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Report of March 2024

Cybersecurity in mobility

Recent developments

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Parag Thakre (pthakre@dennemeyer.com)

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March’s digest

Industry news of the month

Curated and summarized, with reference link to the external source

Patents of the month

Relevant patents shortlisted and summarized, in simple language

Summarized by Dennemeyer

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Industry news

Grid Threat

Electric car charger pulled over fears hackers could use it to attack National Grid

An electric charger company “Wallbox” refrained from selling its Copper SB electric car charger, as it doesn’t comply with the cybersecurity laws for Product Safety and Standards. Drivers can control the Copper SB charger remotely via a smartphone app connected to the internet. However, hackers might find a flaw in the charger through the internet and exploit the flaw to turn on thousands at once, disrupting the National Grid or causing blackouts.

Source
www.msn.com

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Industry news

Security Boosts

Aston Martin Aramco Formula One Team Drives Cybersecurity With SentinelOne

The Aston Martin Aramco Formula One Team partnered with SentinleOne for safety and security. AM will leverage the AI-powered security solutions of the SentinleOne to ensure safety and security on and off track. AM team deals with the vast amount of data and to secure the data it partnered with SentinleOne. SentinleOne's AI-powered security solution will allow the team to anticipate and act on the data to safeguard every endpoint, IoT device, and cloud workload.

Source
www.astonmartinf1.com

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Industry news

New Testing Platform

AUTOCRYPT Launches Cybersecurity Testing Platform for UN R155/156 and GB Compliance

From July 2024, OEMs and vehicle inspection centers will be required to conduct cybersecurity testing and validations in compliance with the UNECE's Regulations 155/156 and SAC's GB and GB/T standards. AutoCrypt CSTP offers an integrated cybersecurity testing platform for vehicle type approvals. The platform provides customizable solution to OEMs for testing. They can customize test cases and licenses based on the need for their environment.

Source
https://autocrypt.io/

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Industry news

Partnership

US-Based EV Manufacturer Fisker Selects Argus as a Preferred CyberSecurity Partner for Its Ocean SUV Product Line

Fisker, a pioneering EV manufacturer, partnered with Argus to use its CAN IDPS (Intrusion Detection and Prevention system) to comply with the UNR 155 and Chinese GB/T regulations. The CAN IDPS helps Fisker identify potential threats and anomalies, including EV-specific threats, and mitigate them before they affect the vehicle. Argus and Fisker validated anomalies in the testing phase to minimize false-positives in production, reducing the volume of events sent to the backend (VSOC).

Source
argus-sec.com

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Industry news

Contextual Threat Intelligence

New VicOne xNexus Next-Gen VSOC Platform Delivers Contextualized Threat Intelligence for Robust Automotive Defense

VicOne introduced a next-generation vehicle security operations center (VSOC) platform, xNexus. The xNexus solution integrates with VicOne’s in-vehicle VSOC sensor to deliver contextualized insights by using a unique Large Language Modeling (LLM) approach. As a result, threat investigations are faster and there's better protection against malicious attacks. With xNexus, it is easier to determine and analyze the attack path and enabling the VSOC team to identify affected areas and act implement proactive measures in less time.

