circumstance representation.

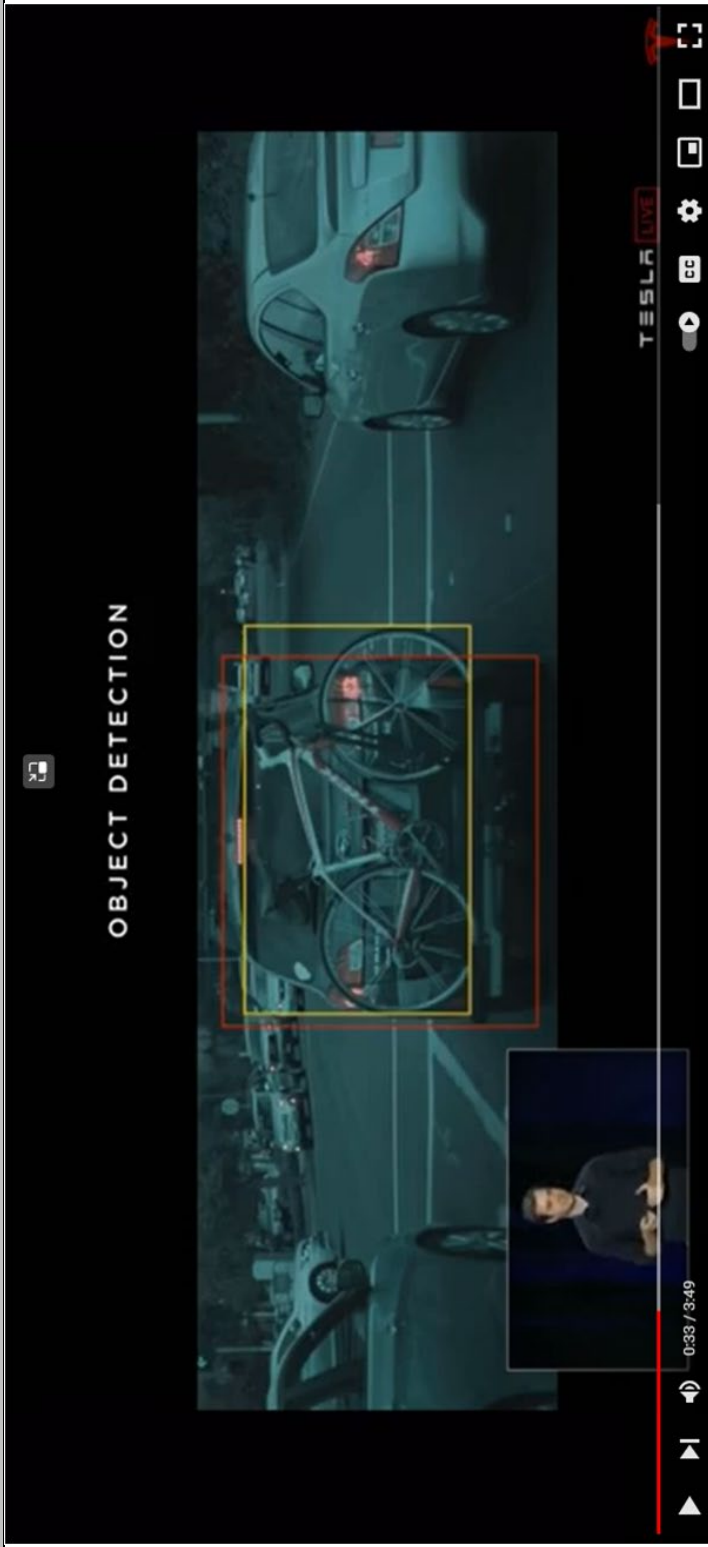
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	Multiple circumstance representations, each including multiple object representations, may be received or generated by each vehicle included in the Tesla fleet (e.g., recorded by the cameras and/or sensed by ultrasonic/telemetry sensors). These circumstance representations are then added (e.g., uploaded) to the knowledgebase (e.g., the supercomputer/simulator and/or the trained CNN on the Tesla vehicle). The knowledge base can also include the FSD computer installed on the Tesla vehicles. Persisting Vehicles & Pedestrians Through Occlusions  At/around 1:31:58 in Tesla's AI Day 2021 presentation depicts a circumstance representation (e.g., navigating through a particular intersection) with multiple object representations.

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	To further explain the relationship between circumstance representations/circumstances and object representations – Circumstance representations may be learned while drivers drive the accused Tesla vehicles. The '474 Accused Products also learn driving instructions, such as instructions for effecting the speed, steering, and/or braking of the accused Tesla vehicle being driven based on the actions taken by the driver to navigate those circumstances. This driving knowledge learned by one Tesla vehicle is transmitted to Tesla's simulator before being distributed to all vehicles in the Tesla fleet via over-the-air (OTA) software updates. Therefore, the fleet enables each accused Tesla vehicle included therein to autonomously implement driving instructions learned on one or more originating vehicles when similar circumstances are detected by any of the vehicles in Tesla's fleet, thereby enabling Tesla's autonomous driving capabilities. Further, to effectuate the circumstance representations, a Tesla vehicle detects objects. For example, in the previous analysis of driving behind the car with the bike mounted to it, the car detects the bike as an object. Tesla explains object detection as follows:

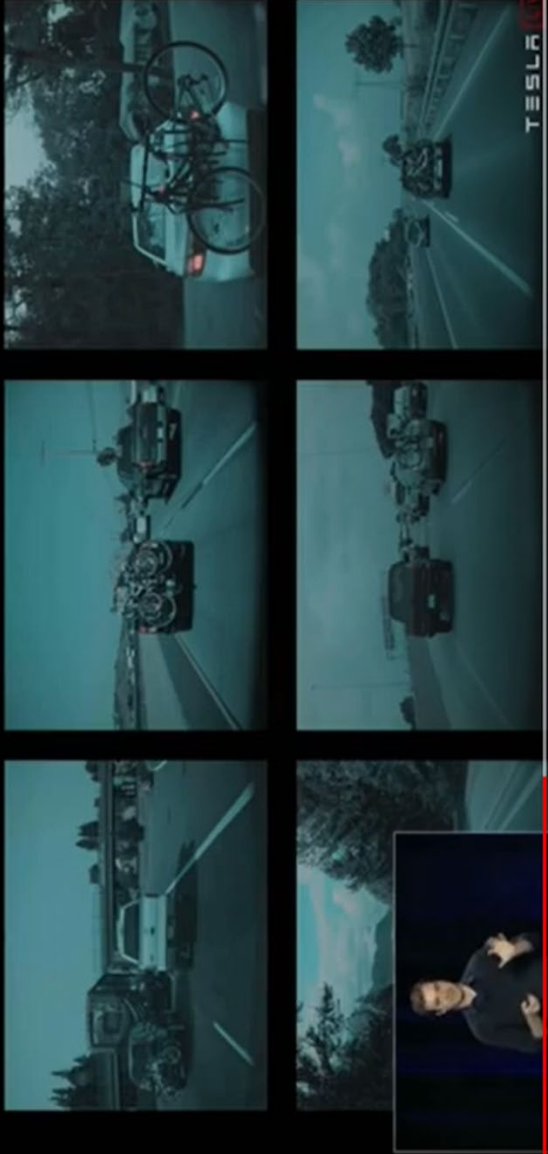
U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²  “so object detection is something we care a lot about we’d like to put bounding boxes around say the cars and the objects here because we need to track them and we need to understand how they might move around so again we might ask human annotators to give us some annotations for these and humans might go in and might tell you that ok those patterns over there are cars and bicycles and so on and you can train your neural network on this, but if you’re not careful, the neural network all will make miss predictions in some cases.”
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“so as an example if we stumble by a car like this that has a bike on the back of it then the neural network actually when I joined would actually create two deductions it would create a car deduction and a bicycle deduction and that’s actually kind of correct because I guess both of those objects actually exist but for the purposes of the controller and a planner downstream you really don’t want to deal with the fact that this bicycle can go with the car the truth is that that bike is attached to that car so in terms of like just objects on the road there’s a single object a single car and so what you’d like to do now is you’d like to just potentially annotate lots of those images as this is just a single car so the process that we that we go through internally in the team is that we take this image or a few images that show this pattern and we have a *mechanism a machine learning mechanism by which we can ask the fleet to source us examples that look like that and the fleet might respond with images that contains those patterns* [emphasis added]”

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	FLEET SENDS IMAGES OF MORE BIKES ON CARS  “so as an example these six images might come from the fleet they all contain bikes on backs of cars and we would go in and we would annotate all those as just a single car and then the the performance of that detector actually improves and the network internally understands that hey when the bike is just attached to the car that’s actually just a single car and it can learn that given enough examples and that’s how we sort of fix that problem ... now the fleet doesn’t just respond with bicycles on backs of cars we look for all the thing we look for lots of things all the time.”

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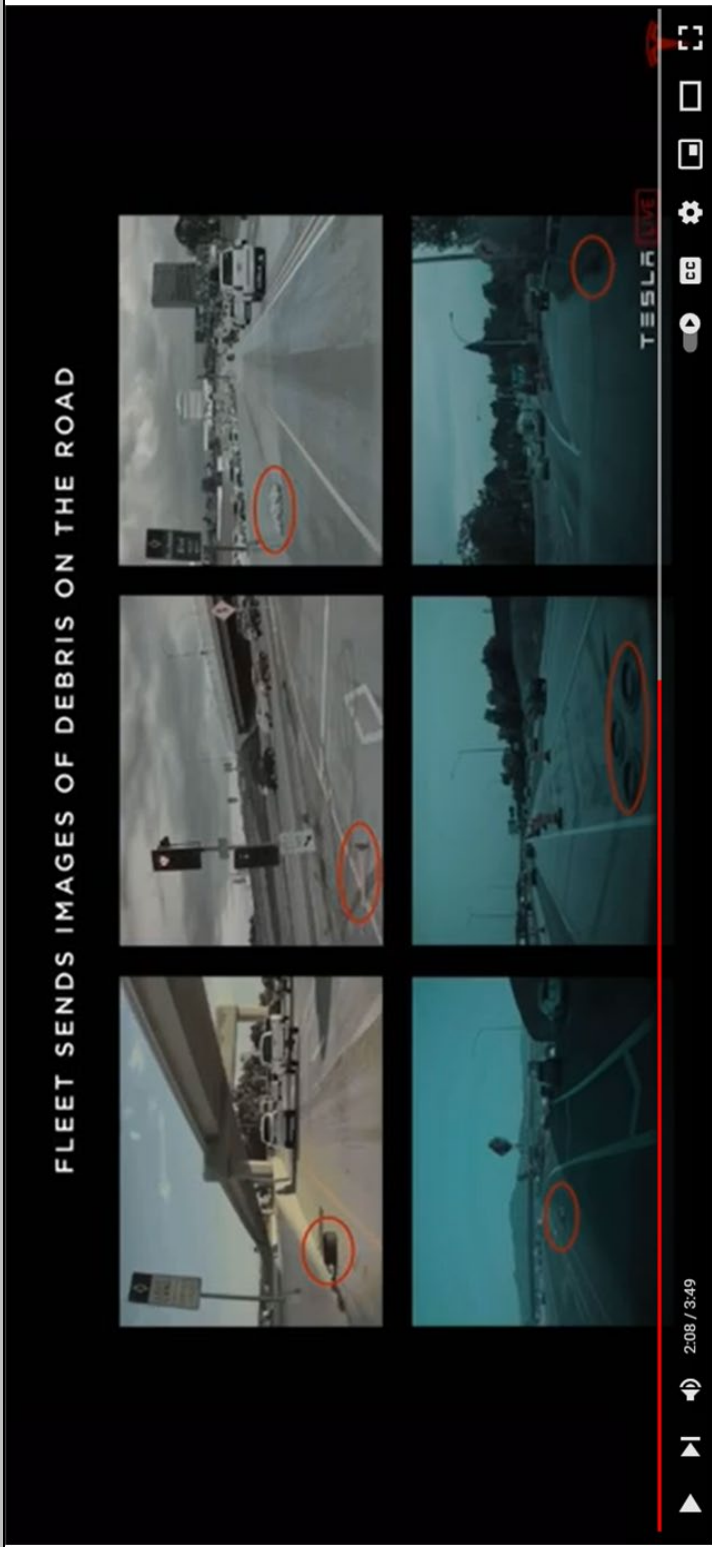
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“so for example we look for boats and the fleet can respond with boats we look for construction sites and the fleet can send us lots of construction sites from across the world we look for even slightly more rare cases.”

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“so for example finding debris on the road is pretty important to us so these are examples of images that have streamed to us from the fleet that show tires cones, plastic bags and things like that if we can source these at scale we can annotate them correctly and *the neural network will learn how to deal with them in the world* [*emphasis added*].”

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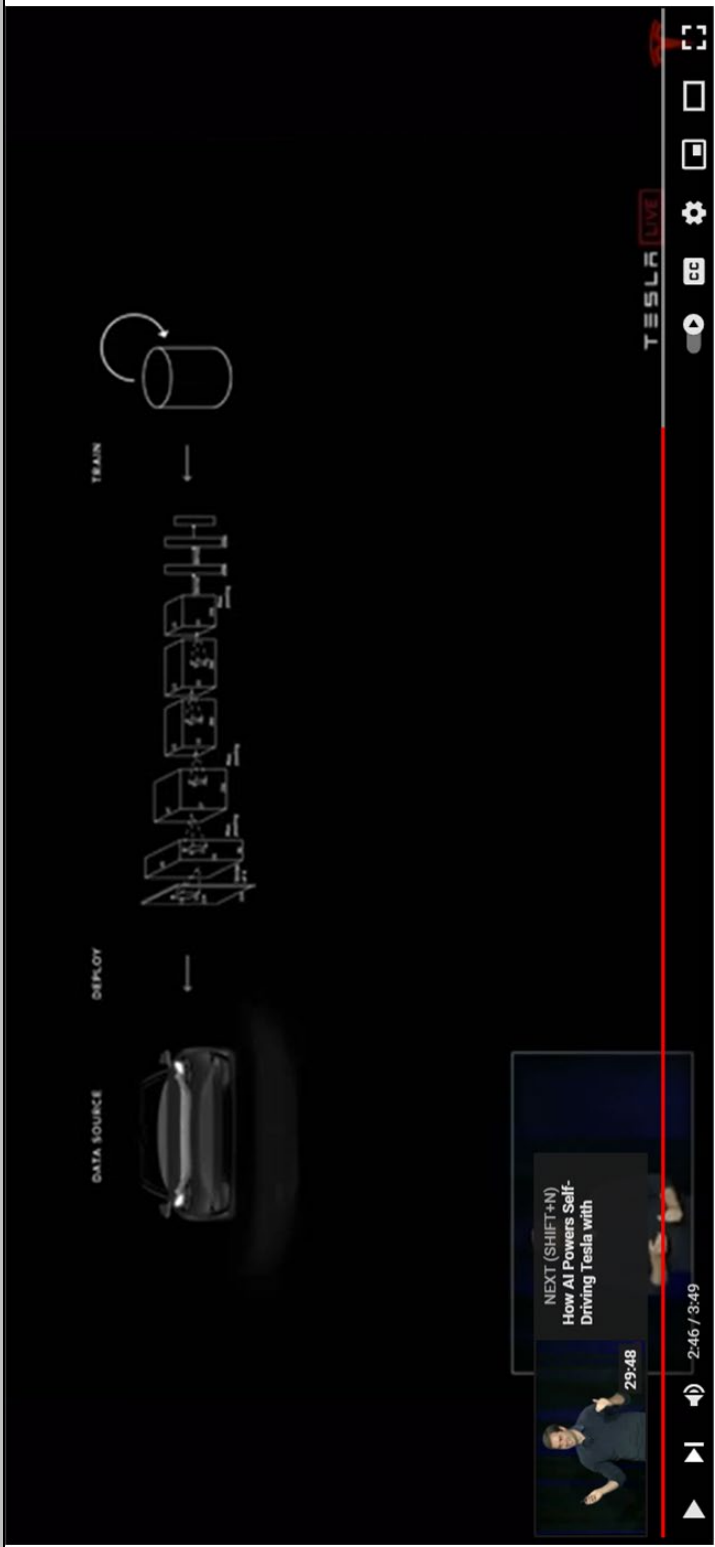
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“here’s another example, animals of course also a very rare occurrence, an event, but we wanted them neural network to really understand what’s going on here...that these are animals and we want to deal with that correctly.”

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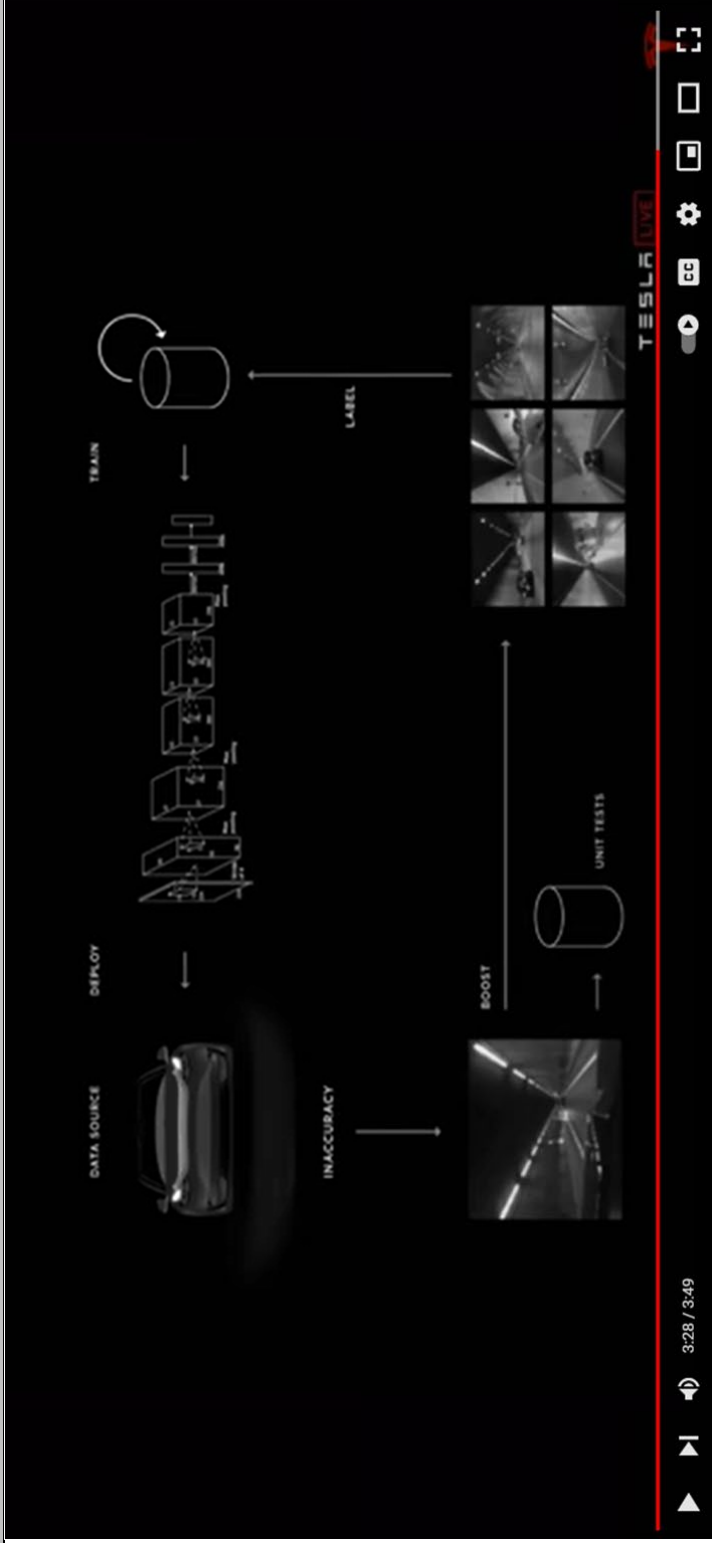
Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²



“so to summarize the process by which we iterate on neural network predictions looked something like this – we start with a seed dataset that was potentially sourced at random, we annotate that dataset, and then we train your networks on that dataset and put that in the car, and then we have mechanisms by which we notice inaccuracies in the car when this detector may be misbehaving.”

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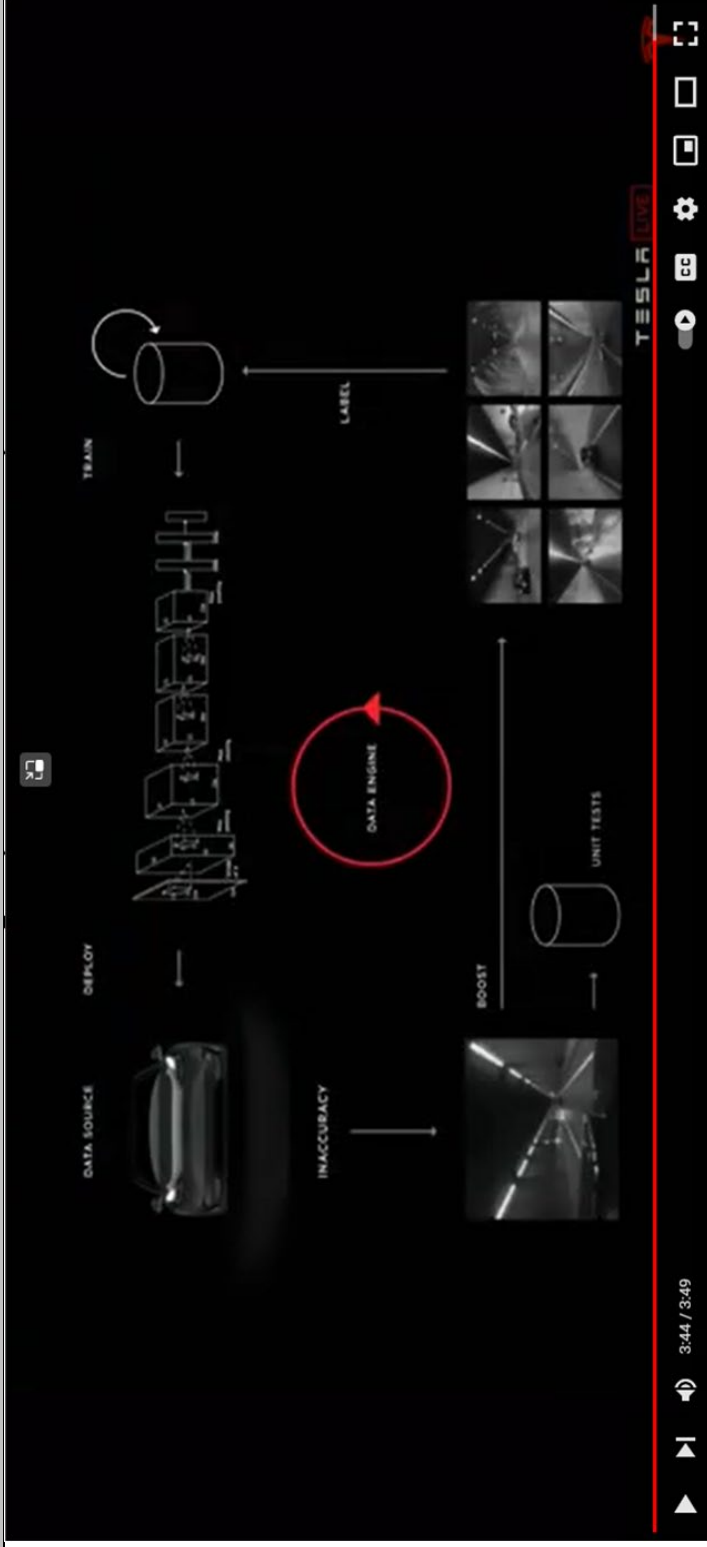
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“so, for example, if we detect that the neural network might be uncertain or if we detect that or if there’s a driver intervention or any of those settings we can create this trigger infrastructure that sends us data of those inaccuracies and so, for example, if we don’t perform very well on lane line detection on tunnels then we can notice that there’s a problem in tunnels that imagine would enter our unit tests so we can verify that we’ve actually fixing the problem over time but now what you do is to fix this inaccuracy you need to source many more examples that look like that so we asked the fleet to please send us many more tunnels and then we label all those tunnels correctly, we incorporate that into the training set and we retrain the network, redeploy, and iterate the cycle over and over again [emphasis added].”