Source
www.vicone.com

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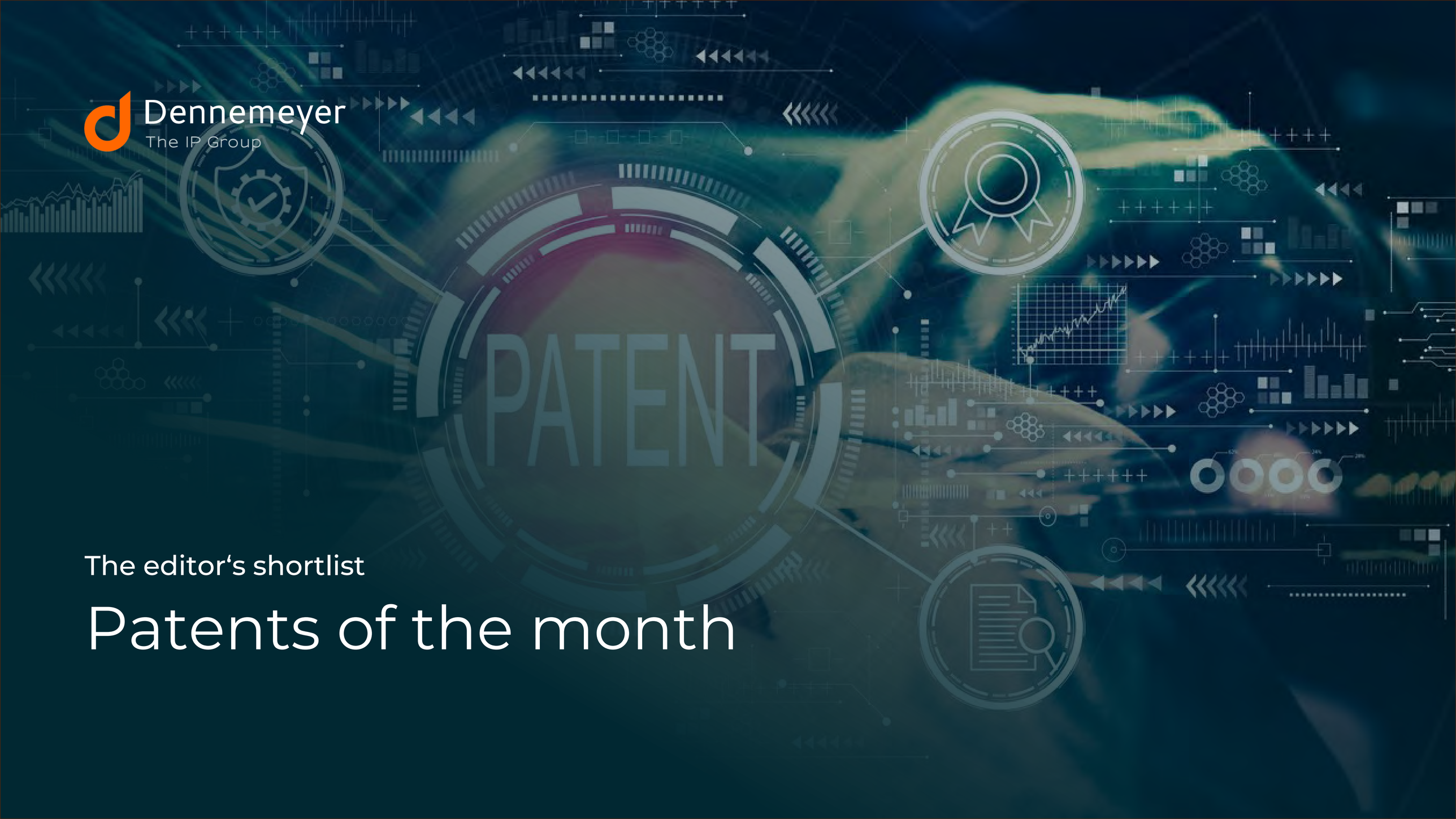

The editor‘s shortlist

Patents of the month

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Patents of the month

March 2024

Shortlisted and summarized by our analyst

- US2024053974A1 - Secure Update And Audit Of Electronic Control Units
  Assignee: Ford Global Technology LLC
- US2024061934A1 - Techniques for mitigating manipulations of an onboard network of a vehicle
  Assignee: Robert Bosch GMBH
- US2024048973A1 - Method and system for verifying data communication integrity in an aircraft
  Assignee: Volocopter GMBH
- US2024071236A1 - Unsupervised anomaly detection for autonomous vehicles
  Assignee: Wing Aviation LLC
- EP4320464A1 - GNSS Spoofing Detection And Recover
  Assignee: Qualcomm Inc
- IN202411008910A - System for secure communication between computing device and vehicle and method thereof
  Assignee: Bluest Mettle Solutions Private Limited, Chitkara University
- DE102023004446A1 - Responding to cyber attacks on an electric vehicle
  Assignee: Mercedes Benz Group AG
- DE102022116152A8 - Method for monitoring data traffic of a motor vehicle and motor vehicle with an attack detection system
  Assignee: Audi AG
- JP7428222B2 - In-vehicle security devices, in-vehicle security methods, and security systems
  Assignee: NEC Corporation
- CN117560666A - Method for establishing point-to-point encryption communication network between intelligent network-connected automobile and cloud
  Assignee: Nanjing Zhongke Qixin Technology Co Ltd