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“so we refer to this iterative process by which we improve these predictions as the *data engine* so iteratively deploying something potentially in shadow mode sourcing inaccuracies and incorporating the training set over and over again and we do this basically for all the predictions of these neural networks [emphasis added].”

Source: <https://www.youtube.com/watch?v=33K3id2xNAE&t>

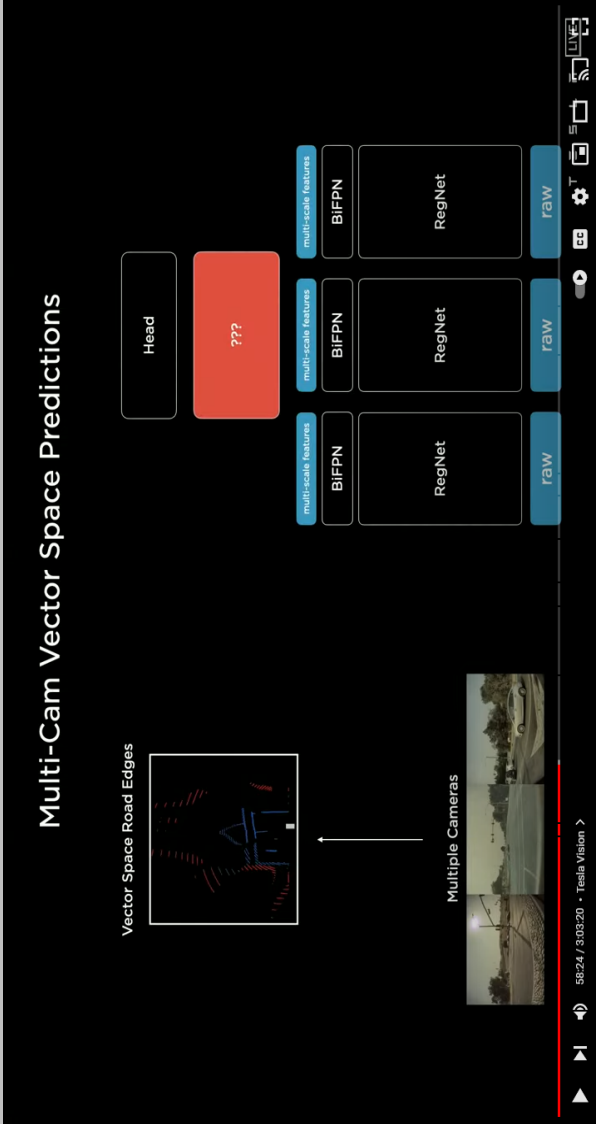
As Mr. Karpathy explained during Tesla Autonomy Day 2019 “while you are driving a car what you’re actually doing is you are annotating the data because you are steering the wheel. you’re telling us how to traverse different environments so what we’re looking at here is a some person in the fleet who took a left through an intersection and what we do here is we have the full video of all the cameras and we know that the path that this person took because of the GPS, the inertial measurement unit, the wheel

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	angle, the wheel ticks, so we put all that together and we understand the path that this person took through this environment and then of course we can use this for supervision [e.g., training a CNN through supervised learning] for the network so we just source a lot of this from the fleet, we train a neural network on those trajectories, and then the neural network predicts paths just from that data so really what this is referred to typically is called imitation learning we're taking human trajectories from the real world I'm just trying to imitate how people drive in real worlds and we can also apply the same data engine crank to all of this and make this work [emphasis added].” Source: https://www.youtube.com/watch?v=b041NXGPZ8 at 1:04:10. In this way, driving knowledge is: (i) learned on a first Tesla vehicle, (ii) transferred to the simulator where it is synthesized with other driving knowledge, (iii) packaged and sent from the simulator to the fleet, e.g., the driving knowledge is stored on a memory of a second Tesla vehicle via the fleet over-the-air (OTA) software update, and (iv) accessed on the second Tesla vehicle for its autonomous driving. The second Tesla vehicle can, thereby, implement the driving knowledge learned by the first Tesla vehicle, synthesized by the supercomputer/simulator, and distributed to vehicles in Telsa's fleet over-the-air. See <i>also</i>, Tesla AI Day 2021 video (https://www.youtube.com/watch?v=j0z4FweCy4M at 2:55:29), during which Mr. Musk explained that all the human drivers are essentially training the neural network as to what is the correct course of action for the accused Tesla vehicles to take while being operated on the road. This is just one example of the system (e.g., the Tesla/Tesla fleet plus simulator) being trained with object representations and instructions from a vehicle. See <i>also</i>, Claim 3 of US 11, 238, 344, which states that, “...the first circumstance representation includes a first one or more object representations.” Claim 18 of the '344 patent further explains that a circumstance representation includes, “...one or more data about a circumstance of a vehicle/device...” Additionally, the description of Fig. 4A (vehicle's/device's circumstance(s) including multiple detected objects), Fig. 4B (object representations including object properties such as distance, bearing/direction/coordinates, identity, type, computer model [e.g., bounding box, point cloud, etc.], etc.), and Fig. 38 (vehicle's/device's circumstance including multiple detected objects) add more generalized framework for the relationship between circumstance representations and object representations. The '344 patent provides examples of object properties that are of importance to the '474 Accused Products. These object properties include, “existence of an object, type of an object (i.e. person, cat, vehicle, building, street, tree, rock, etc.), identity of an object (i.e. name, identifier, etc.), distance of an object, bearing/angle of an object, location of an object

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	(i.e. distance and bearing/angle from a known point, coordinates, etc.), shape/size of an object (i.e. height, width, depth, computer model, point cloud, etc.), activity of an object (i.e. motion, gestures, etc.), and/or other properties of an object.” (See the '344 patent at 72:44-52). See <i>also</i>, Tesla AI Day 2021(https://www.youtube.com/watch?v=j0z4FweCy4M) for additional examples of Tesla's analysis of objects and circumstances. At 58:10, the speaker describes taking all of the images and simultaneously feeding them into a single neural net and directly outputting into a vector space.

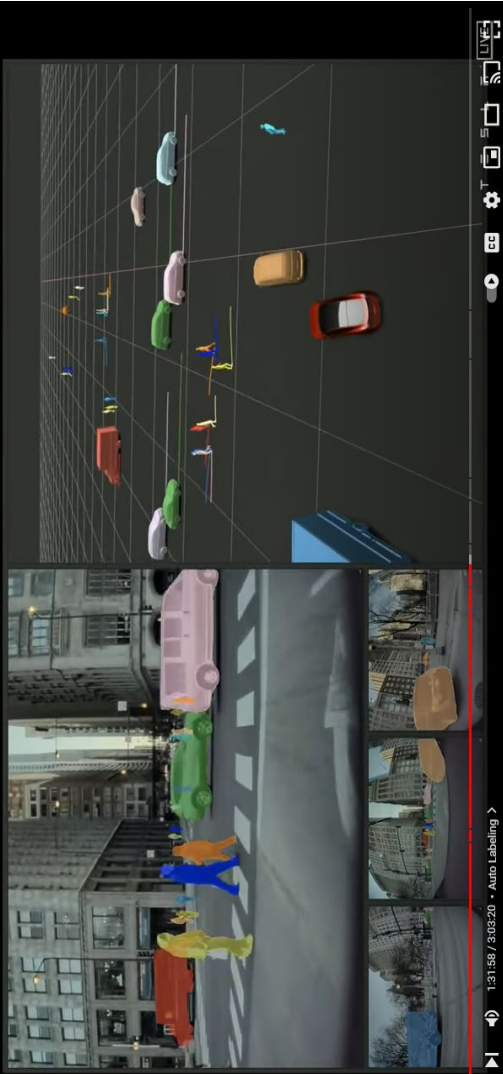
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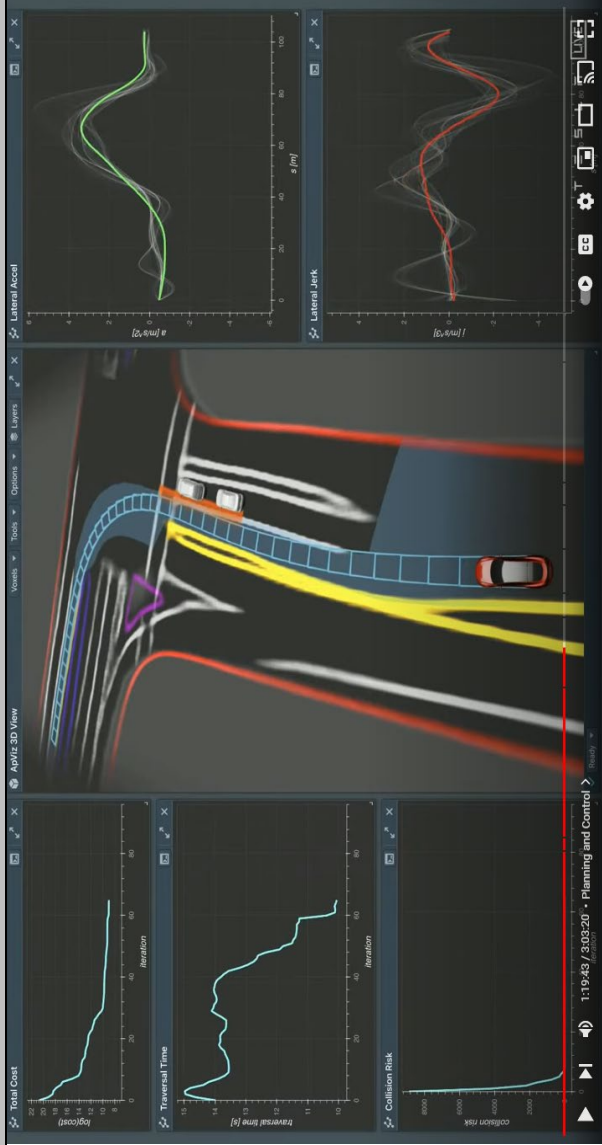
At 1:31:23 the speaker describes Tesla's ability to arbitrarily reconstruct 3D static obstacles, and the slide shown in the screenshot above depicts an example of Tesla's reconstructed 3D point cloud. Tesla is able to make this reconstruction from data captured by the cameras and other various sensors included in the accused Tesla vehicles.

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	Walls, Barriers & Everything Else  ▶ ▶▶ 🔊 1:31:26 / 3:02:20 Auto Labeling > ◀ ◀▶ ⚙️ 📺 📱 🖨️ At 1:31:58 the speaker is describing Tesla's vector space in more detail, notably touching on how the vector space includes object representations.

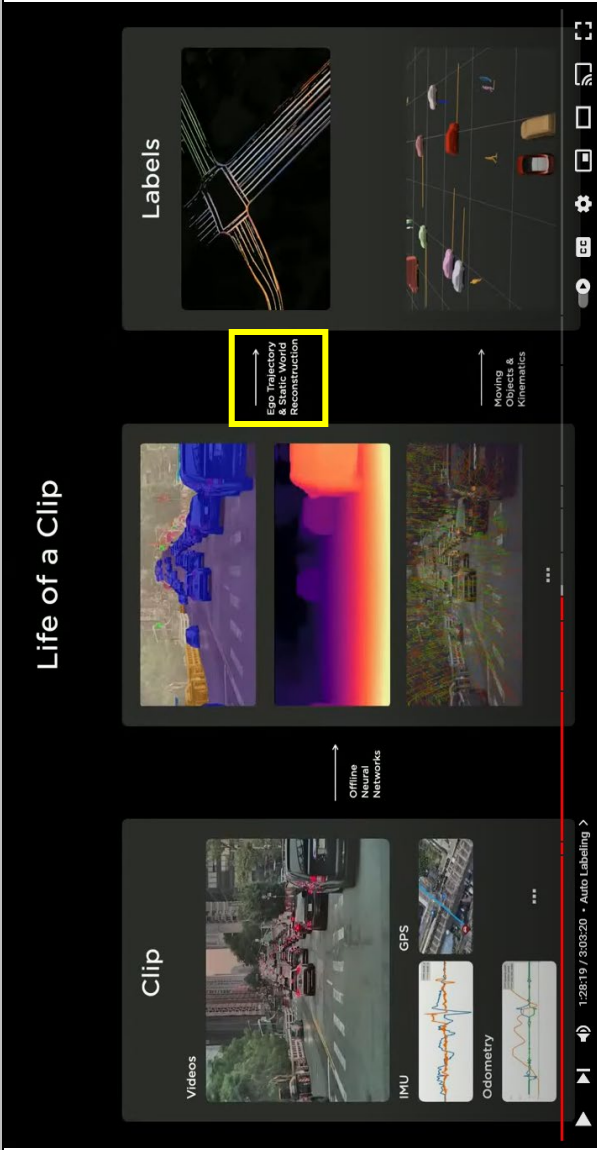
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	Persisting Vehicles & Pedestrians Through Occlusions  At 1:32:48, the speaker explains how Tesla combines everything together in order to produce “amazing” data sets that annotate all of the road texture, the static objects, and all of the moving objects. For additional examples of Tesla’s correlating a first circumstance representation with one or more instruction sets, <i>see also</i>, Tesla AI Day 2021(https://www.youtube.com/watch?v=j0z4FweCy4M)

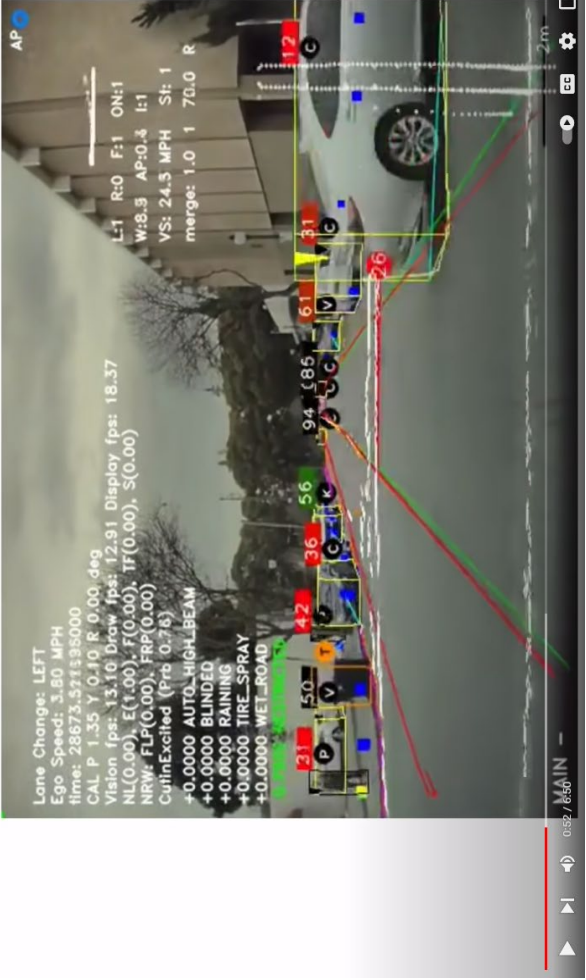
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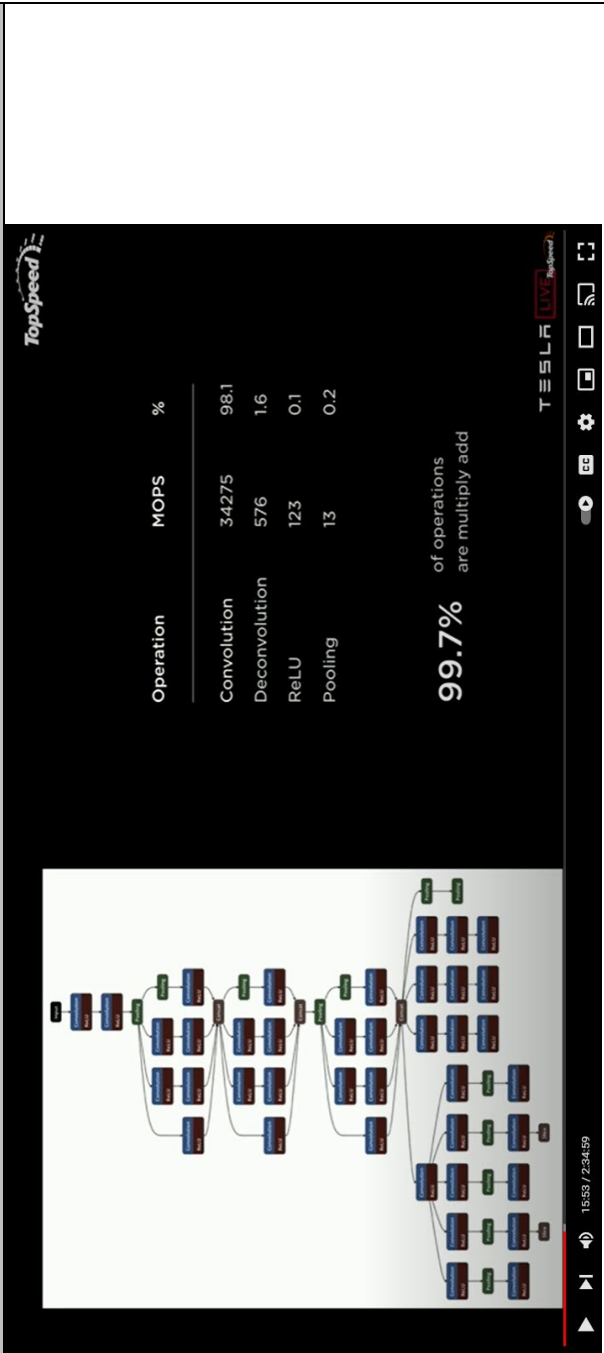
At 1:19:43, the speaker describes recording a human's trajectory around a curve, recording/storing the data associated therewith, and sharing that data with the fleet so the accused Tesla vehicles are better able to handle that particular turn and similar turns/curves in the future.

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	 At/around 1:28:16, the speaker is describing exemplary labeling of a single clip in which an entity that has dense sensor data like videos, imu data, gps, odometry (e.g., speed, steering braking, etc.) are uploaded by Tesla's own engineering cars and/or from customer cars. Note the "Ego Trajectory & Static World Reconstruction" label shown in the screenshot above (yellow annotation). Again, at/around 2:55:29, Mr. Musk describes how all the human drivers are "essential training the neural net as to what is the correct course of action" in any particular circumstance encountered by the accused Tesla vehicles. A further example of Tesla's correlating a first circumstance representation with one or more instruction set is depicted below.

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	①  At/around 0:50 in the video referenced above/cited below, a myriad of instruction labels considered by the accused Tesla vehicles while in operation can be seen. Examples of such instruction labels include Lane change and Ego speed. Source: https://www.youtube.com/watch?v=zRnSmwli_DQ Tesla describes how circumstance representations are correlated with various instruction sets for operation of the accused Tesla vehicles during Tesla Autonomy Day 2019 (https://www.youtube.com/watch?v=-b041NXGPZ8) and Tesla AI Day 2021 (https://www.youtube.com/watch?v=j0z4FweCy4M). As examples:

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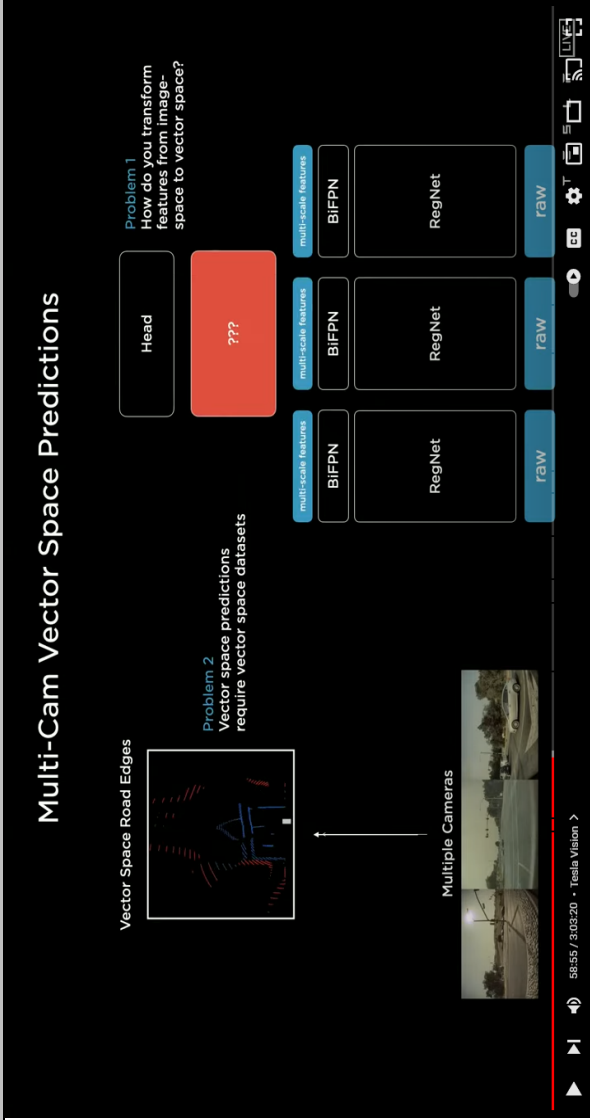
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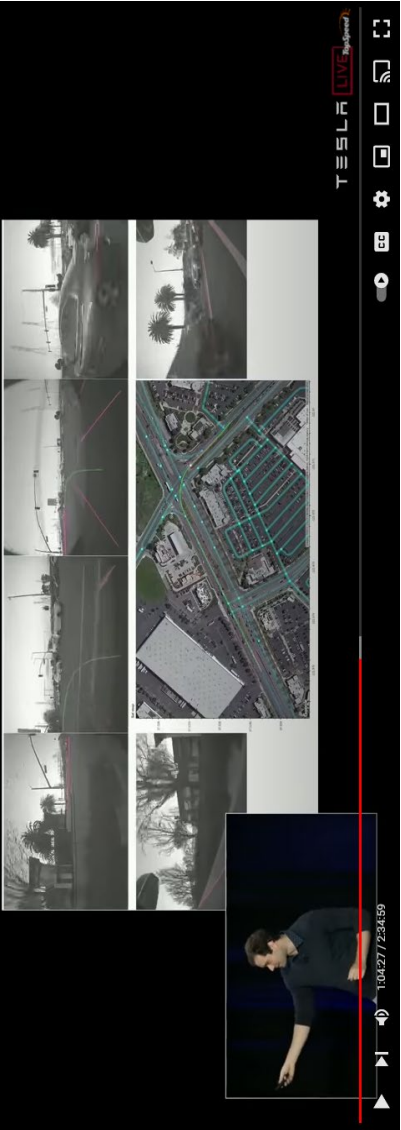
Tesla describes how the accused Tesla vehicles use a convolutional neural network (CNN) to learn and implement autonomous driving. (See Tesla Autonomy Day 2019 at/around 15:53).