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Latest patents

US20240053974A1

Secure Update And Audit Of Electronic Control Units

Company name	Ford Global Technology LLC
Inventors	John Cardillo, Satya Meenakshi Raparthi, Vijayababu Jayaraman, Jason Michael Miller
Priority date	11 Aug 2022
Publication date	15 Feb 2024

Summarized by Dennemeyer

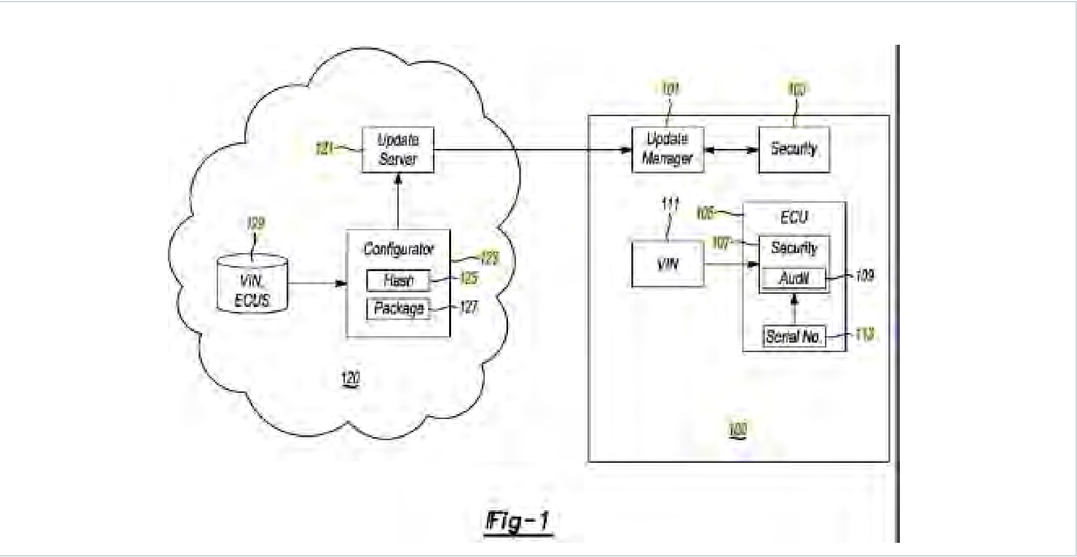

Fig-1

Technology advances are enabling software-defined vehicles to be updated remotely, posing a security risk. In order to protect vehicles from cyberattacks and ensure secure ECU-specific (Electronic control units) updates, this patent proposes a way to make sure only authorized updates are installed on the ECUs. The system checks the time of the update, makes sure it matches previous updates, and uses a special code to confirm the update is for that specific vehicle. It also verifies if the software update package has not been tampered with during delivery.

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Latest patents

US20240061934A1

Techniques for mitigating manipulations of an onboard network of a vehicle

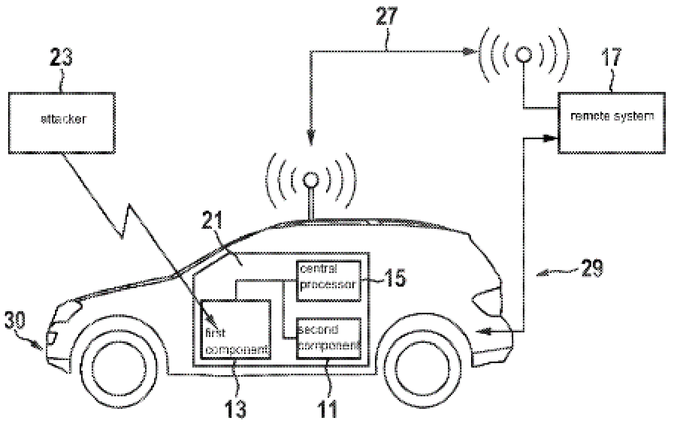

Fig. 2

Company name	Robert Bosch GMBH
Inventors	Nobbe Carsten, Graf Joachim
Priority date	22 Aug 2022
Publication date	22 Feb 2024

Summarized by Dennemeyer

The patent talks about ways to protect a vehicle's network from being tampered. When something unusual is detected in the network, the system takes actions to keep the vehicle safe and functioning properly. It first identifies the problem, then uses different methods to either put the vehicle in a safe mode or restore its functions. These methods are chosen based on what caused the issue and can be adjusted depending on how often similar issues occur. By doing this, it helps prevent any harm or disruptions while keeping the vehicle running smoothly.