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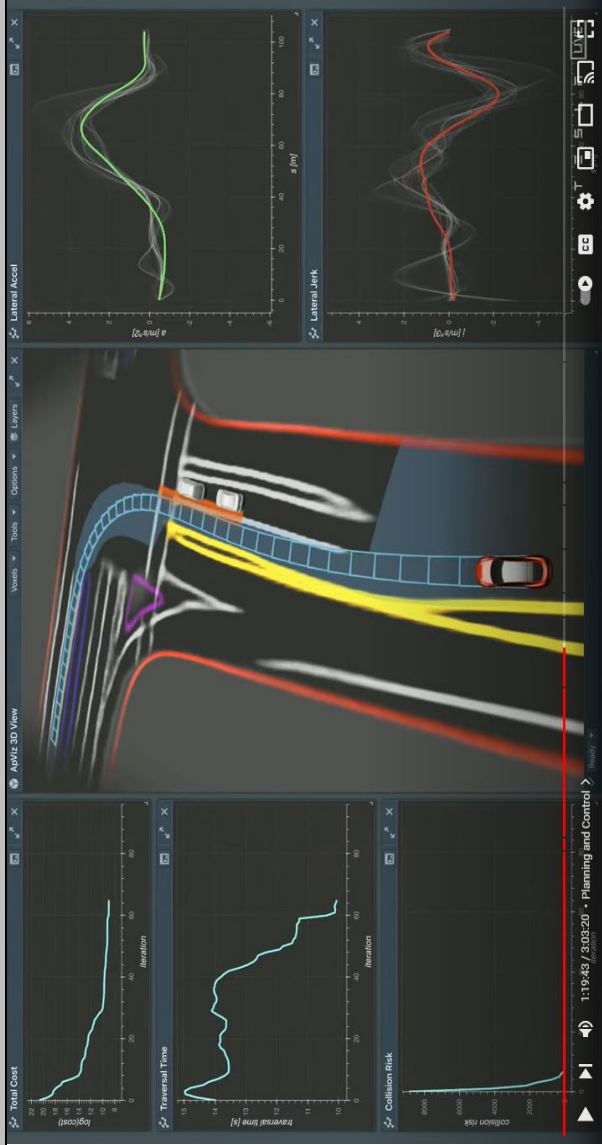


Tesla describes how it wants to re-represent the features from image space as vector space features, and that it wants to use vector space predictions from its neural network, which requires vector space data sets, and vector space data sets require vector space labels. (See Tesla AI Day 2021 at/around 58:31).

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	PATH PREDICTION  Tesla describes how, while driving accused Tesla vehicles, drivers are actually annotating the data captured by the vehicle because the user is steering the wheel, thereby telling the vehicle/Tesla how to navigate/traverse different environment (e.g., circumstance representations representing the environment correlated with driving instructions for traversing the environment). (<i>See</i> Tesla Autonomy Day 2019 at/around 1:04:10)

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Tesla depicts circumstance representation and correlated human trajectory, e.g., trajectory implemented using driving instruction sets at each point in time while the accused Tesla vehicles are taking a turn. (See Tesla AI Day 2021 at/around 1:19:43).

Further, as stated above, circumstance representations include one or more object representations/features. The convolution layers of the CNN in the accused Tesla vehicles store object features correlated via forward connections with output nodes of the CNN, including instructions for driving the vehicle, as described by the expert from MIT speaking in the following video, the “MIT Convolutional Neural Networks” video, found at: <https://www.youtube.com/watch?v=iaSUYvmCekI>.

First, the speaker describes learning features and features being stored/learned in different convolution layers.

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1

1

2

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2

1

0

1

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4

x

y

Pooling

max pool with 2x2 filters
and stride 2

```
tf.keras.layers.MaxPool2D(  
    pool_size=(2,2),  
    strides=2  
)
```

6

8

3

4

1) Reduced dimensionality

2) Spatial invariance

How else can we downsample and preserve spatial invariance?

MIT Introduction to Deep Learning

introtodeeplearning.com @MITDeepLearning

65/91

26:40 / 37:20 • Non-linearity and pooling >

Subtitles/closed captions (c)

IntroToDeepLearning.com

(See MIT Convolutional Neural Networks video at/around 26:40).

Next, the speaker describes the overall CNN used for robotic control (e.g., autonomous driving) where features in convolutional layers of the CNN are correlated with control instructions at the end of the CNN via forward connections.

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An Architecture for Many Applications

FEATURE LEARNING

INPUT

CONVOLUTION + RELU

POOLING

CONVOLUTION + RELU

POOLING

CLASSIFICATION

FLATTEN

FULLY CONNECTED

SOFTMAX

CAR

TRUCK

VAN

BICYCLE

...

Detection

Semantic segmentation

End-to-end robotic control

MIT Deep Learning

Intro To Deep Learning.com

6.5191 Introduction to Deep Learning

intro.tod deeplearning.com

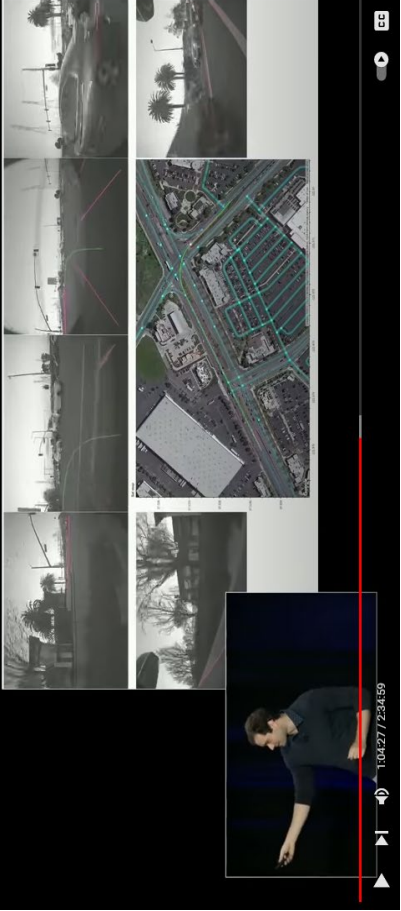
@MITDeepLearning

1/28/20

29:47 / 37:20 • Applications >

(See MIT Convolutional Neural Network video at/around 29:40)

During its Autonomy Day 2019 and AI Day 2021 presentations, Tesla goes on to describe how the instruction sets for operating the device is learned in a learning process that includes operating the first device at least partially by a user. For example:

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
	PATH PREDICTION  At/around 1:04:10 in Tesla's Autonomy Day 2019 presentation, the speaker describes, while driving one of the accused Tesla vehicles, the user is annotating the data because the user is steering the wheel, the user is telling Tesla how to traverse different environments, that one person in the fleet taking, e.g., a left turn through a particular intersection, is providing Tesla with invaluable data corresponding to GPS coordinates, inertial measurements, wheel angle, wheel ticks, etc. thus enabling Tesla to understand the path that particular user took through that particular turn. Tesla then uses this data to supervising/training the CNN (e.g., training through supervised learning). This data is then shared with the entire fleet through the neural network. The speaker goes on to state that Tesla is merely trying to imitate how people drive in the real world. At/around 1:04:01 in Tesla's Autonomy Day 2019 presentation, the speaker describes how Teslas/Tesla's neural network learns from drivers training the network. At/around 1:52:20, it is stated human drivers are monitored (e.g., monitored by a camera), and that the CNN implements autonomous driving based on this learned knowledge. <i>See also</i> Tesla's US 10,956,755; Tesla's US 2020/0249685; Tesla's US 10,997,461; Tesla's WO 2020/056331.

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
[45b]. one or more sensors;	The '474 Accused Products are devices further comprising one or more sensors. For example, the 474 Accused Products further includes numerous sensors. For instance, each vehicle in the Tesla fleet of vehicles includes at least an array of eight (8) outward facing cameras that capture the environment surrounding the vehicle. Optionally, ultrasonic sensors and radar can be equipped. Data detected/sensed by these sensors is provided to accused Tesla autonomous vehicle simulation system, e.g., via internet uplink.

U.S. Patent No.
11,663,474

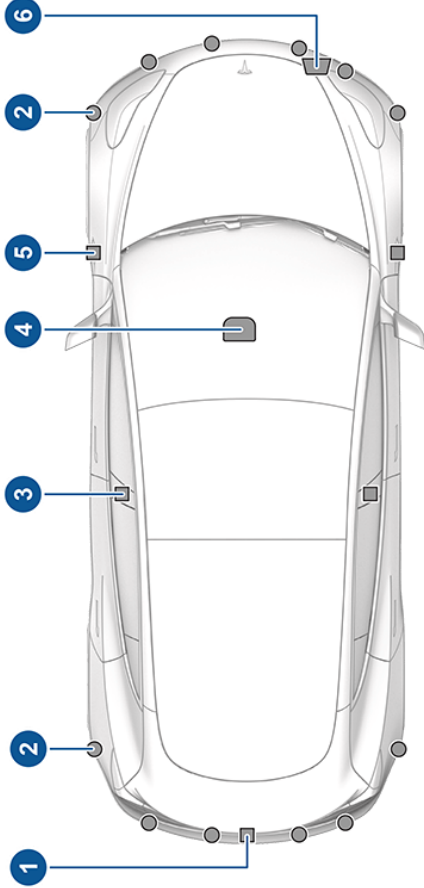
Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²

T E S L A | Model 3 Owner's Manual

- ✓ Model 3 Owner's Manual
- ✓ Overview
- ✓ Opening and Closing
- ✓ Storage Areas
- ✓ Seating and Safety Restraints
- ✓ Connectivity
- ✓ Driving
- ✓ Autopilot
- About Autopilot**
- Traffic-Aware Cruise Control
- Autosteer
- Navigate on Autopilot
- Traffic Light and Stop Sign Control
- Autopark
- Summon
- Smart Summon
- ✓ Active Safety Features
- ✓ Dashcam, Sentry, and Security
- ✓ Climate
- ✓ Navigation and Entertainment
- ✓ Charging and Energy Consumption
- ✓ Maintenance
- ✓ Specifications
- ✓ Roadside Assistance
- ✓ Troubleshooting
- ✓ Consumer Information

How It Works

Your Model 3 includes the following components that actively monitor the surrounding area:

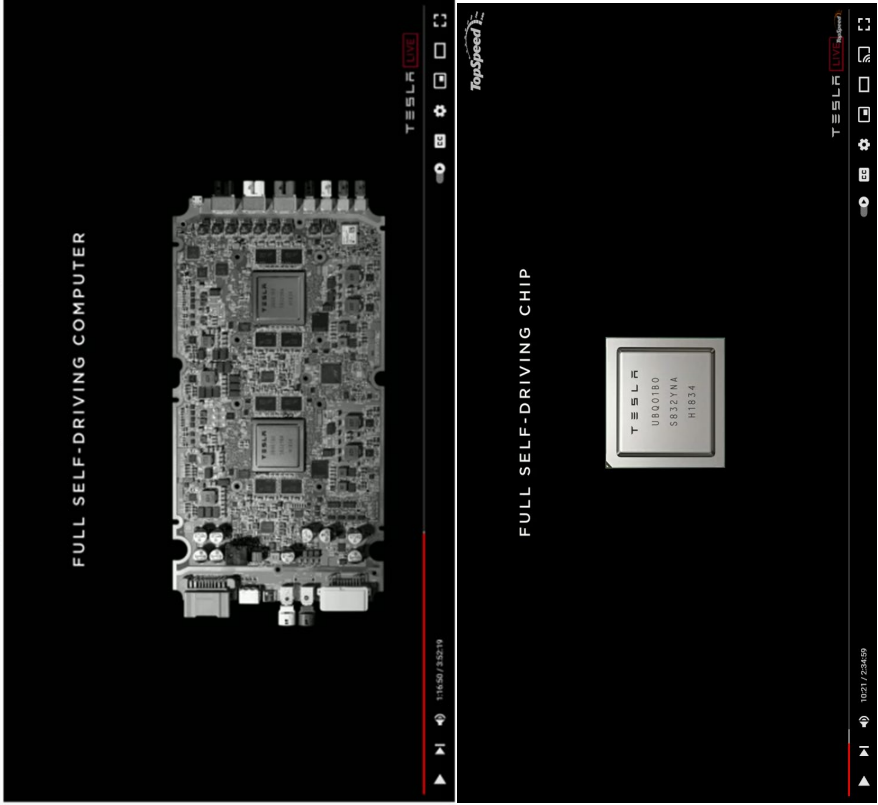


1. A camera is mounted above the rear license plate.
2. Ultrasonic sensors (if equipped) are located in the front and rear bumpers.
3. A camera is mounted in each door pillar.
4. Three cameras are mounted to the windshield above the rear view mirror.
5. A camera is mounted to each front fender.
6. Radar (if equipped) is mounted behind the front bumper.

Model 3 is also equipped with high precision electronically-assisted braking and steering systems.

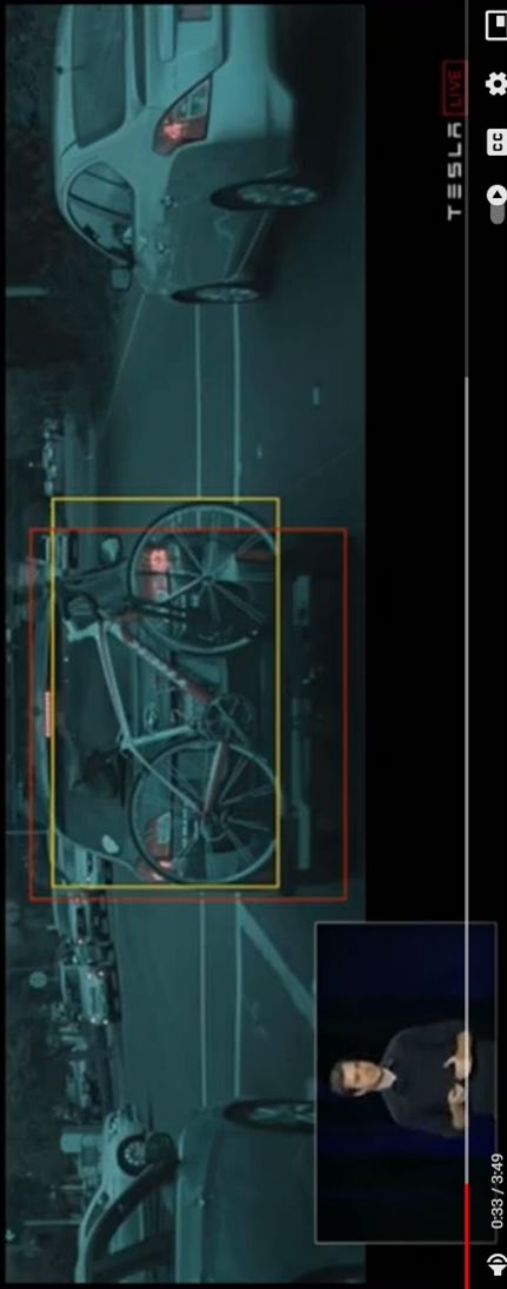
In addition, the cabin camera (if equipped) can determine driver inattentiveness and provide alerts when Autopilot is engaged. By default, data from the camera does not leave the vehicle itself. In other words, data is not saved or transmitted unless you enable data sharing. To enable data sharing, touch **Controls** > **Software** > **Data Sharing** > **Allow Cabin Camera Analytics**. Cabin Camera Analytics helps Tesla continue to develop even safer vehicles in the future. See [Cabin Camera](#).

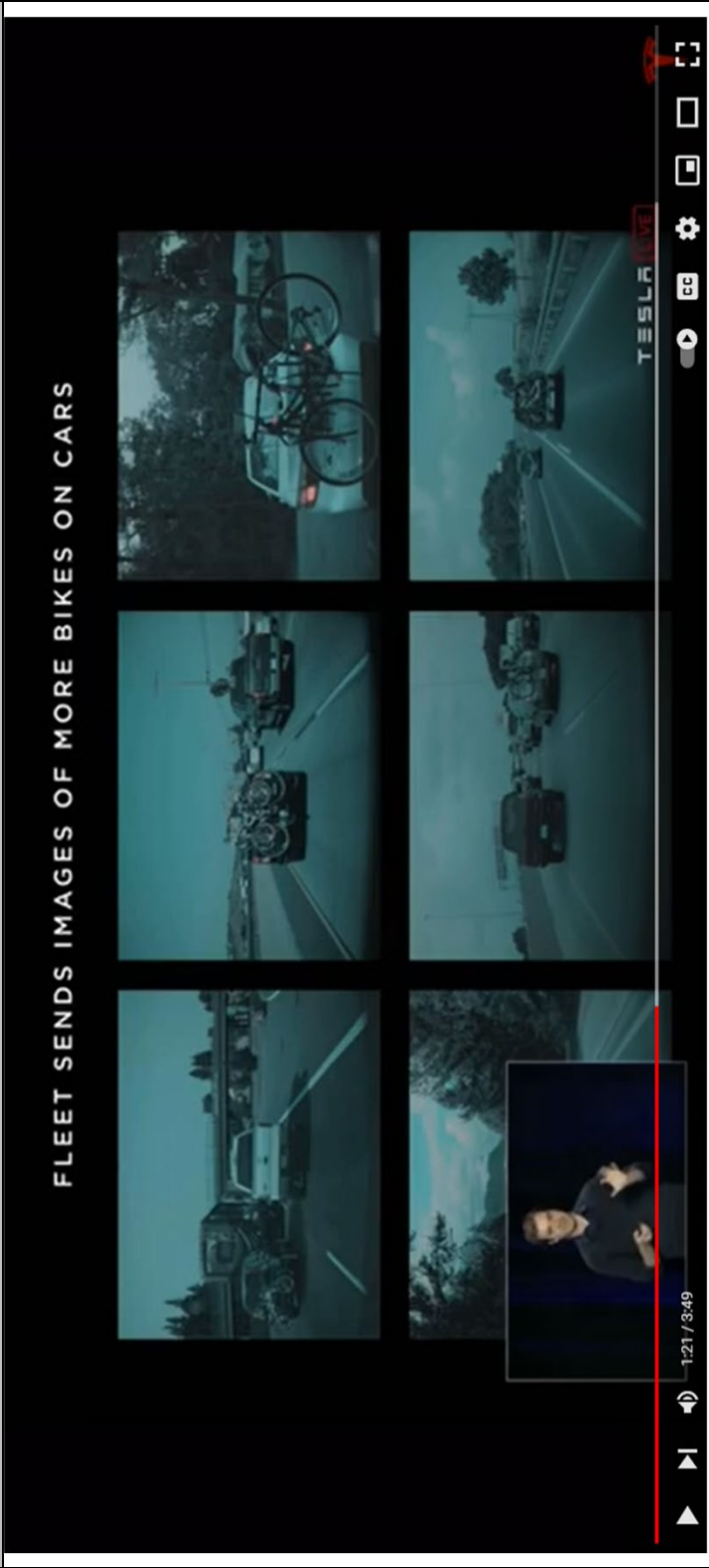
Source: [https://www.tesla.com/ownersmanual/model3/en_au/GUID-EDA77281-42DC-4618-98A9-CC62378E0EC2.html#:~:text=Ultrasonic%20sensors%20\(if%20equipped\)%20are,mounted%20to%20each%20front%20fender.](https://www.tesla.com/ownersmanual/model3/en_au/GUID-EDA77281-42DC-4618-98A9-CC62378E0EC2.html#:~:text=Ultrasonic%20sensors%20(if%20equipped)%20are,mounted%20to%20each%20front%20fender.)

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
[45c]. one or more processors; and	The '474 Accused Products are devices further comprising one or more processors. For example, Tesla's Models S, 3, X, and Y include one or more processors that, at a minimum, effect semi and/or fully autonomous driving. The image contains two side-by-side screenshots from a video. The left screenshot shows a complex circuit board labeled 'FULL SELF-DRIVING COMPUTER' with the Tesla logo in the top right corner. The right screenshot shows a single integrated circuit chip labeled 'FULL SELF-DRIVING CHIP' with the Tesla logo and part numbers 'U800180', 'S8327NA', and 'H1834' in the top right corner. Both screenshots include video player controls at the bottom. Source: https://www.youtube.com/watch?v=-b041NXGPZ8 (Tesla Autonomy Day 2019, discussing Tesla's full self-driving computer and Tesla's full self-driving chip); see also Tesla's ECU, which contains computers that are programmed to perform the claimed features.

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[45d]. one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least:	The '474 Accused Products are devices further comprising one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least the following limitations. For example, each accused Tesla vehicle includes a system(s) that access memory that stores representations of objects in the surroundings of the Tesla vehicle. These circumstance representations (or circumstances) are learned while drivers drive the accused Tesla vehicles. Examples of circumstances that can be learned include, effectively everything captured/sensed/measured by the sensors (e.g., cameras, ultrasonic, telemetry, etc.) included in each of the accused Tesla vehicles that is fed into the ECU, such as other vehicles, pedestrians, roads, buildings, bikes, road debris, curbs, sidewalks, animals, speed, location, wheel ticks, etc. The '474 Accused Products also learn driving instructions, such as instructions for effecting the speed, steering, and/or braking of the accused Tesla vehicle being driven based on the actions taken by the driver to navigate those circumstances. This driving knowledge learned by one accused Tesla vehicle is transmitted to Tesla's simulator before being distributed to all vehicles in the Tesla fleet via over-the-air (OTA) software updates. Therefore, the fleet enables each accused Tesla vehicle included therein to autonomously implement driving instructions learned on one or more originating vehicles when similar circumstances are detected by any of the vehicles in Tesla's fleet, thereby enabling Tesla's autonomous driving capabilities. Further, to effectuate the circumstance representations, a Tesla vehicle detects objects. For example, in the previous analysis of driving behind the car with the bike mounted to it, the car detects the bike as an object. Tesla explains object detection as follows:

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²  The screenshot displays a video player interface. The main video area shows a road scene with a white car and a cyclist. Overlaid on the bottom right is a presentation window showing a man in a dark shirt speaking. The video player controls at the bottom include a play button, a progress bar at 0:00 / 3:49, a volume icon, a settings gear, a full screen icon, and a share icon. The text 'TESLA LIVE' is visible in the top right corner of the video player. “So object detection is something we care a lot about we’d like to put bounding boxes around say the cars and the objects here because we need to track them and we need to understand how they might move around so again we might ask human annotators to give us some annotations for these and humans might go in and might tell you that ok those patterns over there are cars and bicycles and so on and you can train your neural network on this, but if you’re not careful, the neural network all will make miss predictions in some cases.”
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U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
	OBJECT DETECTION  “So as an example if we stumble by a car like this that has a bike on the back of it then the neural network actually when I joined would actually create two deductions it would create a car deduction and a bicycle deduction and that’s actually kind of correct because I guess both of those objects actually exist but for the purposes of the controller and a planner downstream you really don’t want to deal with the fact that this bicycle can go with the car the truth is that that bike is attached to that car so in terms of like just objects on the road there’s a single object a single car and so what you’d like to do now is you’d like to just potentially annotate lots of those images as this is just a single car so the process that we that we go through internally in the team is that we take this image or a few images that show this pattern and we have a mechanism a machine learning mechanism by which we can ask the fleet to source us examples that look like that and the fleet might respond with images that contains those patterns.”

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²  “So as an example these six images might come from the fleet they all contain bikes on backs of cars and we would go in and we would annotate all those as just a single car and then the performance of that detector actually improves and the network internally understands that hey when the bike is just attached to the car that’s actually just a single car and it can learn that given enough examples and that’s how we sort of fix that problem ... now the fleet doesn’t just respond with bicycles on backs of cars we look for all the thing we look for lots of things all the time.”
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Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²



“So for example we look for boats and the fleet can respond with boats we look for construction sites and the fleet can send us lots of construction sites from across the world we look for even slightly more rare cases.”

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Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²

FLEET SENDS IMAGES OF DEBRIS ON THE ROAD



TESLA LIVE

▶ ▶ | 🔊 2:08 / 3:49 ⚙️

“So for example finding debris on the road is pretty important to us so these are examples of images that have streamed to us from the fleet that show tires cones, plastic bags and things like that if we can source these at scale we can annotate them correctly and the neural network will learn how to deal with them in the world.”

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Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²

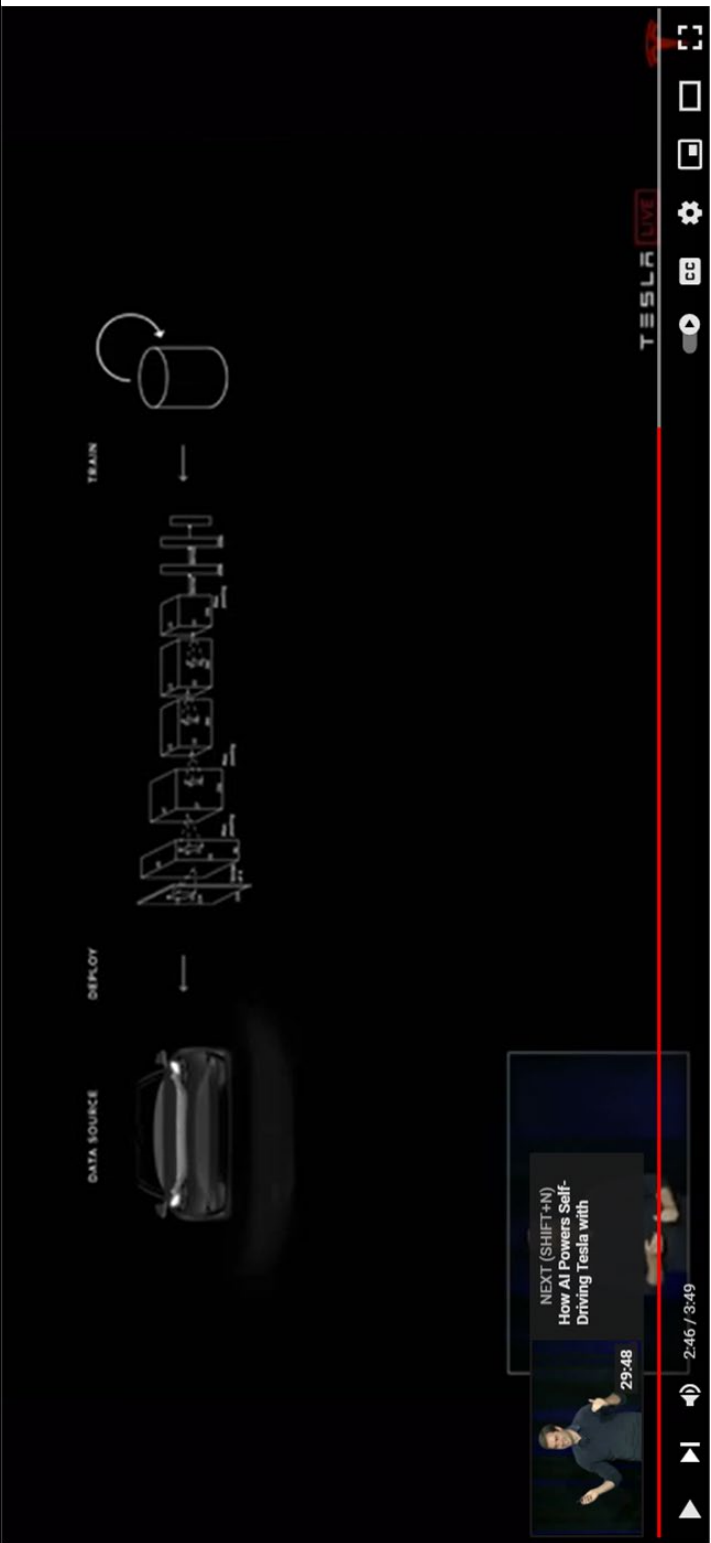
FLEET SENDS IMAGES OF ANIMALS ON THE ROAD

▶ ⏮ 🔊 2:24 / 3:49

TESLA

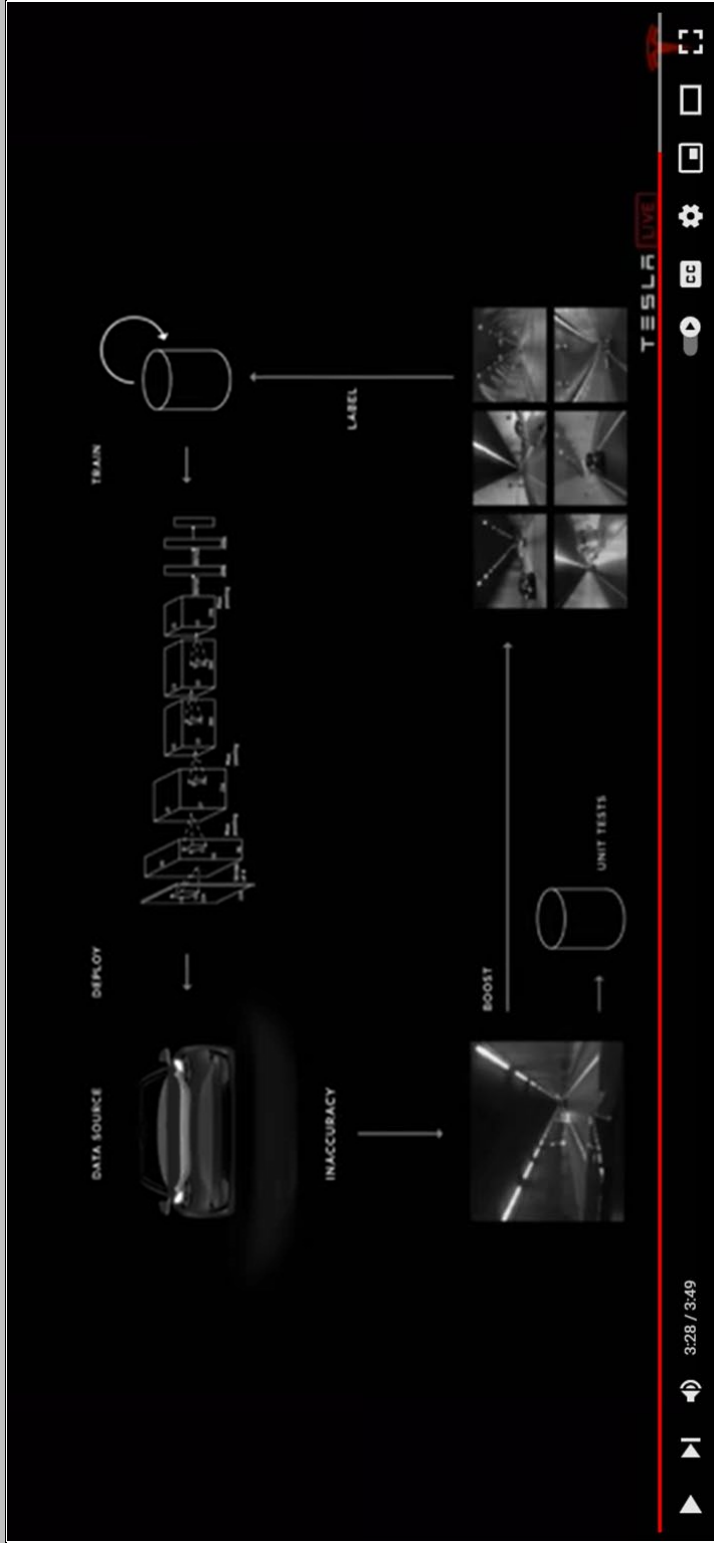
⏮ ⏪ ⏩ ⏭ ⚙️ ⏸ ⏹

“Here’s another example, animals of course also a very rare occurrence, an event, but we wanted them neural network to really understand what’s going on here...that these are animals and we want to deal with that correctly.”

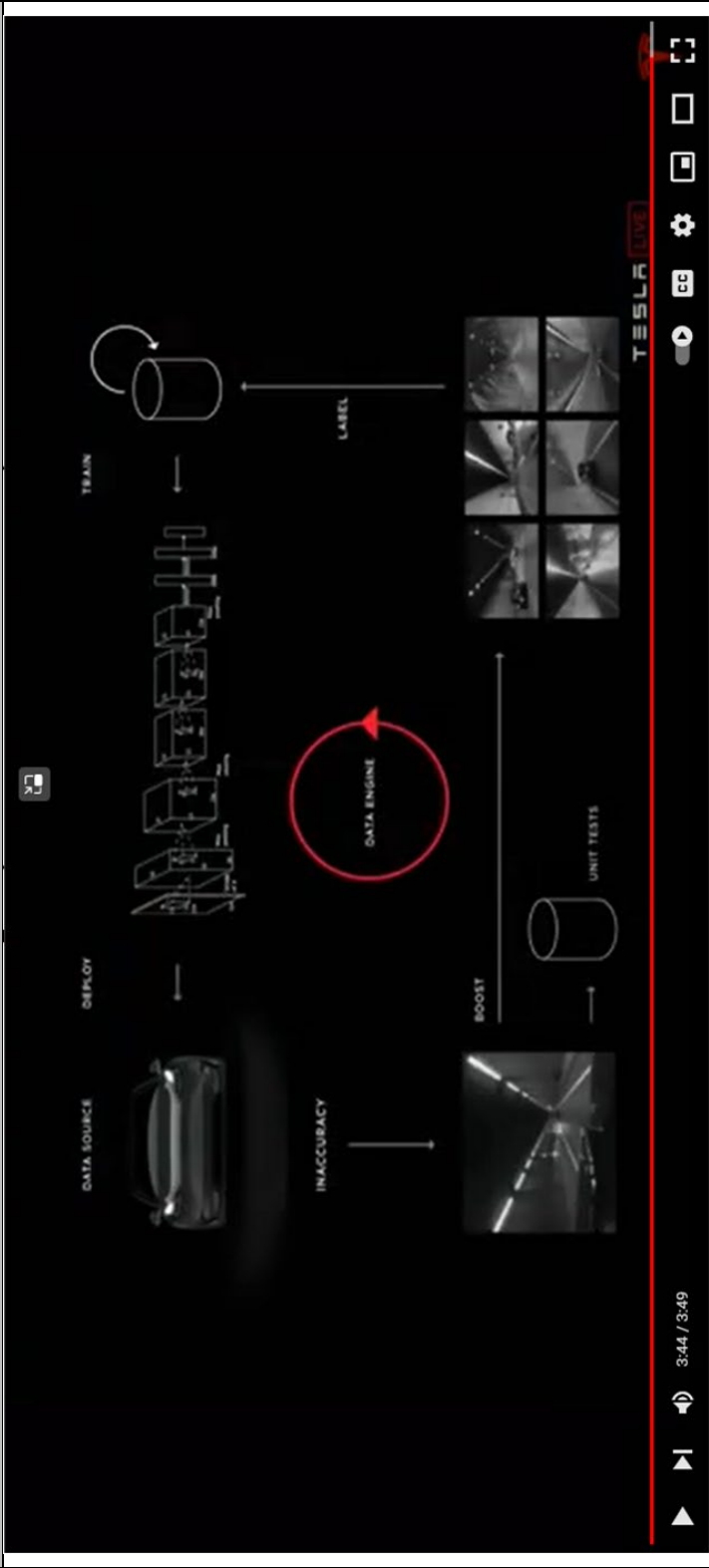
U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
	 “So to summarize the process by which we iterate on neural network predictions looked something like this – we start with a seed dataset that was potentially sourced at random, we annotate that dataset, and then we train your networks on that dataset and put that in the car, and then we have mechanisms by which we notice inaccuracies in the car when this detector may be misbehaving.”

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“So, for example, if we detect that the neural network might be uncertain or if we detect that or if there’s a driver intervention or any of those settings we can create this trigger infrastructure that sends us data of those inaccuracies and so, for example, if we don’t perform very well on lane line detection on tunnels then we can notice that there’s a problem in tunnels that imagine would enter our unit tests so we can verify that we’ve actually fixing the problem over time but now what you do is to fix this inaccuracy you need to source many more examples that look like that so we asked the fleet to please send us many more tunnels and then we label all those tunnels correctly, we incorporate that into the training set and we retrain the network, redeploy, and iterate the cycle over and over again”

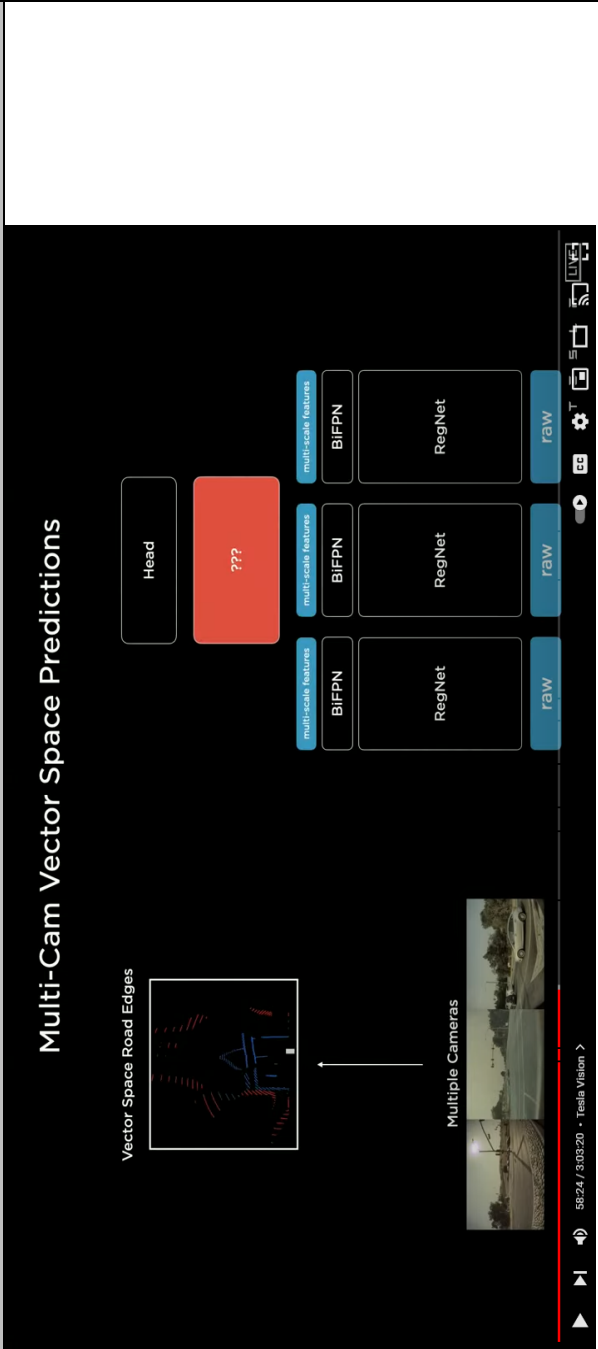
U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²  “So we refer to this iterative process by which we improve these predictions as the data engine so iteratively deploying something potentially in shadow mode sourcing inaccuracies and incorporating the training set over and over again and we do this basically for all the predictions of these neural networks.” Source: https://www.youtube.com/watch?v=33K3id2xNAE&t As Mr. Karpathy explained during Tesla Autonomy Day 2019 “while you are driving a car what you’re actually doing is you are annotating the data because you are steering the wheel. you’re telling us how to traverse different environments so what we’re looking at here is a some person in the fleet who took a left through an intersection and what we do here is we have the full video of all the cameras and we know that the path that this person took because of the GPS, the inertial measurement unit, the wheel angle, the wheel ticks, so we put all that together and we understand the path that this person took through this environment and then of course we can use this for supervision [e.g., training a CNN through supervised
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U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
	learning] for the network so we just source a lot of this from the fleet, we train a neural network on those trajectories, and then the neural network predicts paths just from that data so really what this is referred to typically is called imitation learning we're taking human trajectories from the real world I'm just trying to imitate how people drive in real worlds and we can also apply the same data engine crank to all of this and make this work.” Source: https://www.youtube.com/watch?v=b041NXGPZ8 at 1:04:10. In this way, driving knowledge is: (i) learned on a first Tesla vehicle, (ii) transferred to the simulator where it is synthesized with other driving knowledge, (iii) packaged and sent from the simulator to the fleet, e.g., the driving knowledge is stored on a memory of a second Tesla vehicle via the fleet over-the-air (OTA) software update, and (iv) accessed on the second Tesla vehicle for its autonomous driving. The second Tesla vehicle can, thereby, implement the driving knowledge learned by the first Tesla vehicle and synthesized by the simulator. See <i>also</i>, Tesla AI Day 2021 (https://www.youtube.com/watch?v=j0z4FweCy4M) at or around 2:55:29), during which Mr. Musk explained that all the human drivers are essentially training the neural network as to what is the correct course of action for the accused Tesla vehicles to take while being operated on the road. This is just one example of the system (e.g., the Tesla/Tesla fleet plus the supercomputer system or other computers) being trained with object representations and instructions from a vehicle. See <i>also</i>, Tesla AI Day 2021(https://www.youtube.com/watch?v=j0z4FweCy4M) for additional examples of Tesla's analysis of objects and circumstances:

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	 At 58:10, the speaker describes taking all of the images and simultaneously feeding them into a single neural net and directly outputting into a vector space.

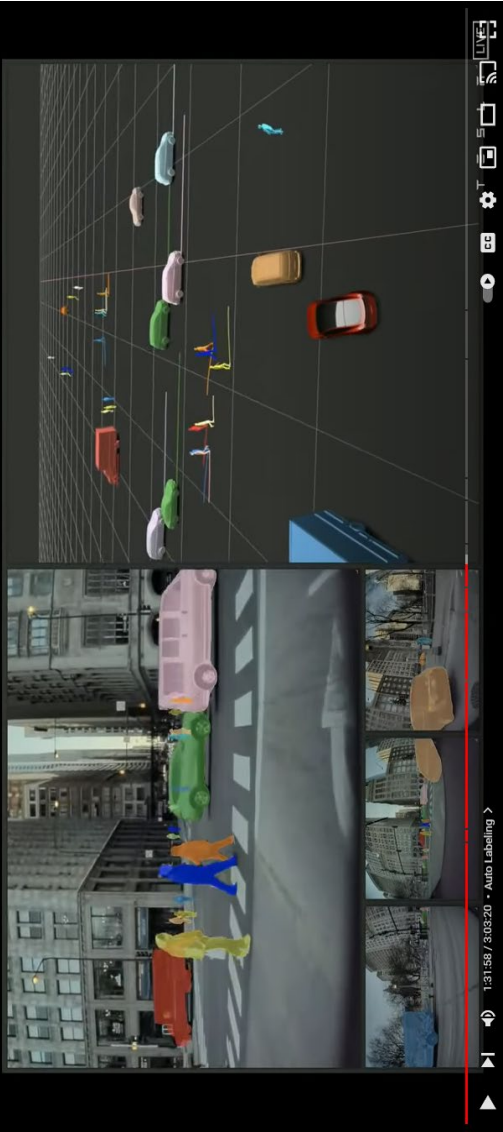
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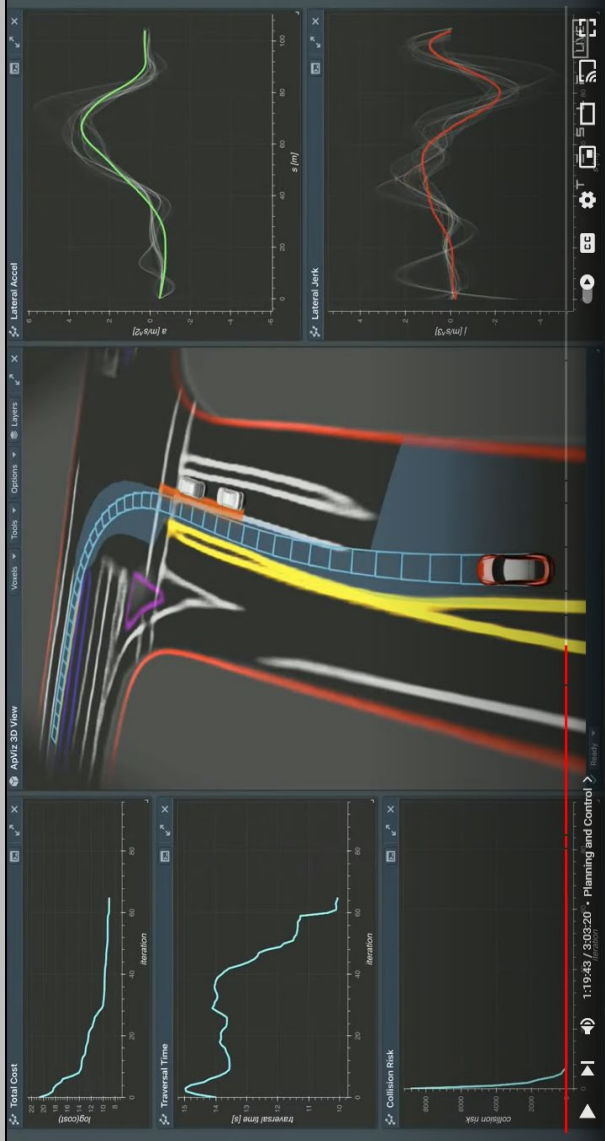
At 1:31:23 the speaker describes Tesla's ability to arbitrarily reconstruct 3D static obstacles, and the slide shown in the screenshot above depicts an example of Tesla's reconstructed 3D point cloud. Tesla is able to make this reconstruction from data captured by the cameras and other various sensors included in the accused Tesla vehicles.

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
	Walls, Barriers & Everything Else  At 1:31:58 the speaker is describing Tesla's vector space in more detail, notably touching on how the vector space includes object representations.

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	Persisting Vehicles & Pedestrians Through Occlusions  At 1:32:48, the speaker explains how Tesla combines everything together in order to produce “amazing” data sets that annotate all of the road texture, all static objects, and all of the moving objects. For additional examples of Tesla’s correlating a first circumstance representation with one or more instruction sets, see also, Tesla AI Day 2021(https://www.youtube.com/watch?v=j0z4FweCy4M).

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At 1:19:43, the speaker describes recording a human's trajectory around a curve, recording/storing the data associated therewith, and sharing that data with the fleet so the accused Tesla vehicles are better able to handle that particular turn and similar turns/curves in the future.

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	The screenshot displays a software interface titled "Life of a Clip". It is divided into three main sections: "Clip", "Life of a Clip", and "Labels". The "Clip" section shows a video of a street scene with cars, along with sensor data plots for IMU, GPS, and Odometry. The "Life of a Clip" section shows a 3D reconstruction of the scene with a yellow box highlighting the "Ego Trajectory & Static World Reconstruction" section. The "Labels" section shows a 3D reconstruction of the scene with labels for moving objects and kinematics. At/around 1:28:16, the speaker is describing exemplary labeling of a single clip in which an entity that has dense sensor data like videos, IMU data, GPS, odometry (e.g., speed, steering braking, etc.) are uploaded by Tesla's own engineering cars and/or from customer cars. Note the "Ego Trajectory & Static World Reconstruction" label shown in the screenshot above (yellow annotation). Again, at/around 2:55:29, Mr. Musk describes how all the human drivers are "essential training the neural net as to what is the correct course of action" in any particular circumstance encountered by the accused Tesla vehicles. A further example of Tesla's correlating a first circumstance representation with one or more instruction set is depicted below.

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At/around 0:50 in the video referenced above/cited below, a myriad of instruction labels considered by the accused Tesla vehicles while in operation can be seen. Examples of such instruction labels include Lane change and Ego speed. Source: https://www.youtube.com/watch?v=zRnSmwLi_DQ

A bevy of sensors are included in the accused Tesla vehicles. Examples of sensors included in the accused Tesla vehicles include an array of outward-facing cameras that capture the environment surrounding the vehicle. Optionally, ultrasonic sensors and radar can be equipped.