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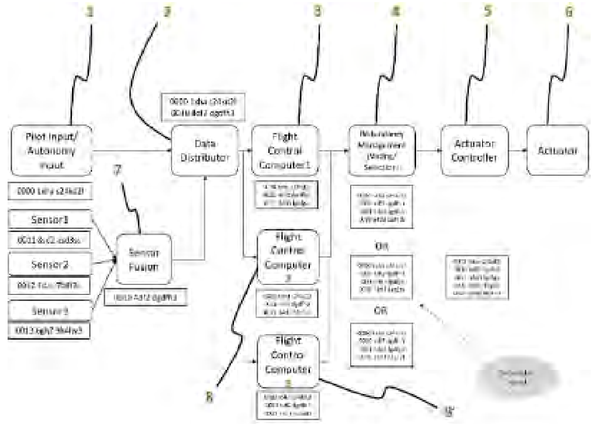
Latest patents

US20240048973A1

Method and system for verifying data communication integrity in an aircraft



Company name	Volocopter GMBH
Inventors	Burak Yüksel
Priority date	05 Aug 2022
Publication date	08 Feb 2024

Summarized by Dennemeyer

This invention talks about a way to make sure important messages sent between different parts of an aircraft are not lost. It uses a special method called blockchain, which links messages together in a chain so they can be tracked. Each part of the aircraft adds information to the message as it passes through, like a pilot command or control data. By checking these added details at each step, it can be seen if any message was missed along the way. This helps prevent problems and allows for maintenance before anything bad happens during flight.

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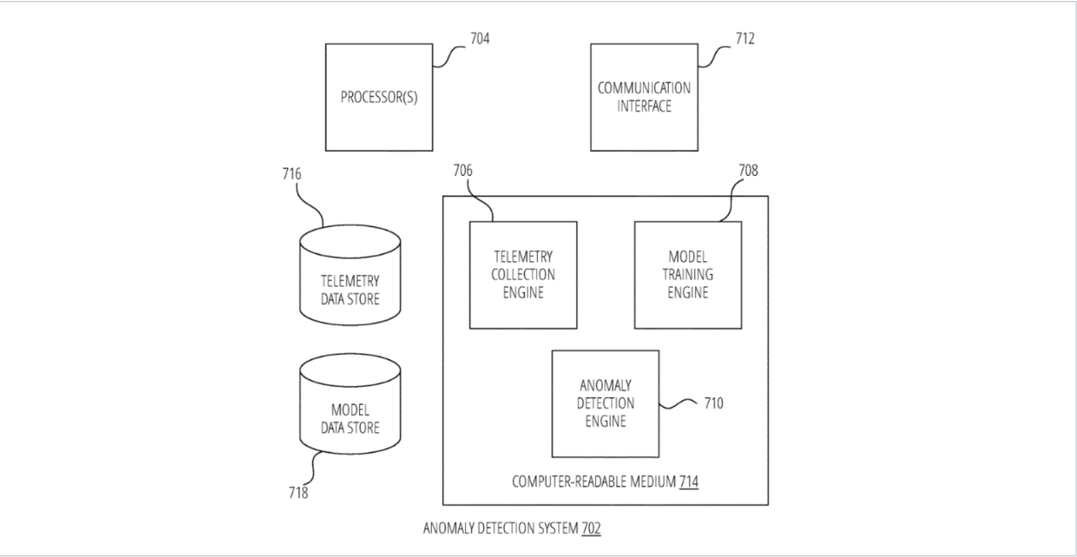
Latest patents

US2024071236A1

Unsupervised anomaly detection for autonomous vehicles

Company name	Wing Aviation LLC
Inventors	Vikas Sindhwani, Hakim Sidahmed, Krzysztof Choromanski, Brandon L Jones
Priority date	26 Oct 2023
Publication date	29 Feb 2024

Summarized by Dennemeyer



The patent text talks about using a smart system to detect problems in self-driving vehicles like drones. It uses historical data and machine learning to create accurate models that can spot issues during flights. When anomalies are found, the system can send commands to the vehicle to handle the problem. The system includes components like sensors, processors, and communication interfaces. In simple terms, this technology helps drones fly safely by analyzing their flight data for any unusual behavior or problems. If something goes wrong, it can alert the drone and even take actions like changing its route or landing safely. This smart system makes sure that delivery drones operate smoothly and securely during their missions.