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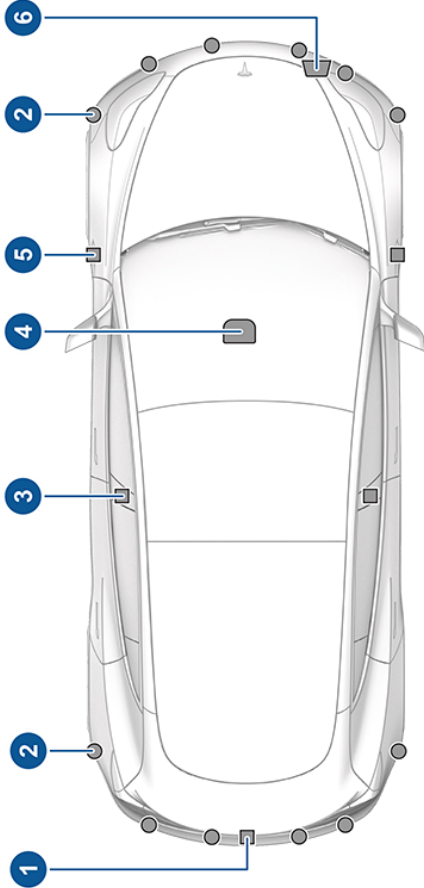
Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²

T E S L A | Model 3 Owner's Manual

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- Traffic-Aware Cruise Control
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- Navigate on Autopilot
- Traffic Light and Stop Sign Control
- Autopark
- Summon
- Smart Summon
- ✓ Active Safety Features
- ✓ Dashcam, Sentry, and Security
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How It Works

Your Model 3 includes the following components that actively monitor the surrounding area:



1. A camera is mounted above the rear license plate.
2. Ultrasonic sensors (if equipped) are located in the front and rear bumpers.
3. A camera is mounted in each door pillar.
4. Three cameras are mounted to the windshield above the rear view mirror.
5. A camera is mounted to each front fender.
6. Radar (if equipped) is mounted behind the front bumper.

Model 3 is also equipped with high precision electronically-assisted braking and steering systems.

In addition, the cabin camera (if equipped) can determine driver inattentiveness and provide alerts when Autopilot is engaged. By default, data from the camera does not leave the vehicle itself. In other words, data is not saved or transmitted unless you enable data sharing. To enable data sharing, touch **Controls** > **Software** > **Data Sharing** > **Allow Cabin Camera Analytics**. Cabin Camera Analytics helps Tesla continue to develop even safer vehicles in the future. See [Cabin Camera](#).

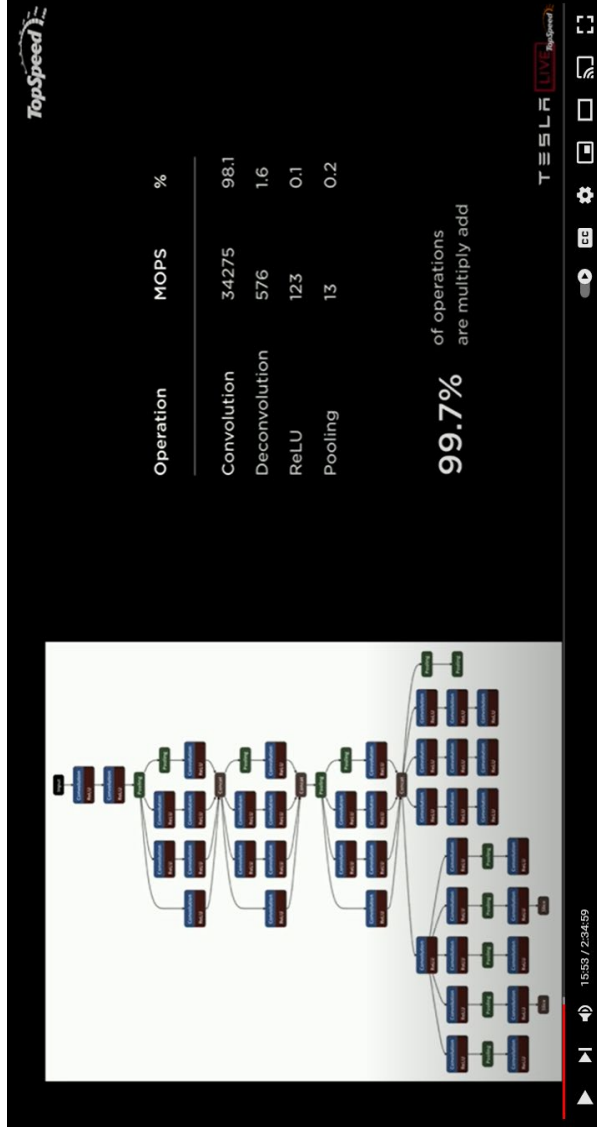
Source: [https://www.tesla.com/ownersmanual/model3/en_au/GUID-EDA77281-42DC-4618-98A9-CC62378E0EC2.html#:~:text=Ultrasonic%20sensors%20\(if%20equipped\)%20are,mounted%20to%20each%20front%20of,fender.](https://www.tesla.com/ownersmanual/model3/en_au/GUID-EDA77281-42DC-4618-98A9-CC62378E0EC2.html#:~:text=Ultrasonic%20sensors%20(if%20equipped)%20are,mounted%20to%20each%20front%20of,fender.)

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Tesla describes how circumstance representations are correlated with various instruction sets for operation of the accused Tesla vehicles during Tesla Autonomy Day 2019 (<https://www.youtube.com/watch?v=b041NXGPZ8>) and Tesla AI Day 2021 (<https://www.youtube.com/watch?v=j0z4FweCy4M>).

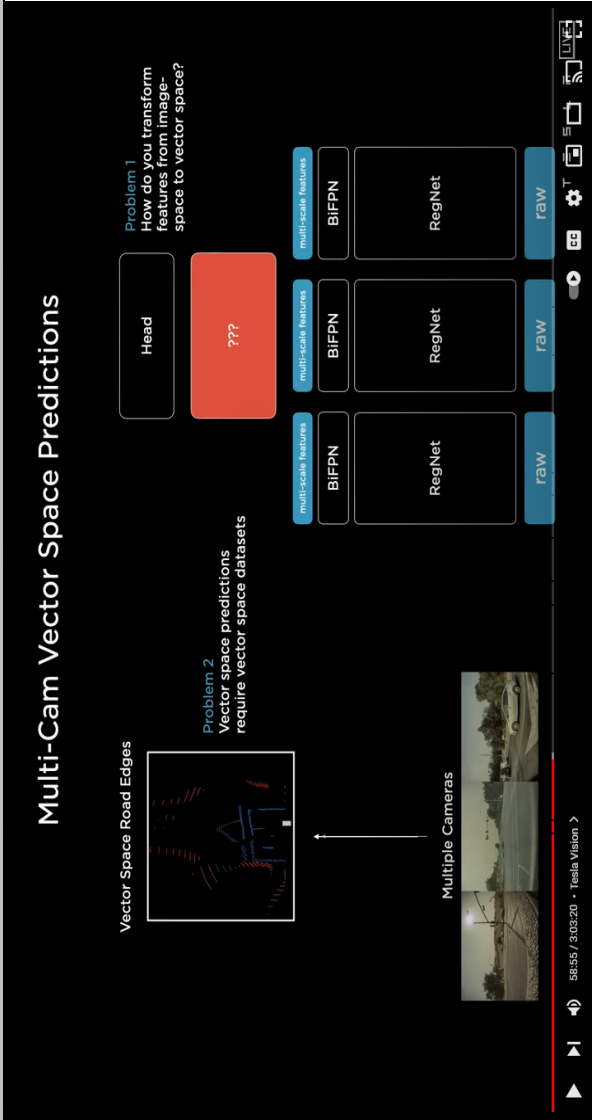
As examples:



Tesla describes how the accused Tesla vehicles use a convolutional neural network (CNN) to learn and implement autonomous driving. See Tesla Autonomy Day 2019 at/around 15:53.

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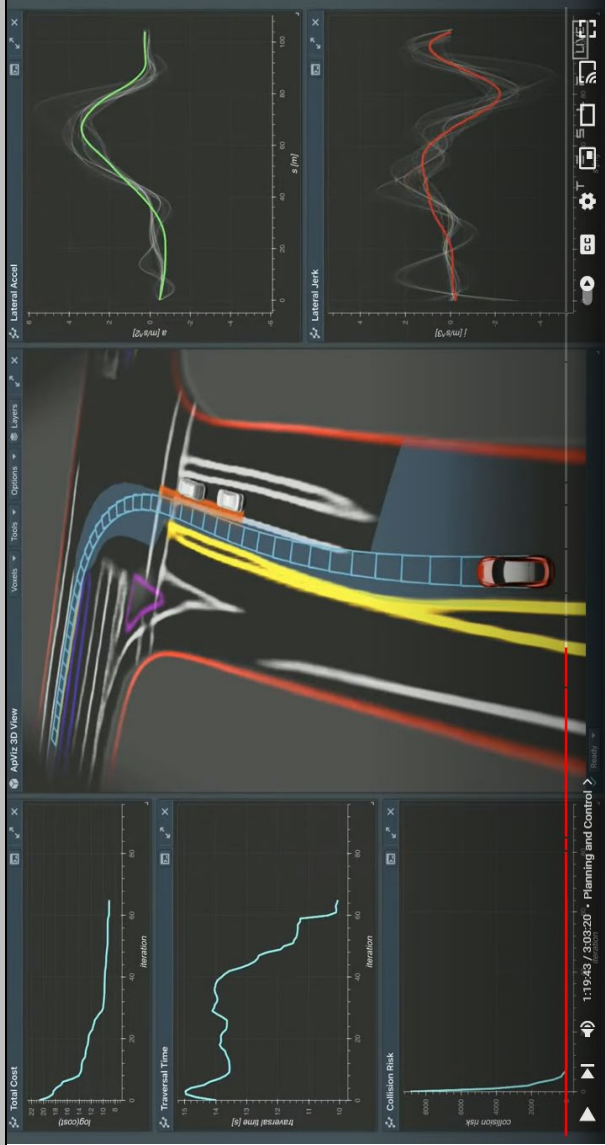


Tesla describes how it wants to re-represent the features from image space as vector space features, and that it wants to use vector space predictions from its neural network, which requires vector space data sets, and vector space data sets require vector space labels. See Tesla AI Day 2021 at/around 58:31.

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
	PATH PREDICTION  Tesla describes how, while driving accused Tesla vehicles, drivers are actually annotating the data captured by the vehicle because the user is steering the wheel, thereby telling the vehicle/Tesla how to navigate/traverse different environment (e.g., circumstance representations representing the environment correlated with driving instructions for traversing the environment). <i>See</i> Tesla Autonomy Day 2019 at/around 1:04:10.

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Tesla depicts circumstance representation and correlated human trajectory, e.g., trajectory implemented using driving instruction sets at each point in time while the accused Tesla vehicles are taking a turn. *See* Tesla AI Day 2021 at/around 1:19:43.

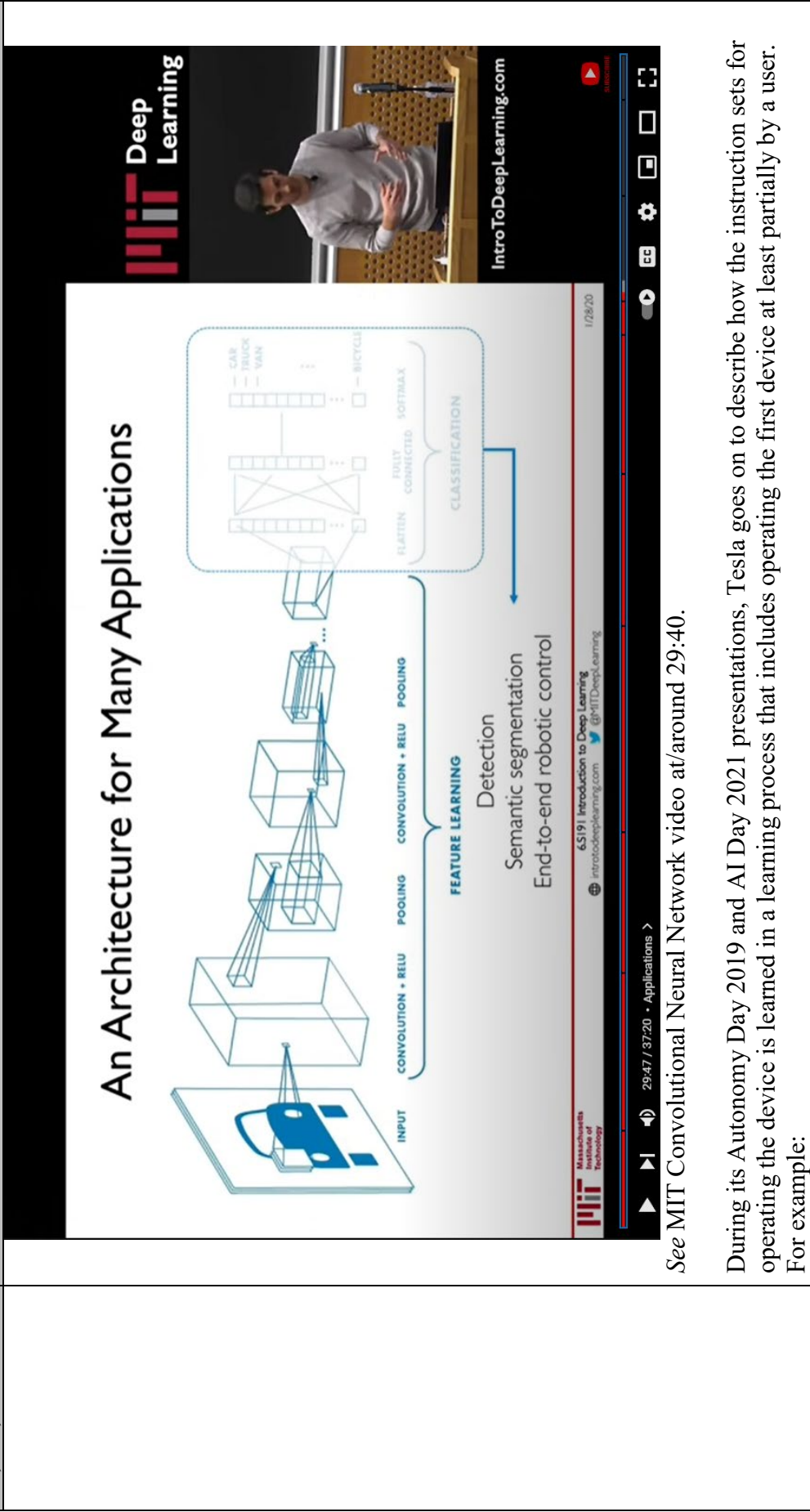
Further, as stated above, circumstance representations include one or more object representations/features. The convolution layers of the CNN in the accused Tesla vehicles store object features correlated via forward connections with output nodes of the CNN, including instructions for driving the vehicle, as described by the expert from MIT speaking in the following video, the “MIT Convolutional Neural Networks” video, found at: <https://www.youtube.com/watch?v=iaSUYvmCekI>.

First, the speaker describes learning features and features being stored/learned in different convolution layers.

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MIT Deep Learning IntroToDeepLearning.com 6.S191 Introduction to Deep Learning introtodeeplearning.com @MITDeepLearning 26:40 / 37:20 • Non-linearity and pooling > Subtitles/closed captions (c) How else can we downsample and preserve spatial invariance? Pooling max pool with 2x2 filters and stride 2 <pre>tf.keras.layers.MaxPool2D(pool_size=(2,2), strides=2)</pre> 1) Reduced dimensionality 2) Spatial invariance	MIT Convolutional Neural Networks video at/around 26:40. Next, the speaker describes the overall CNN used for robotic control (e.g., autonomous driving) where features in convolutional layers of the CNN are correlated with control instructions at the end of the CNN via forward connections.

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Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²



An Architecture for Many Applications

INPUT

CONVOLUTION + RELU POOLING CONVOLUTION + RELU POOLING

FEATURE LEARNING

Detection

Semantic segmentation

End-to-end robotic control

FLATTEN FULLY CONNECTED SOFTMAX

CAR TRUCK VAN BICYCLE

MIT Deep Learning

IntroToDeepLearning.com

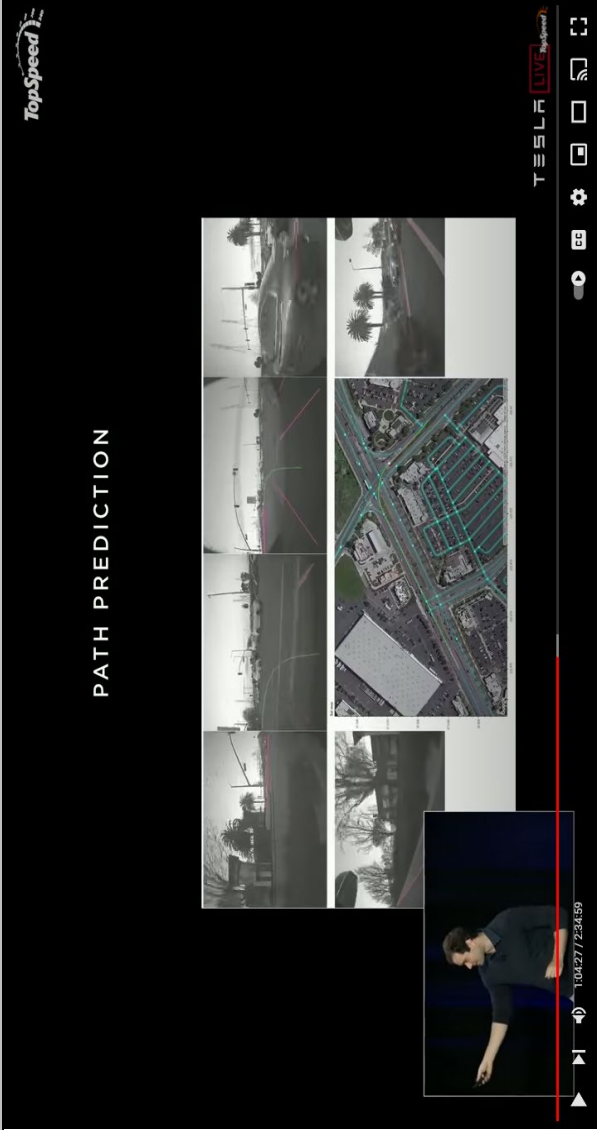
6S191 Introduction to Deep Learning
@introtodeeplearning @MITDeepLearning

1/28/20

▶ 29:47 / 37:20 • Applications >

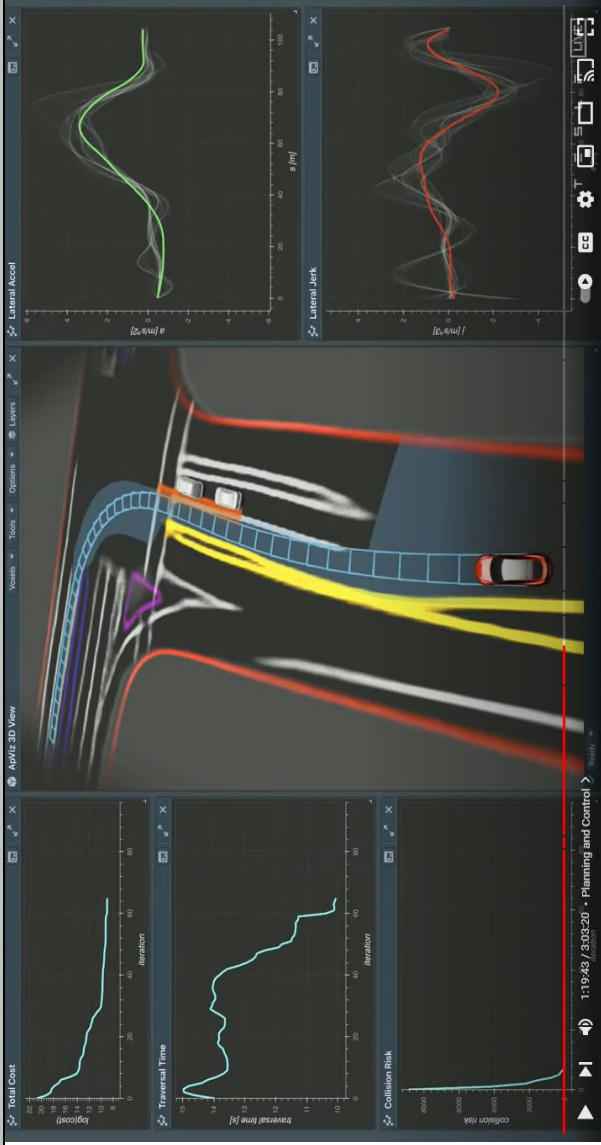
See MIT Convolutional Neural Network video at/around 29:40.

During its Autonomy Day 2019 and AI Day 2021 presentations, Tesla goes on to describe how the instruction sets for operating the device is learned in a learning process that includes operating the first device at least partially by a user. For example:

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
	PATH PREDICTION  At/around 1:04:10 in Tesla's Autonomy Day 2019 presentation, the speaker describes, while driving one of the accused Tesla vehicles, the user is annotating the data because the user is steering the wheel, the user is telling Tesla how to traverse different environments, that one person in the fleet taking, e.g., a left turn through a particular intersection, is providing Tesla with invaluable data corresponding to GPS coordinates, inertial measurements, wheel angle, wheel ticks, etc. thus enabling Tesla to understand the path that particular user took through that particular turn. Tesla then uses this data to supervising/training the CNN (e.g., training through supervised learning). This data is then shared with the entire fleet through the neural network. The speaker goes on to state that Tesla is merely trying to imitate how people drive in the real world. At/around 1:04:01 in Tesla's Autonomy Day 2019 presentation, the speaker describes how Tesla vehicles/Tesla's neural network learns from drivers training the network. At/around 1:52:20, it is stated human drivers are monitored (e.g., monitored by a camera), and that the CNN implements autonomous driving based on this learned knowledge.

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11,663,474

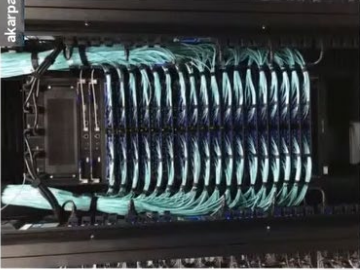
Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²



At/around 1:19:43 in Tesla's AI Day 2021 presentation, Tesla describes how the path of the accused Tesla vehicles took a trajectory through the curve shown above that looks substantially similar to humans who had driven through the same turn in accused Tesla vehicles in the past.

For example, the supercomputer included in the 474 Accused Products further includes volatile and non-volatile memory, such as NVME or DRAM respectively, for, e.g., storing digital pictures correlated with one or more instruction sets for operating a first object of a first application program, along with other executable, machine-readable code. See, e.g., [CVPR'21 WAD] Keynote - Andrej Karpathy, Tesla, available at <https://www.youtube.com/watch?v=g6bOwQdCJrc>.

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In-house supercomputer

Our latest cluster (1 of 3):
720 nodes of 8x A100 80GB. (5760 GPUs total)
1.8 EFLOPS (720 nodes * 312 TFLOPS-FP16-A100 * 8 gpu/nodes)
10 PB of "hot tier" NVME storage @ 1.6 TBps
640 TBps of total switching capacity

Help us build & maintain the cluster! Submit a patch to our GitHub repo: [https://github.com/Dojo-DeepLearning/Dojo](#)

(next up: Dojo)

20:01 / 31:31

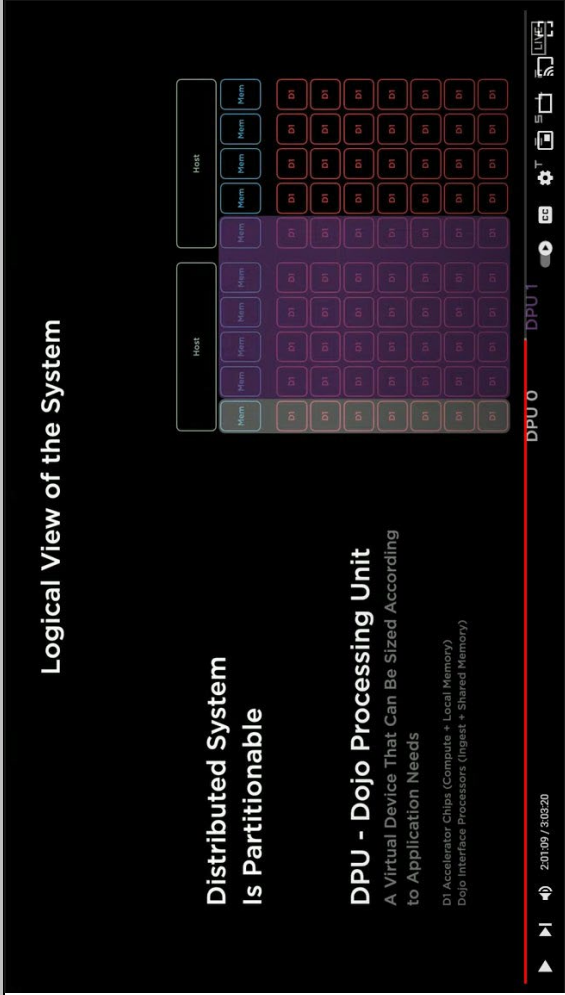
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Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²

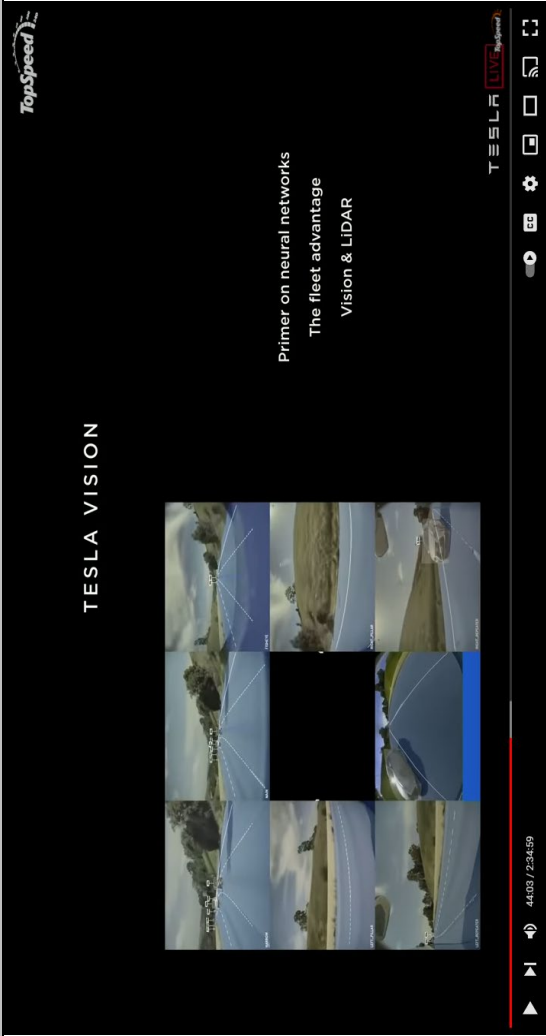


See Tesla AI Day video, available at <https://www.youtube.com/watch?v=j0z4FweCy4M&t=3s>

"We do have a major program at Tesla which we don't have enough time to talk about today called "Dojo". That's a super powerful training computer. The goal of Dojo will be to be able to take in vast amounts of data and train at a video level and do unsupervised massive training of vast amounts of video with the Dojo program – or Dojo computer."

[Elon Musk hints at Tesla's not-so-secret Dojo AI-training supercomputer capacity – Electrek](#)

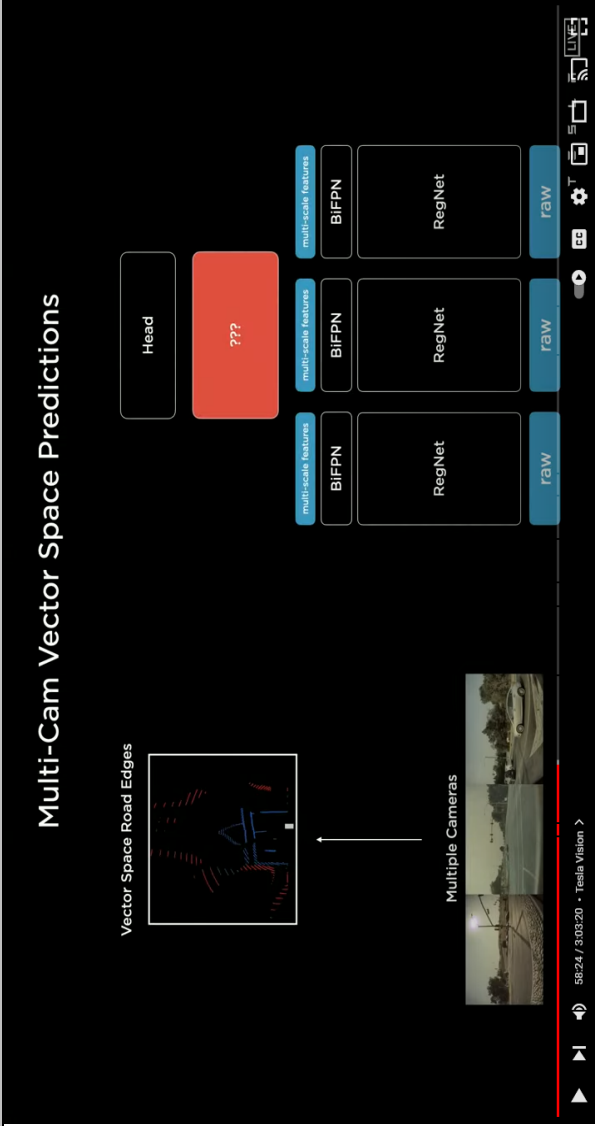
U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
	Karpathy commented on the effort: <i>"We have a neural net architecture network and we have a data set, a 1.5 petabytes data set that requires a huge amount of computing. So I wanted to give a plug to this insane supercomputer that we are building and using now. For us, computer vision is the bread and butter of what we do and what enables Autopilot. And for that to work really well, we need to master the data from the fleet, and train massive neural nets and experiment a lot. So we invested a lot into the compute. In this case, we have a cluster that we built with 720 nodes of 8x A100 of the 80GB version. So this is a massive supercomputer. I actually think that in terms of flops, it's roughly the number 5 supercomputer in the world."</i> https://www.inputmag.com/tech/tesla-showed-off-its-massive-supercomputer-for-self-driving-data-processing
[45e]. generating a circumstance representation, wherein the generated circumstance representation represents a circumstance detected at least in part by the one or more sensors;	The '474 Accused Products are devices further comprising one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least generating a circumstance representation, wherein the generated circumstance representation represents a circumstance detected at least in part by the one or more sensors. For example, each of the accused Tesla Models S, 3, X, and Y is a device. The Tesla fleet includes multiple accused Tesla vehicles, each of which is capable of accounting for circumstances encountered by drivers while out and about, those circumstances being captured by the multiple cameras included therein. Representations of these captured circumstances are then generated. A particular accused Tesla vehicle may capture and represent circumstances on its own, or each of the accused Tesla vehicles can receive circumstances/representations of circumstances from other vehicles in Tesla's fleet, e.g., via Tesla's CNN. At/around 44:00 in Tesla's Autonomy Day 2019, a stream of video from the 8 cameras included in the accused Tesla vehicles can be seen.

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	The screenshot shows a presentation slide with a black background. At the top left is the 'TopSpeed' logo. In the center, the text 'TESLA VISION' is displayed in white. Below this, there is a 3x3 grid of nine images showing various road scenes with white detection lines overlaid on them. To the right of the grid, the text 'Primer on neural networks' is followed by 'The fleet advantage' and 'Vision & LiDAR'. At the bottom, there is a 'TESLA LIVE' logo and a series of icons including a play button, a gear, and a refresh symbol. A timestamp '44:03 / 2:24:59' is visible in the bottom right corner of the slide. Further, at/around 41:14 in Tesla's AI Day 2021 presentation, a circumstance representation including object representations representing vehicles, pedestrians, etc. around the accused Tesla vehicle being driven is being shown on the display of the vehicle.

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	 At/around 58:10 in Tesla's AI Day 2021 presentation, the presenter mentions Tesla's desire to take all images captured by the cameras and feed them into a single neural network in order to directly output into a vector space

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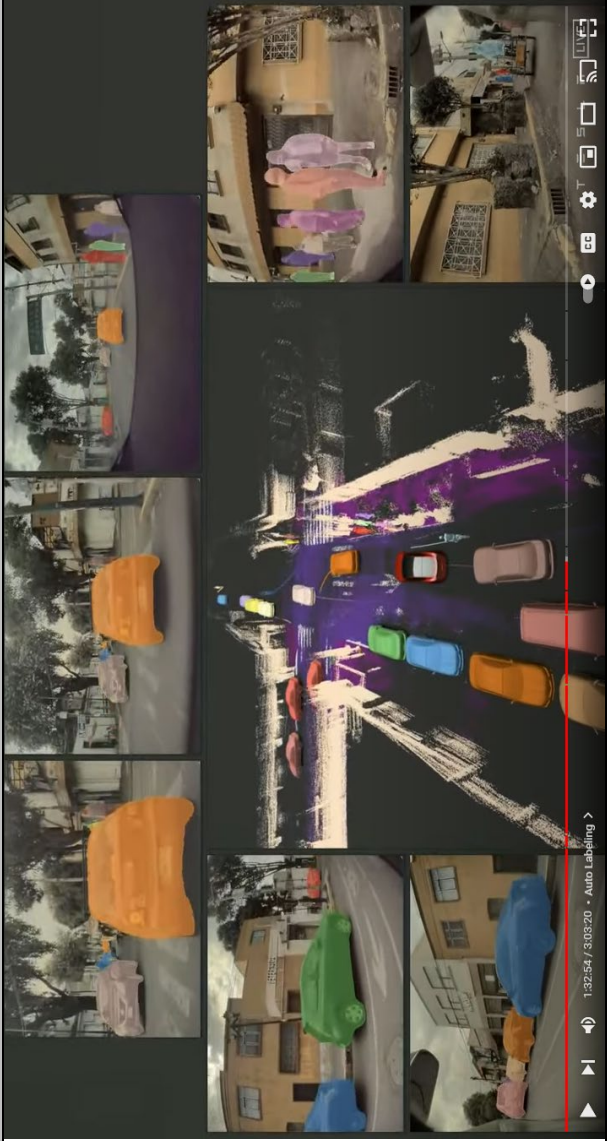
Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²



Later in Tesla's AI Day 2021 presentation (at/around 1:31:23), the presenter describes how Tesla can arbitrarily reconstruct 3D static objects from data captured by the cameras included in the accused Tesla vehicles.

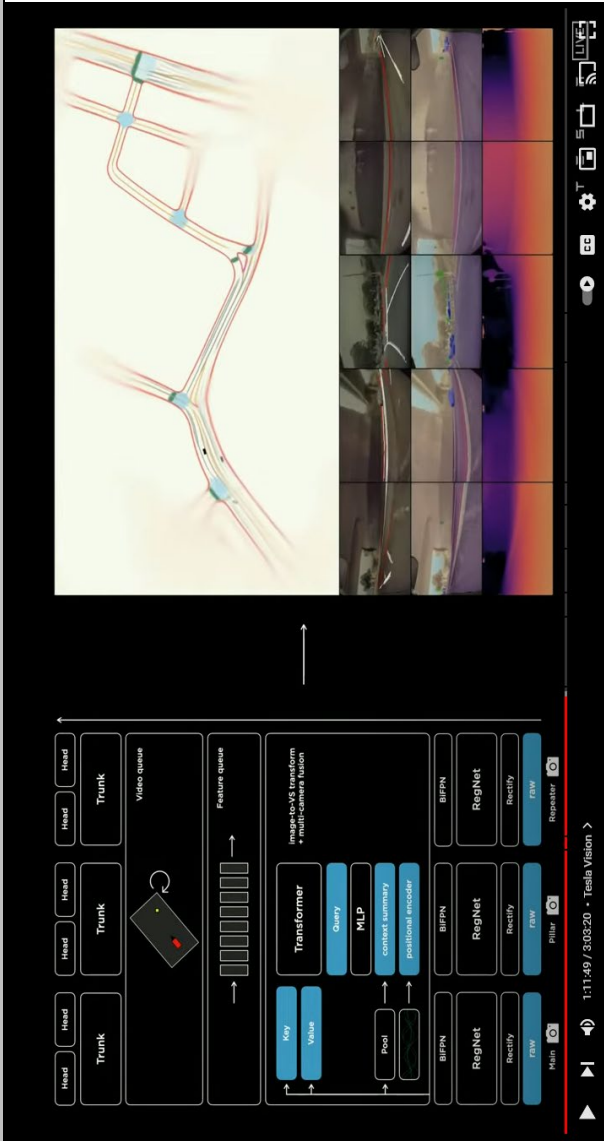
U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
	Walls, Barriers & Everything Else  Tesla AI Day 2021 goes on to describe: the vector space, including object representations, relied upon by the accused Tesla vehicles (at/around 1:31:58); combining all captured data together to make data sets that annotate all road texture, static objects, and/or moving objects represented in the captured data (at/around 1:32:48); and feeding raw images through a transformer module to re-represent the data in a vector space (at/around 1:11:20).

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	Persisting Vehicles & Pedestrians Through Occlusions 

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Circumstance representations, including object representations (e.g., bounding boxes) used to represent objects in the environment of the accused Tesla vehicles can be seen at/around 0:50 of the video "Tesla Autopilot is better than you think! Here's why. (part 1)"

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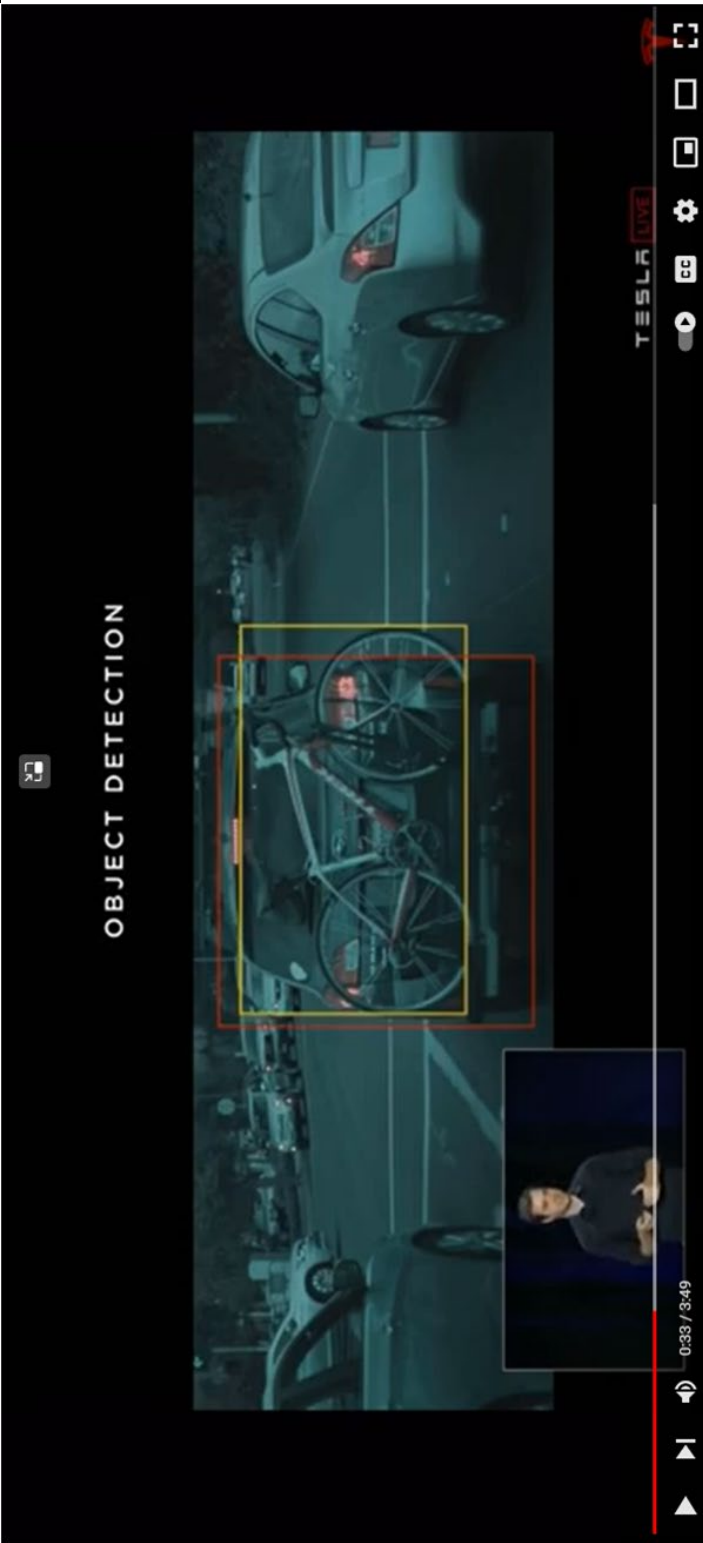


Source: https://www.youtube.com/watch?v=zRnSmw1i_DQ

Moreover, the 474 Accused Products further generates circumstance representations. According to Tesla, these circumstance representations (or circumstances) are learned while drivers drive Tesla vehicles that are a part of the 474 Accused Products. Examples of circumstances that can be learned include, effectively everything captured/sensed/measured by the sensors (e.g., cameras, ultrasonic, telemetry, etc.) included in each Tesla vehicle in the fleet that is included in the 474 Accused Products. by the driver to navigate those circumstances.

This driving knowledge learned by one Tesla vehicle is transmitted to the supercomputer/simulator before being distributed to all vehicles in the Tesla fleet via over-the-air (OTA) software updates. Therefore, the fleet enables each accused Tesla vehicle included therein to autonomously implement driving instructions learned on one or more originating vehicles when similar circumstances are detected by any of the vehicles in Tesla's fleet, thereby enabling Tesla's autonomous driving capabilities.

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products² Further, to effectuate the circumstance representations, the sensors of [45b] included a Tesla vehicle detect objects. For example, in the previous analysis of driving behind the car with the bike mounted to it, the sensors (e.g., cameras) included in the vehicle detects the bike as an object. Tesla explains object detection as follows:  The screenshot shows a video player interface. The title 'OBJECT DETECTION' is centered at the top. The video content shows a first-person view from a vehicle on a road. A white car is in the distance, and a cyclist is on the left side of the road. The video player has a 'TESLA LIVE' logo in the top right corner and playback controls (play, volume, full screen, etc.) in the bottom right corner. A small inset video shows a man speaking. “so object detection is something we care a lot about we’d like to put bounding boxes around say the cars and the objects here because we need to track them and we need to understand how they might move around so again we might ask human annotators to give us some annotations for these and humans might go in and might tell you that ok those patterns over there are cars and bicycles and so on and you can train your neural network on this, but if you’re not careful, the neural network all will make miss predictions in some cases.”
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	 “so as an example if we stumble by a car like this that has a bike on the back of it then the neural network actually when I joined would actually create two deductions it would create a car deduction and a bicycle deduction and that’s actually kind of correct because I guess both of those objects actually exist but for the purposes of the controller and a planner downstream you really don’t want to deal with the fact that this bicycle can go with the car the truth is that that bike is attached to that car so in terms of like just objects on the road there’s a single object a single car and so what you’d like to do now is you’d like to just potentially annotate lots of those images as this is just a single car so the process that we that we go through internally in the team is that we take this image or a few images that show this pattern and we have a <i>mechanism a machine learning mechanism by which we can ask the fleet to source us examples that look like that and the fleet might respond with images that contains those patterns</i> [emphasis added]”

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“so as an example these six images might come from the fleet they all contain bikes on backs of cars and we would go in and we would annotate all those as just a single car and then the performance of that detector actually improves and the network internally understands that hey when the bike is just attached to the car that’s actually just a single car and it can learn that given enough examples and that’s how we sort of fix that problem ... now the fleet doesn’t just respond with bicycles on backs of cars we look for all the thing we look for lots of things all the time.”

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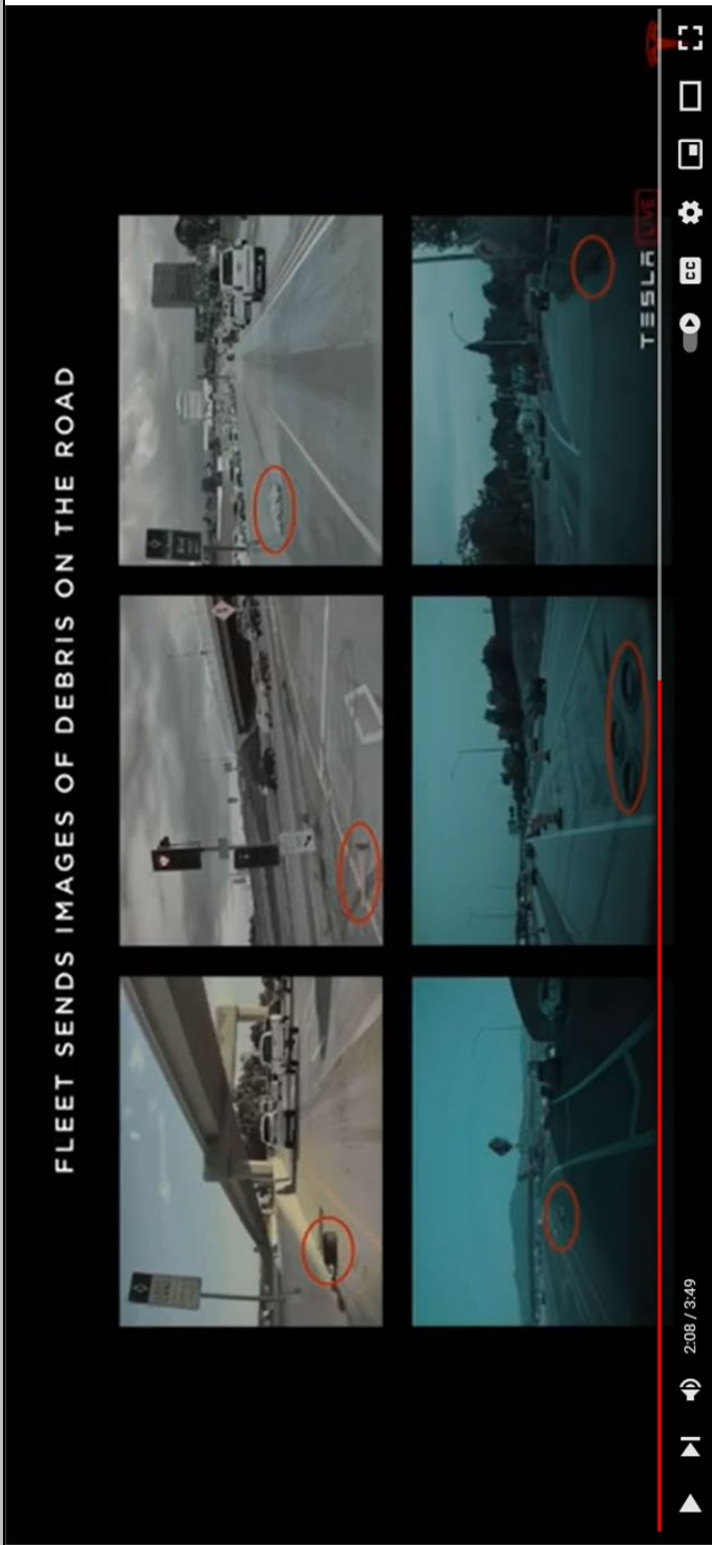
Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²



“so for example we look for boats and the fleet can respond with boats we look for construction sites and the fleet can send us lots of construction sites from across the world we look for even slightly more rare cases.”