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Latest patents

EP4320464A1

GNSS Spoofing Detection And Recovery

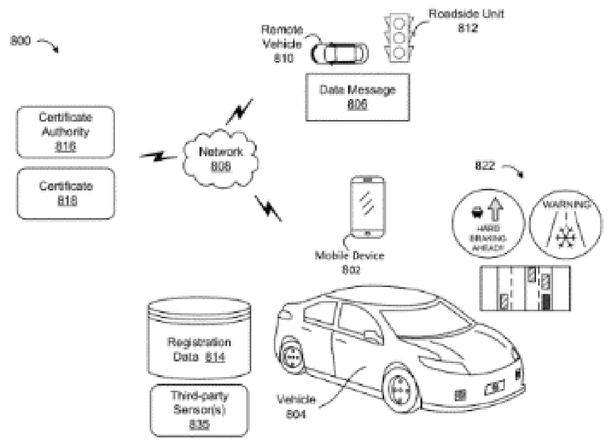

FIG. 8

Company name	Qualcomm Inc
Inventors	Arunandan Sharma, Volodimir Slobodyanyuk, Mohammed Ataur Rahman Shuman
Priority date	05 Sep 2023
Publication date	29 Feb 2024

Summarized by Dennemeyer

The invention talks about detecting fake GPS signals that can mislead cars. These fake signals, called spoofing signals, can make the device think it's in a different place than it really is. The method involves checking if there are any signs that the GPS signal might be fake and comparing the location calculated by GPS with known locations like bridges or landmarks to confirm if there's any deception going on. This helps ensure that devices know their real location accurately, especially important for things like emergency services or self-driving cars.

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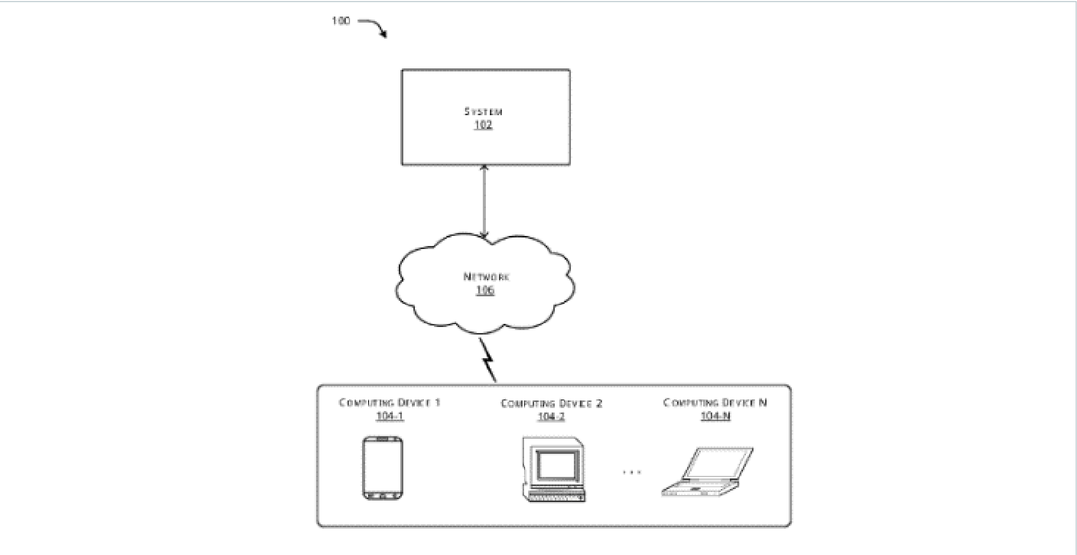
Latest patents

IN202411008910A

System for secure communication between computing device and vehicle and method thereof

Company name	Bluest Mettle Solutions Private Limited, Chitkara University
Inventors	Rahul Mishra, Dhiraj Singh, Pratham Arora
Priority date	22 Aug 2022
Publication date	22 Feb 2024

Summarized by Dennemeyer



The invention talks about securely integrating a computing device (e.g., handheld devices like mobile, laptop, etc.) with the vehicle. Technology has transformed the automotive industry over the years and integrating handheld devices is a notable change. Handheld devices now have enhanced infotainment, communication, navigation, etc. As a result, security becomes a top priority when integrating with different devices. To ensure secure communication, the invention allows mutual authentication from both sides. Moreover, it monitors the communication pattern for anomalies and intrusion attempts to prevent security breaches.