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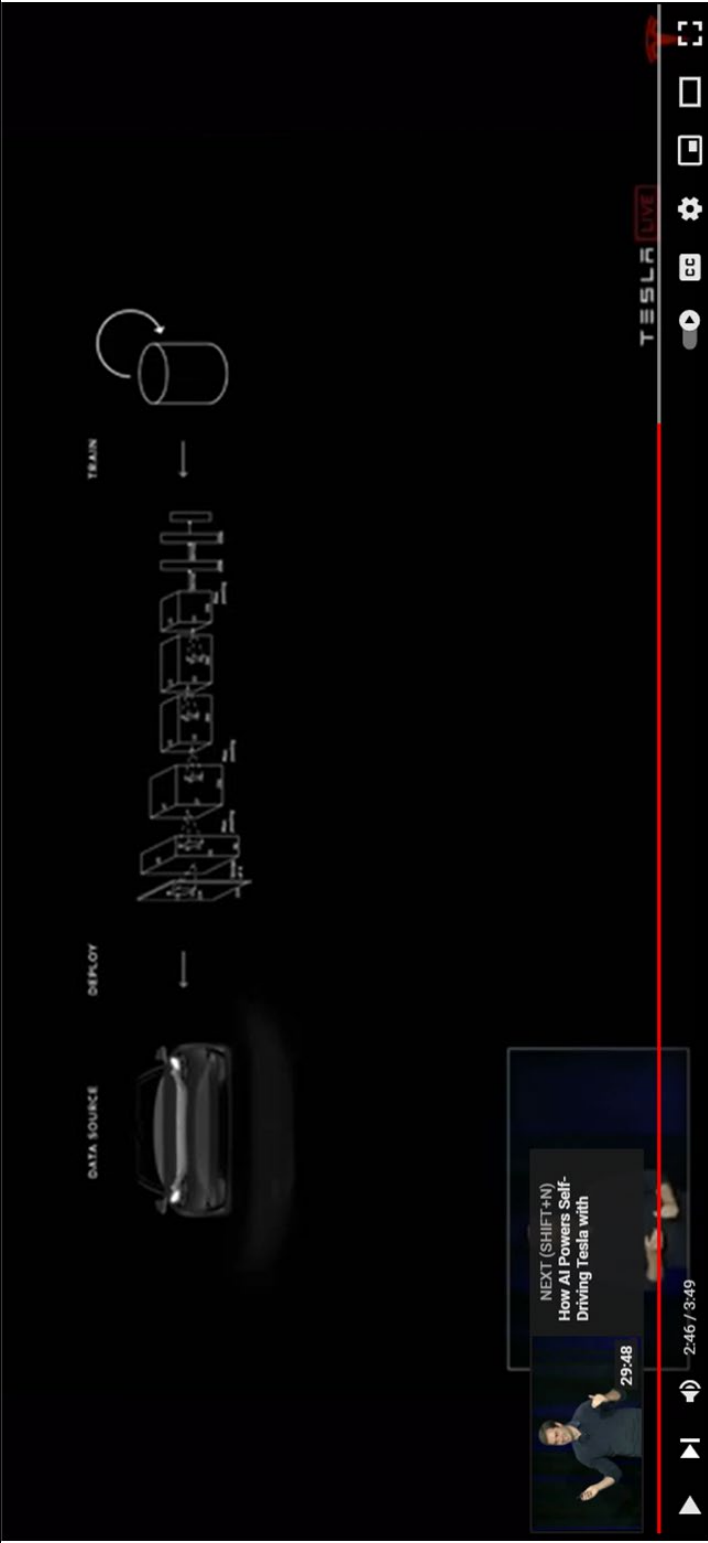
“so for example finding debris on the road is pretty important to us so these are examples of images that have streamed to us from the fleet that show tires cones, plastic bags and things like that if we can source these at scale we can annotate them correctly and *the neural network will learn how to deal with them in the world* [*emphasis added*].”

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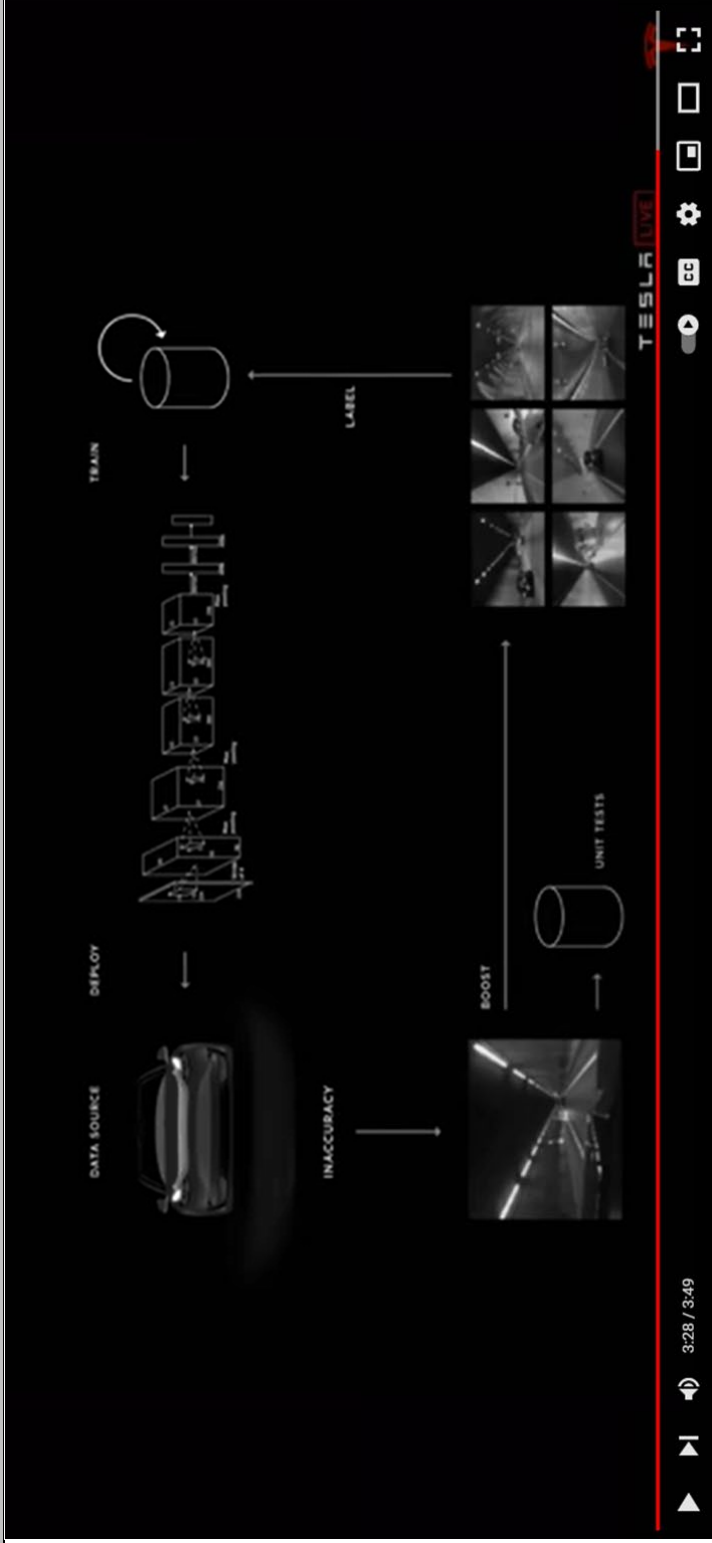


“here’s another example, animals of course also a very rare occurrence, an event, but we wanted them neural network to really understand what’s going on here...that these are animals and we want to deal with that correctly.”

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	 “so to summarize the process by which we iterate on neural network predictions looked something like this – we start with a seed dataset that was potentially sourced at random, we annotate that dataset, and then we train your networks on that dataset and put that in the car, and then we have mechanisms by which we notice inaccuracies in the car when this detector may be misbehaving.”

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11,663,474

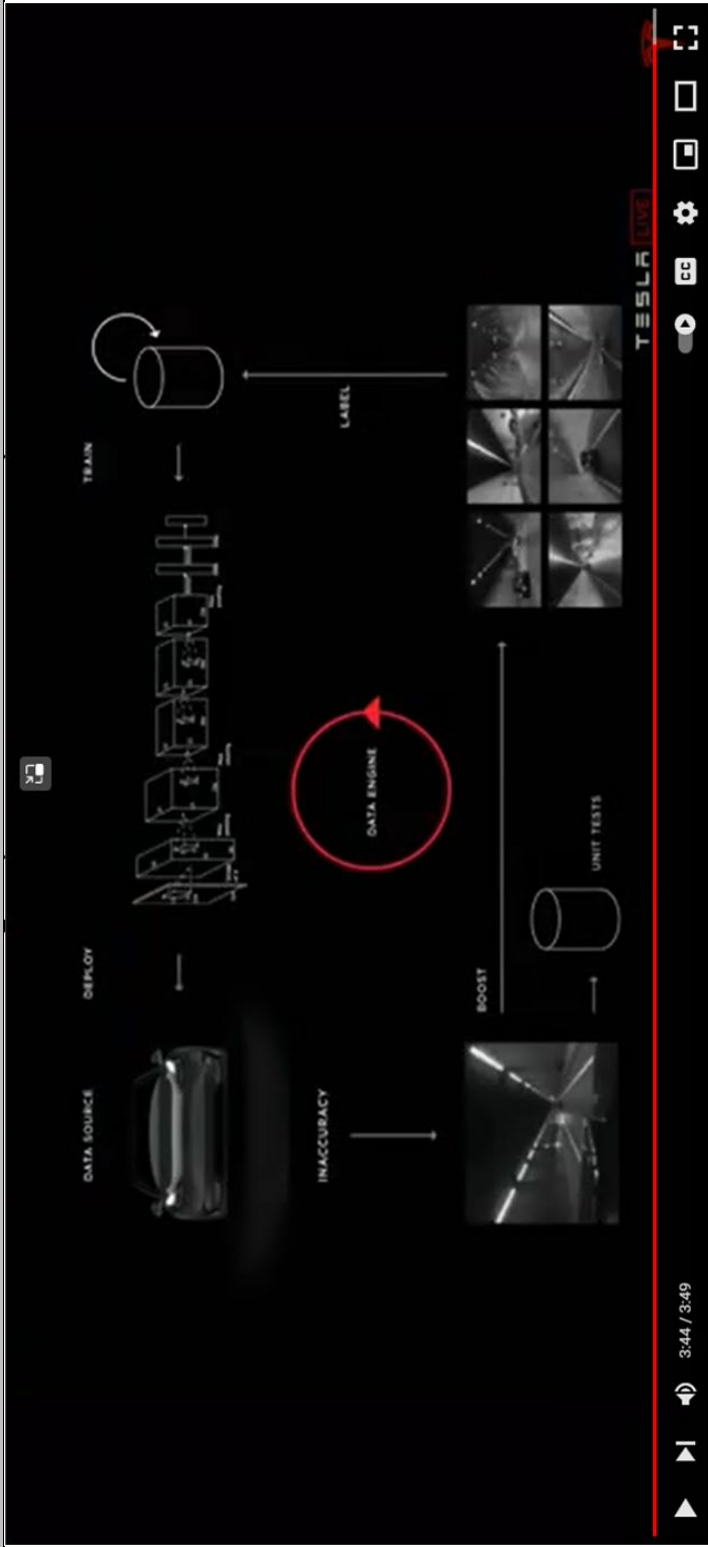
Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²



“so, for example, if we detect that the neural network might be uncertain or if we detect that or if there’s a driver intervention or any of those settings we can create this trigger infrastructure that sends us data of those inaccuracies and so, for example, if we don’t perform very well on lane line detection on tunnels then we can notice that there’s a problem in tunnels that imagine would enter our unit tests so we can verify that we’ve actually fixing the problem over time but now what you do is to fix this inaccuracy you need to source many more examples that look like that so we asked the fleet to please send us many more tunnels and then we label all those tunnels correctly, we incorporate that into the training set and we retrain the network, redeploy, and iterate the cycle over and over again [emphasis added].”

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“so we refer to this iterative process by which we improve these predictions as the *data engine* so iteratively deploying something potentially in shadow mode sourcing inaccuracies and incorporating the training set over and over again and we do this basically for all the predictions of these neural networks [emphasis added].”

Source: <https://www.youtube.com/watch?v=33K3id2xNAE&t>

A further example of Tesla’s correlating a first circumstance representation with one or more instruction set is depicted below.

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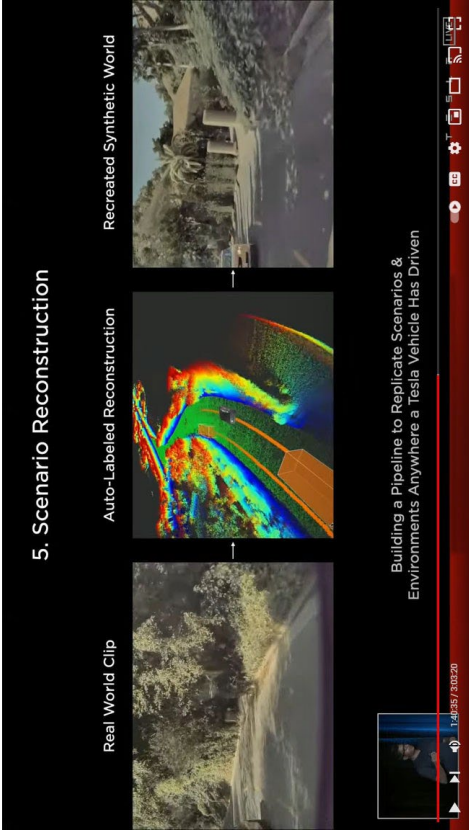
Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products²



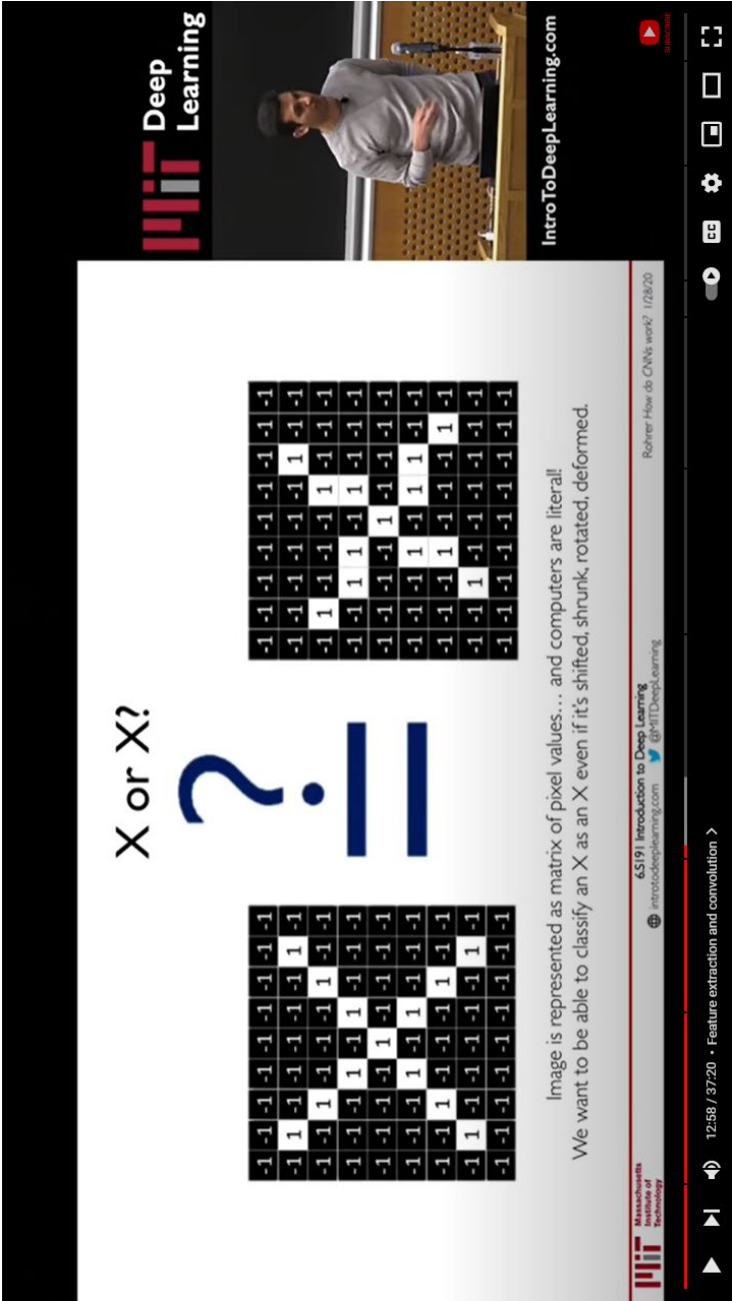
At/around 0:50 in the video referenced above/cited below, a myriad of instruction labels considered by the accused Tesla vehicles while in operation can be seen. Examples of such instruction labels include Lane change and Ego speed. Source: <https://www.youtube.com/watch?v=zRnSmwliDQ>

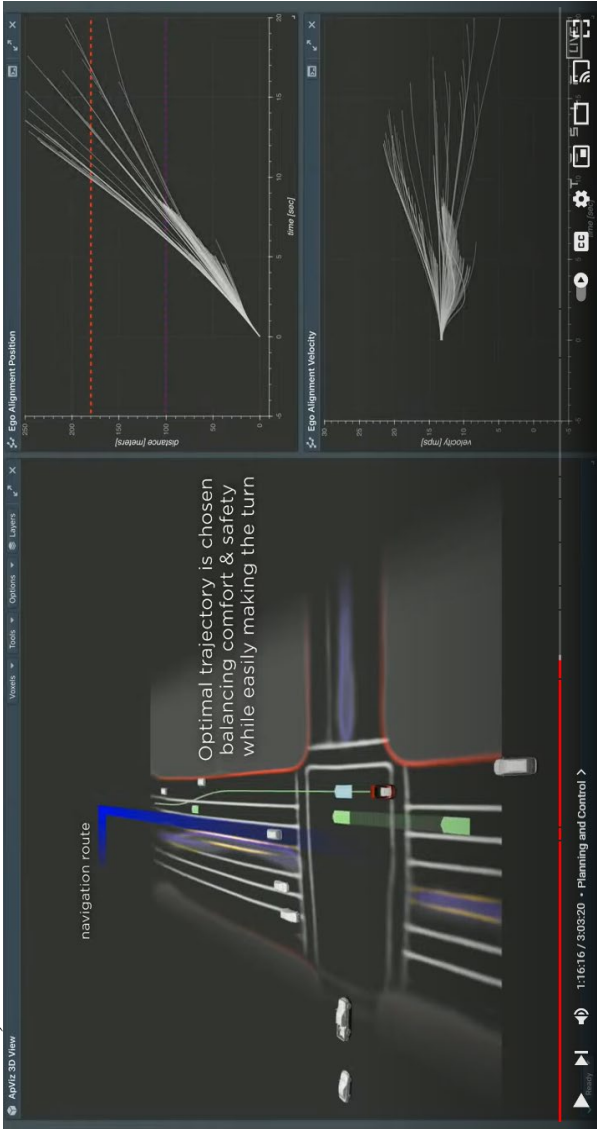
Additional examples of Tesla simulating real world driving environments using real world data and generated data can be seen below.

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	5. Scenario Reconstruction Real World Clip Auto-Labelled Reconstruction Recreated Synthetic World Building a Pipeline to Replicate Scenarios & Environments Anywhere a Tesla Vehicle Has Driven See Tesla AI Day video, available at https://www.youtube.com/watch?v=j0z4FweCy4M&t=3s 
	<i>Id.</i>

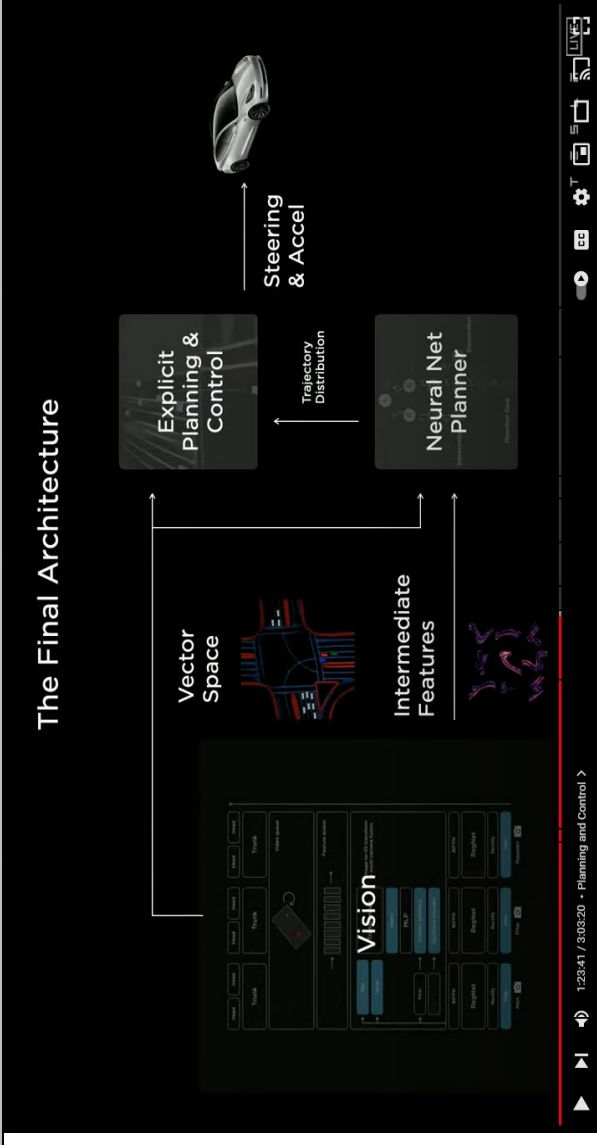
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	The real world and generated data includes video data, which includes object representations. Given that the video data is from the real world and generated simulations of real world environments the object representations represent objects of the application. See, for example, the simulated environment below showing a simulation of a person near the simulated car from the first application program (AI simulation). See Tesla AI Day video, available at https://www.youtube.com/watch?v=j0z4FweCy4M&t=3s As shown in the above-cited video, Tesla's simulation system is capable of behaving appropriately because the simulated car is provided with driving instructions that are correlated with objects, e.g., simulated people, cars, traffic lights, traffic signs, etc.  See Tesla AI Day video, available at https://www.youtube.com/watch?v=j0z4FweCy4M&t=3s
[45f]. determining the one or more instruction sets for operating the second device at least by: inputting	The '474 Accused Products are devices further comprising one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform at least determining the one or more instruction sets for operating the second device at least by: inputting at least a portion of the generated circumstance representation into the one or more inputs, and using a correlation between the one or more inputs and the one or more instruction sets for operating the second device

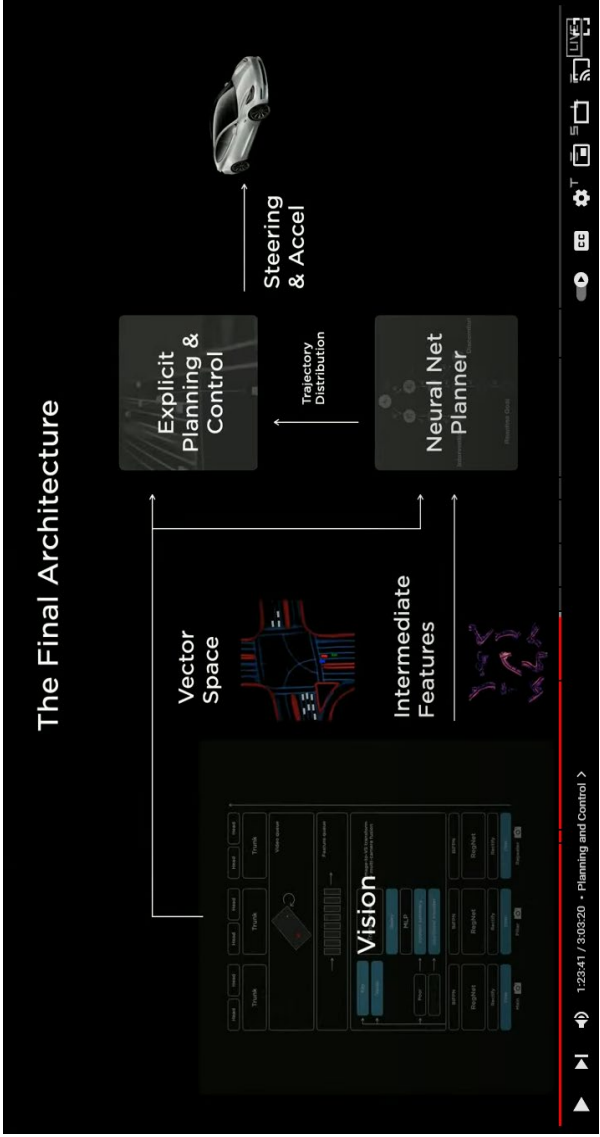
U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement ¹ against the '474 Accused Products ²
at least a portion of the generated circumstance representation into the one or more inputs, and using a correlation between the one or more inputs and the one or more instruction sets for operating the second device; and	For example, the 474 Accused Products determines an instruction set (e.g., steer to the left) for operating vehicles in the Tesla fleet. These instructions are provided to Tesla vehicles based on the circumstance representations gathered by Tesla fleet vehicles, that are correlated to instruction sets as described above, over-the-air. This correlation may be based on one similarity between one or more object representations detected/present in the circumstance representation and the first one or more object representations. https://electrek.co/2021/08/19/watch-tesla-ai-day-livestream-important-news/ at/around 38:45 to 39:00 Further, vehicles in Tesla's fleet can learn from each other. The ability of the fleet to learn from itself is mentioned as a distinct competitive advantage of Tesla by both Mr. Musk and Mr. Karpathy. <i>See</i>, for example, Tesla Autonomy Day

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	2019 at/around 38:58, "I think a very powerful sustainable advantage for us is the fleet." At/around 44:40, it is stated that, "it is such a big deal that we have the fleet," and at 55:55, it is reiterated that, "Tesla is in such a unique and interesting position" because of the fleet. Finally, at/around 1:22:14, it is proclaimed that it "[i]s extremely difficult to catch up when Tesla has 100 times more miles per day than everyone else combined," which is a direct result of the fleet. Similarly, while operating in autonomous driving mode, the CNN in the accused Tesla vehicles carries out a comparison between features of objects in a previously learned circumstance representation stored in its convolution layers and features of objects in an incoming circumstance representation. See MIT Convolutional Neural Networks at/around 12:58. 

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	Source: https://www.youtube.com/watch?v=iaSUYvmCekl. Further, Tesla's AI Day 2021 presentation (https://www.youtube.com/watch?v=j0z4FweCy4M) describes/presents the following: An example of how searching for previously learned driving instructions for effecting a trajectory correlated with a previously learned circumstance representation that at least partially matches an incoming circumstance representation operates (at/around 1:15:26).  The screenshot above depicts an accused Tesla vehicle attempting to do a lane change. In this instance, the car needs to get over two lanes before making the left-hand turn. To perform this maneuver (getting over two lanes, then making a 90-degree left turn), the accused Tesla vehicle searches over different maneuvers available on the network shared by the Tesla fleet of vehicles (e.g., the CNN and/or simulator). The car tries to pick the safest maneuvers that feel comfortable/natural to the driver, based on data already stored on the network, which itself is based on data observed by

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	the accused Tesla vehicles of the drivers of said vehicles. In some instances, thousands of maneuvers are searched through in real-time, in a very short time span. At/around 2:32:42, the presenter at Tesla's AI Day 2021 describes planning. In essence, Tesla bakes in a search for a previously learned driving instruction(s) effecting a trajectory correlated with a previously learned circumstance representation that, at least partially, matches the incoming circumstance representation being captured by the vehicle. Via network optimization, a plan is devised (e.g., when/how the car will change lanes to the left the first time, when/how the car will change lanes to the left the second time, when/how the car will make the 90-degree left turn). This plan is devised rather quickly. At/around 1:23:40, the presenter at Tesla's AI Day 2021 describes the architecture and the vision system that is implemented in the accused Tesla vehicles. The vision system is described as condensing down video into a vector space (e.g., incoming circumstance representations representing objects in the Tesla's current environment). This video is also consumed by the CNN that stores previously learned circumstance representations correlated with previously learned driving instructions, and that searches for at least partially matching circumstance representation(s) and correlated driving instructions, along with a planner. A trajectory distribution is produced. The trajectory distribution can be optimized accounting for explicit cost functions, human intervention, and other imitation data. The trajectory distribution is then worked into a planning function that causes the car to perform the actions deemed most appropriate based on the comparison of data, and produces the final driving commands (e.g., the commands that control steering, speed, acceleration, turn signals, etc.).

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	The Final Architecture 
[45g]. at least in response to the determining, executing the one or more instruction sets for operating the second device, wherein the first device autonomously performs one or more operations defined by the one or more instruction	The '474 Accused Products are devices further comprising one or more non-transitory machine readable media storing machine readable code that, when executed by the one or more processors, causes the one or more processors to perform, at least in response to the determining, executing the one or more instruction sets for operating the second device, wherein the first device autonomously performs one or more operations defined by the one or more instruction sets for operating the second device. For example, <i>see</i> the evidence presented in support of [45f] above. As described by Mr. Musk in Tesla's Autonomy Day 2019 presentation, the Tesla system includes using driving instructions learned from/by one Tesla vehicle to effect the semi/fully-autonomous driving of another Tesla vehicle in the fleet. Mr. Musk goes on to explain that this knowledge is distributed over the Tesla network via over-the-air (OTA) software updates, thereby enabling second, third, fourth, fifth, etc. Tesla vehicles to implement autonomous driving knowledge/instructions learned from the first vehicle.

U.S. Patent No. 11,663,474	Exemplary Evidence of Plaintiff's Theory(ies) of Infringement¹ against the '474 Accused Products² The ability of the fleet to learn from itself is mentioned as a distinct competitive advantage of Tesla by both Mr. Musk and Mr. Karpathy. <i>See</i>, for example, Tesla Autonomy Day 2019 at/around 38:58, "I think a very powerful sustainable advantage for us is the fleet." At/around 44:40, it is stated that, "it is such a big deal that we have the fleet," and at 55:55, it is reiterated that, "Tesla is in such a unique and interesting position" because of the fleet. Finally, at/around 1:22:14, it is proclaimed that it "[i]s extremely difficult to catch up when Tesla has 100 times more miles per day than everyone else combined," which is a direct result of the fleet. Source: https://www.youtube.com/watch?v=-b041NXGPZ8 (Tesla Autonomy Day 2019 at the various timestamps listed above). During Tesla's AI Day 2021 presentation, Tesla describes what the final architecture of the Tesla/fleet/Software 9.0+/CNN/simulator system is going to look like, and states that it will produce the final steering and acceleration commands for the cars.  Source: https://www.youtube.com/watch?v=j0z4FweCy4M at/around 1:23:40
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46. The first device of claim 45, wherein the one or more inputs for inputting the at least the portion of the circumstance representation include one or more inputs for inputting at least a portion of one or more object representations, and wherein the generated circumstance representation includes one or more object representations, and wherein the first device is a first vehicle, and wherein the second device is a second vehicle.	The '474 Accused Products comprise the first device of claim 45, wherein the one or more inputs for inputting the at least the portion of the circumstance representation include one or more inputs for inputting at least a portion of one or more object representations, and wherein the generated circumstance representation includes one or more object representations, and wherein the first device is a first vehicle, and wherein the second device is a second vehicle. For example, <i>see</i> the evidence presented in support of claims [45a] – [45f] above. The first and second devices are Tesla vehicles, for example. And the input(s) include input(s) for inputting at least a portion of objection representation(s). Similarly, the generated circumstance representation includes object representation(s).
47. The first device of claim 46, wherein at least an information related	The '474 Accused Products comprise the first device of claim 46, wherein at least an information related to the one or more instruction sets for operating the second device is learned in a learning process that includes operating the second device at least partially by a user.

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to the one or more instruction sets for operating the second device is learned in a learning process that includes operating the second device at least partially by a user.	For example, see the evidence provided in claim 45 (particularly [45g]) above. For instance the user may operate the second Tesla vehicle during the learning process.
51. The first device of claim 46, wherein at least a portion of the one or more instruction sets for operating the second device is learned in a learning process that includes operating the second device at least partially by a user.	The '474 Accused Products comprise the first device of claim 46, wherein at least a portion of the one or more instruction sets for operating the second device is learned in a learning process that includes operating the second device at least partially by a user. For example, see the evidence presented in claim 45 and 46 above. In this example, at least a portion of the one or more instruction sets for operating the second Tesla vehicle is learned in a learning process that includes operating the second Tesla vehicle at least partially by a driver of that vehicle.
52. The first device of claim 46, wherein the one or more instruction sets for operating the second device	The '474 Accused Products comprise the first device of claim 46, wherein the one or more instruction sets for operating the second device are applied to the first device. For example, vehicles in Tesla's fleet can learn from each other. The ability of the fleet to learn from itself is mentioned as a distinct competitive advantage of Tesla by both Mr. Musk and Mr. Karpathy. See, for example, Tesla Autonomy Day 2019 at/around 38:58, "I think a very powerful sustainable advantage for us is the fleet." At/around 44:40, it is

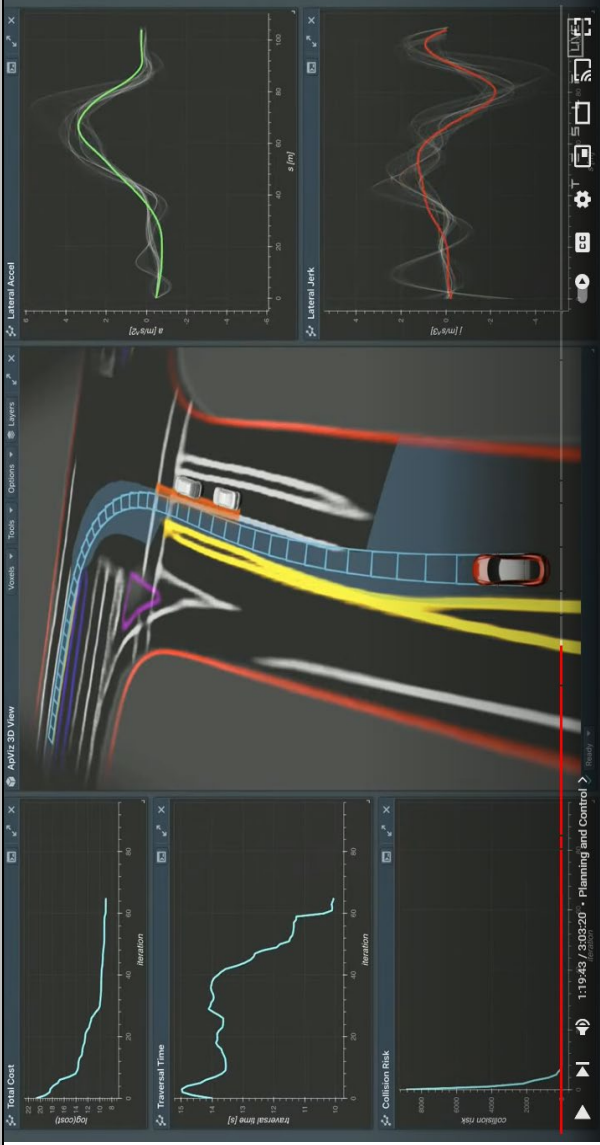
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are applied to the first device.	stated that, "it is such a big deal that we have the fleet," and at 55:55, it is reiterated that, "Tesla is in such a unique and interesting position" because of the fleet. Finally, at/around 1:22:14, it is proclaimed that it "[i]s extremely difficult to catch up when Tesla has 100 times more miles per day than everyone else combined," which is a direct result of the fleet. <i>See also</i>, the evidence presented in support of [45a], [45f], and [45g] above.
56. The first device of claim 46, wherein the one or more inputs are further correlated with another one or more instruction sets for operating the second device or at least an information related to the one or more instruction sets for operating the second device is learned in a learning process that includes operating the second device at least partially by a user, and wherein at least a portion of the another one or more instruction sets for operating the third device or at least an information related to the another one or more instruction sets for operating the third device is learned in another learning process that includes operating the third device at least partially by another user. For example, a first, second, third, etc. circumstance representation derived from potentially multiple sensed inputs can correspond to/be correlated with a first, second, third, etc. instruction set. <i>See</i> the evidence presented in support of claim 45 above.	

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learning process that includes operating the second device at least partially by a user, and wherein at least a portion of the another one or more instruction sets for operating the third device or at least an information related to the another one or more instruction sets for operating the third device is learned in another learning process that includes operating the third device at least partially by another user.	
57. The first device of claim 46, wherein the one or more inputs are further correlated with another one or more instruction	The '474 Accused Products comprise the first device of claim 46, wherein the one or more inputs are further correlated with another one or more instruction sets for operating a third device. For example, an input of/a series of inputs to the 474 Accused Products can be correlated with a second, third, fourth, etc. instruction set(s) for operating a third, fourth, fifth, etc. device (e.g., Tesla vehicle).

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sets for operating a third device.	See the evidence presented in claim 56 above. For example, the third device is a third Tesla vehicle and the one or more inputs are correlated with another one or more instruction sets for operating that third Tesla vehicle.
59. The first device of claim 46, wherein the one or more object representations of the generated circumstance representation include one or more information about one or more objects.	The '474 Accused Products comprise the first device of claim 46, wherein the one or more object representations of the generated circumstance representation include one or more information about one or more objects. For example, circumstance representations include information about objects, e.g., human, animal, vehicle, car, truck, speed, predicted path, etc. See the evidence presented in support of [45a] for more information on the relationship between circumstance representations and the object representations included therein.
60. The first device of claim 46, wherein the one or more object representations of the generated circumstance representation include one or more coordinates of one or more objects.	The '474 Accused Products comprise the first device of claim 46, wherein the one or more object representations of the generated circumstance representation include one or more coordinates of one or more objects. For example, the vehicle must know the distance from the detected object representations in the generated circumstance. The distance and location of the object representation in the circumstance representation is an example of a coordinate relative to the Tesla vehicle. See the evidence presented in support of claim 59 above. See also, Mr. Karpathy speaking during Tesla Autonomy Day 2019 “while you are driving a car what you’re actually doing is you are annotating the data because you are steering the wheel. you’re telling us how to traverse different environments so what we’re looking at here is a some person in the fleet who took a left through an intersection and what we do here is <i>we have the full video of all the cameras and we know that the path that this person took because of the GPS</i>, the inertial measurement unit, the wheel angle, the wheel ticks, so we put all that together and we understand the path that this person took through this environment and then of course we can use this for supervision [e.g., training a CNN

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	through supervised learning] for the network so we just source a lot of this from the fleet, we train a neural network on those trajectories, and then the neural network predicts paths just from that data so really what this is referred to typically is called imitation learning we're taking human trajectories from the real world I'm just trying to imitate how people drive in real worlds and we can also apply the same data engine crank to all of this and make this work [<i>emphasis added</i>].” Source: https://www.youtube.com/watch?v=b041NXGPZ8 at 1:04:10. See also, para. [36] of Tesla's US 2020/0249685, which states, “At 303, data related to the elements of the time series are received. ...In some embodiments, the related data is odometry data of the vehicle. ... The related data may include vehicle operating parameters such as the speed, change in speed, acceleration, change in acceleration, steering, change in steering, braking, change in braking, etc.” Further, Tesla's 10,956,755 explains that “...odometry data may include vehicle operation parameters such as applied acceleration, applied braking, applied steering, <i>vehicle location, vehicle orientation, the change in vehicle location, the change in vehicle orientation</i>, etc. [<i>emphasis added</i>].” The '474 Accused Products comprise the first device of claim 46, wherein the knowledgebase is a neural network. For example, the 474 Accused Products implements a convolutional neural network. As Mr. Karpathy explained during Tesla Autonomy Day 2019 “while you are driving a car what you're actually doing is you are annotating the data because you are steering the wheel. you're telling us how to traverse different environments so what we're looking at here is a some person in the fleet who took a left through an intersection and what we do here is we have the full video of all the cameras and we know that the path that this person took because of the GPS, the inertial measurement unit, the wheel angle, the wheel ticks, so we put all that together and we understand the path that this person took through this environment and then of course we can use this for supervision [e.g., training a CNN through supervised learning] for the network so we just source a lot of this from the fleet, we train a neural network on those trajectories, and then the neural network predicts paths just from that data so really what <i>this is referred to typically is called imitation learning we're taking human trajectories from the real world I'm just trying to imitate how people drive in real worlds and we can also apply the same data engine crank to all of this and make this work</i> [<i>emphasis added</i>].” Source: https://www.youtube.com/watch?v=b041NXGPZ8 at 1:04:10.
68. The first device of claim 46, wherein the knowledgebase is a neural network.	

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	<i>See also</i>, the evidence presented in support of [45a] above. The '474 Accused Products comprise the first device of claim 46, wherein the knowledgebase includes an artificial intelligence system. For example, the supercomputer/simulator included in the 474 Accused Products is an artificial intelligence system (e.g., a convolutional neural network, or CNN). <i>See</i> the evidence presented in support of claim 68 above.
69. The first device of claim 46, wherein the knowledgebase includes an artificial intelligence system. 78. The first device of claim 46, wherein the one or more instruction sets for operating the second device are further for operating at least a third device.	The '474 Accused Products comprise the first device of claim 46, wherein For example, instruction sets derived from circumstance representations generated by the 474 Accused Products can be used to operate an entire fleet (e.g., tens/hundreds of thousands, even millions) of Tesla vehicles). The ability of vehicles in Tesla's fleet to learn from each other is widely acknowledged by Mr. Musk and Mr. Karpathy as one of Tesla's biggest competitive advantages. <i>See</i>, for example, Tesla Autonomy Day 2019 at/around 38:58, "I think a very powerful sustainable advantage for us is the fleet." At/around 44:40, it is stated that, "it is such a big deal that we have the fleet," and at 55:55, it is reiterated that, "Tesla is in such a unique and interesting position" because of the fleet. Finally, at/around 1:22:14, it is proclaimed that it "[i]s extremely difficult to catch up when Tesla has 100 times more miles per day than everyone else combined," which is a direct result of the fleet. The '474 Accused Products comprise the first device of claim 46, wherein the generated circumstance representation represents the circumstance detected at least in part by the one or more sensors during a time period.
80. The first device of claim 46, wherein the generated circumstance representation represents the circumstance detected at least in part by the one or more sensors	For example, Tesla vehicles are constantly sensing data (e.g., capturing images/video of the surrounding environment) and generating circumstance representations therefrom (e.g., via the supercomputer/simulator on the back-end of the 474 Accused Products). As an example, at/around 1:10:43 in Tesla's AI Day 2021 presentation, the speaker describes how Tesla depicts circumstance representations and the driving instructions (e.g., a trajectory through a turn) correlated therewith, along with how each is implemented as sensors (e.g., cameras) are capturing data over a series of pints in time as Tesla vehicles are being drive in real-time.

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during a time period.	 See also, the remaining evidence in support of claim 45 (particularly [45a]) above. The '474 Accused Products comprise the first device of claim 46, wherein the generated circumstance representation is a data structure that includes one or more data about the circumstance detected at least in part by the one or more sensors, and wherein the circumstance detected at least in part by the one or more sensors includes one or more objects detected at least in part by the one or more sensors: at a first time, or during a first time period. For example, at 58:10 in Tesla's AI Day 2021 presentation (https://www.youtube.com/watch?v=j0z4FweCy4M), the speaker describes taking all of the images captured/recorded by the cameras included in Tesla vehicles and simultaneously feeding them into a single neural net and directly outputting them into a vector space.
81. The first device of claim 46, wherein the generated circumstance representation is a data structure that includes one or more data about the circumstance detected at least in part by the one or more sensors, and	

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wherein the circumstance detected at least in part by the one or more sensors includes one or more objects detected at least in part by the one or more sensors: at a first time, or during a first time period.	 See <i>also</i>, the additional evidence corresponding to convolutional neural network implemented by the 474 Accused Products, e.g., in claims 68 and 69 above.
[84pre]. A system comprising:	The '474 Accused Products are/include a system(s) comprising the limitations below. For example, <i>see</i> the evidence presented in support of claim [45pre] above.
[84a]. means for accessing a knowledgebase that includes one or more inputs for	The '474 Accused Products are/include a system(s) comprising means for accessing a knowledgebase that includes one or more inputs for inputting at least a portion of a circumstance representation, wherein the one or more inputs are correlated with one or more instruction sets for operating a first device. For example, <i>see</i> the evidence presented in support of [45a], [45c], and [45d] above.

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inputting at least a portion of a circumstance representation, wherein the one or more inputs are correlated with one or more instruction sets for operating a first device;	
[84b]. means for generating a circumstance representation, wherein the generated circumstance representation represents a circumstance detected at least in part by one or more sensors of a second device;	The '474 Accused Products are/include a system(s) further comprising means for generating a circumstance representation, wherein the generated circumstance representation represents a circumstance detected at least in part by one or more sensors of a second device. For example, <i>see</i> the evidence presented in support of [45c], [45d], and [45e] above.
[84c]. means for determining the one or more instruction sets for operating the first device at least by:	The '474 Accused Products are/include a system(s) further comprising means for determining the one or more instruction sets for operating the first device at least by: inputting at least a portion of the generated circumstance representation into the one or more inputs, and using a correlation between the one or more inputs and the one or more instruction sets for operating the first device. For example, <i>see</i> the evidence presented in support of [45c], [45d], and [45f] above.

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inputting at least a portion of the generated circumstance representation into the one or more inputs, and using a correlation between the one or more inputs and the one or more instruction sets for operating the first device; and	
[84d]. means for executing, at least in response to the determining, the one or more instruction sets for operating the first device, wherein the second device autonomously performs one or more operations defined by the one or more instruction sets for operating the first device.	The '474 Accused Products are/include a system(s) further comprising means for executing, at least in response to the determining, the one or more instruction sets for operating the first device, wherein the second device autonomously performs one or more operations defined by the one or more instruction sets for operating the first device. For example, <i>see</i> the evidence presented in support of [45c], [45d], and [45g] above.