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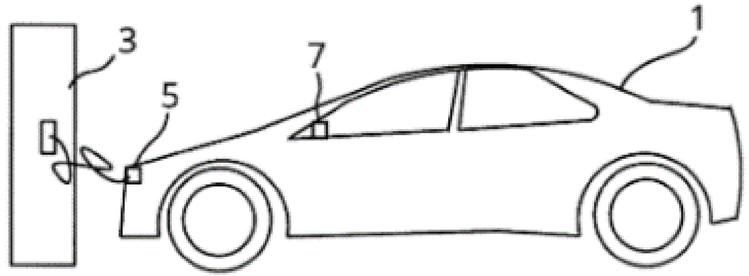
Latest patents

DE102023004446A1

Responding to cyber attacks on an electric vehicle



Company name	Mercedes Benz Group AG
Inventors	Scheerle Marc, Biswojyothi Monith, Bhagat Preet
Priority date	04 Nov 2023
Publication date	29 Feb 2024

Summarized by Dennemeyer

This invention relates to protecting electric cars from cyber attacks when they are charging at public stations. It's like having a security system for the car while it's getting charged. If there's any sign of a cyber attack, a warning is sent to other cars in the area so they can avoid using that same charging station. during and after each charging process and location if any threat is detected. This helps prevent more cars from being affected by the attack. The method also involves checking if the car's software is safe tested. By doing this, it stops potential hackers from messing with the car's systems through the charging station connection.

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Latest patents

DE102022116152A8

Method for monitoring data traffic of a motor vehicle and motor vehicle with an attack detection system

Company name	Audi AG
Inventors	Corbett Christopher, Oelker Martin, Schmidt Karsten
Priority date	29 Jun 2022
Publication date	22 Feb 2024

Summarized by Dennemeyer

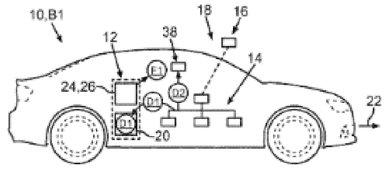

Fig.1

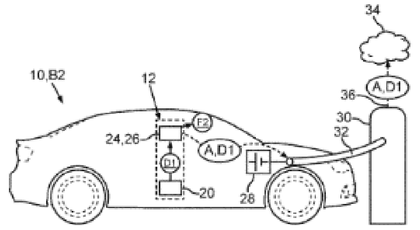

Fig.2

This patent is about a smart way to protect cars from cyber attacks. It explains how a system can monitor the data traffic in a car and detect any suspicious activity that could be an attack. The system stores some data while the car is driving, then analyzes it when the car is parked and not moving. This analysis helps to find any potential threats or unusual activities in the car's network. uses different states of the car, like when it's charging, to do this analysis without needing extra computing power inside the vehicle. By using this method, the security of detecting attacks in cars can be improved without adding more technology inside them. It also talks about sending detected anomalies to a central server for further investigation if needed.

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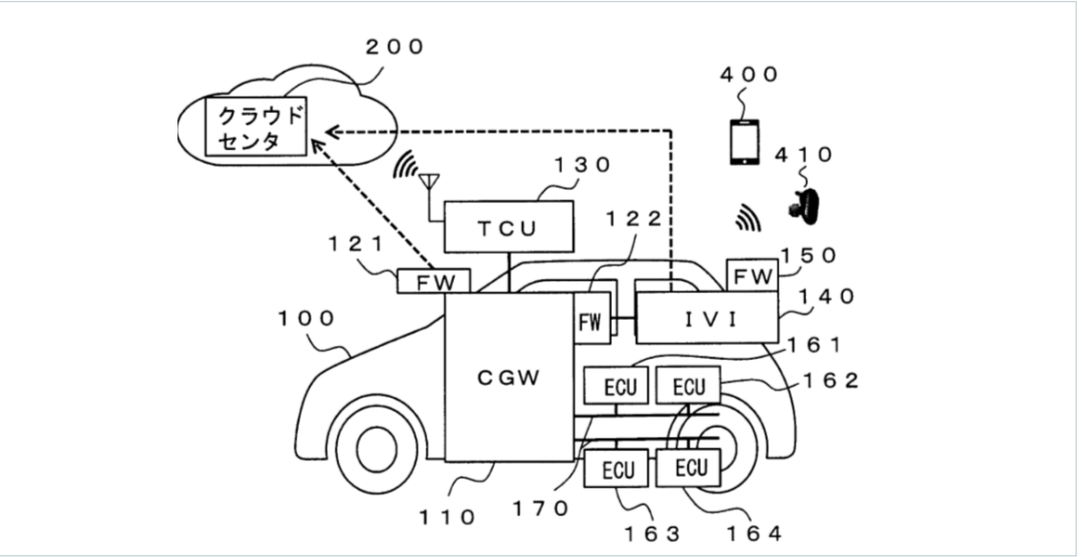
Latest patents

JP7428222B2

In-vehicle security devices, in-vehicle security methods, and security systems

Company name	NEC Corporation
Inventors	Sakata Masayuki
Priority date	14 Mar 2019
Publication date	06 Feb 2024

Summarized by Dennemeyer



This patent is about a system to protect vehicles from cyber-attacks. It includes devices that collect and analyze communication logs to detect any unusual activity, like an attack. It monitors communication within the vehicle network for signs of a cyber-attack before it fully happens. If suspicious activity is detected, it can alert the driver and take actions like stopping the engine or blocking certain communications to keep the vehicle safe. In case of a confirmed cyber-attack, authorized personnel can restore normal operations after verifying their identity through specific commands.

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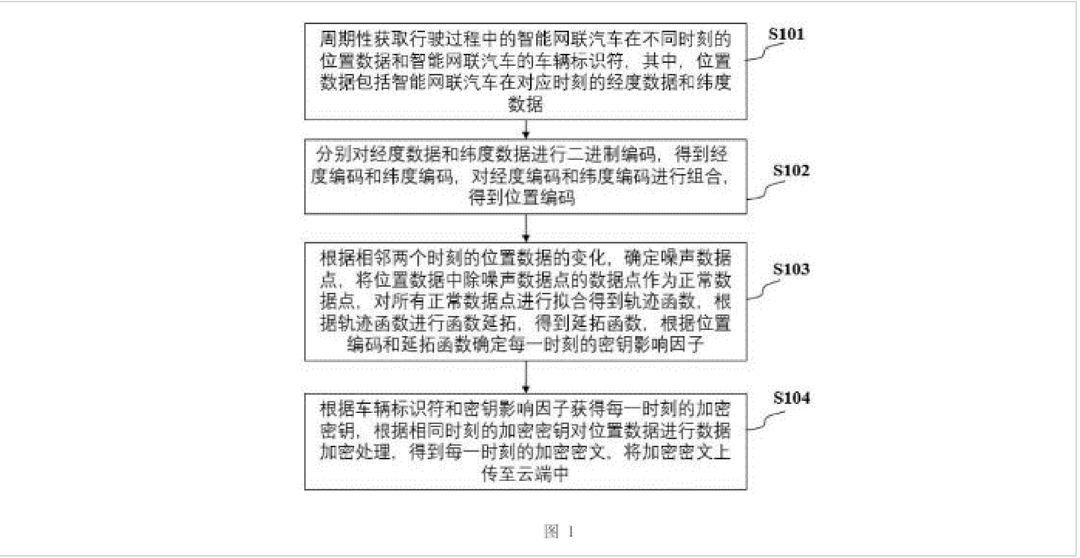
Latest patents

CN117560666A

Method for establishing point-to-point encryption communication network between intelligent network-connected automobile and cloud

Company name	Nanjing Zhongke Qixin Technology Co Ltd
Inventors	XU Chen, Zhao Yiheng
Priority date	11 Jan 2024
Publication date	13 Feb 2024

Summarized by Dennemeyer



The process of remotely transmitting data from vehicle to cloud end is easy to intercept. To ensure the safety and security of the communication, the patent describes a way to make sure that data sent between smart cars and the cloud is super safe. It establishes point-to-point encryption communication network between automobile and cloud. The automobiles can securely send their location information to the cloud by creating unique secret codes at different times and preventing unauthorized access through advanced encryption techniques. By using special codes based on where the car is located, any abnormal data points are filtered out, making sure only correct information is used for encryption.

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Contact us at

Dennemeyer India Private Limited

North & East India
+91 79831 15166

South & West India
91 88266 88838