Abstract 1:

Multi-Modal Biometric Authentication System   
This patent introduces a groundbreaking Multi-Modal Biometric Authentication System   
(M2BAS) that integrates fingerprint, facial, and voice recognition for heightened security.   
Unlike conventional systems, M2BAS dynamically adjusts security levels based on   
contextual factors and user preferences, ensuring both robust protection and user   
convenience. Utilizing advanced machine learning algorithms, the system continuously   
analyzes environmental conditions and user behavior to determine the optimal authentication   
strength. Additionally, M2BAS incorporates cutting-edge encryption techniques for secure   
data transmission and storage. Its modular design facilitates seamless integration into   
existing infrastructures, making it a versatile and scalable solution across various   
applications. This innovation represents a significant leap forward in biometric security,   
promising to redefine authentication methods with its adaptive and user-centric approach.

Comparison Promp 1:

'The following texts are abstracts from patent specifications. Your task is to compare the "Testing Abstract" to all the others. \n It is important that you focus on comparing the concepts that the abstracts describe, not the way they are written. \n Rank the remaining abstracts on how well they match with the Testing Abstract by giving them a rating from 0 to 10 points. \n 0 meaning they have absolutely nothing in common and 10 meaning they basically describe the exact same idea.\n Your output should be a python dictionary with the title "comparison", each element hast the Abstract number as key and the rating as value.\n I want to convert your output string to an actual dictionary, so make sure the formatting is right.\n\n Testing Abstract: "\nMulti-Modal Biometric Authentication System \nThis patent introduces a groundbreaking Multi-Modal Biometric Authentication System \n(M2BAS) that integrates fingerprint, facial, and voice recognition for heightened security. \nUnlike conventional systems, M2BAS dynamically adjusts security levels based on \ncontextual factors and user preferences, ensuring both robust protection and user \nconvenience. Utilizing advanced machine learning algorithms, the system continuously \nanalyzes environmental conditions and user behavior to determine the optimal authentication \nstrength. Additionally, M2BAS incorporates cutting-edge encryption techniques for secure \ndata transmission and storage. Its modular design facilitates seamless integration into \nexisting infrastructures, making it a versatile and scalable solution across various \napplications. This innovation represents a significant leap forward in biometric security, \npromising to redefine authentication methods with its adaptive and user-centric approach. "\n US8952781B2: "A biometrically authenticated access control in which a wireless authentication signal is provided from a primary instrumentality of access, only after a dual-stage biometric verification of the user\'s identity is performed. In one embodiment, an accessing device includes memory for storing a device identification code and an authentication code, along with first and second biometric templates corresponding to biometric samples from a user. In another embodiment, an accessing device includes memory for storing a device identification code and more than one authentication code, for separate users, along with first and second biometric templates corresponding to biometric samples from multiple users. In order to gain access to a secured resource, a user undergoes first and second biometric sampling to generate biometric data to be compared with the first and second biometric templates."\nUS9654468B2: "Systems and methods for secure remote biometric authentication are provided. A network-based biometric authentication platform stores biometric templates for individuals which have been securely enrolled with the authentication platform. A plurality of sensor platforms separately establishes secure communications with the biometric authentication platform. The sensor platform can perform a biometric scan of an individual and generate a biometric authentication template. The sensor platform then requests biometric authentication of the individual by the biometric authentication platform via the established secure communications. The biometric authentication platform compares the generated biometric template to one or more of the enrolled biometric templates stored in memory at the biometric authentication platform. The result of the authentication is then communicated to the requesting sensor platform via the established secure communications."\nUS8392965B2: "Techniques for multiple biometric smart card authentication are provided. At least two biometric readings are obtained from a requesting user. Both biometric readings are verified before access to resources of a smart card are made available to the requesting user."\nUS8141141B2: "This invention provides for progressive processing of biometric samples to facilitate verification of an authorized user. The initial processing is performed by a security token. Due to storage space and processing power limitations, excessive false rejections may occur. To overcome this shortfall, the biometric sample is routed to a stateless server, which has significantly greater processing power and data enhancement capabilities. The stateless server receives, processes and returns the biometric sample to the security token for another attempt at verification using the enhanced biometric sample. In a second embodiment of the invention, a second failure of the security token to verify the enhanced biometric sample sends either the enhanced or raw biometric sample to a stateful server. The stateful server again processes the biometric sample and performs a one to many search of a biometric database. The biometric database contains the master set of enrolled biometric templates associated with all authorized users. Signals generated by the stateful server are used by the security token to allow or deny access to a resource or function. In both embodiments of the invention, the heuristics remain with the security token."\nUS8694793B2: "Aspects and embodiments of the present disclosure provide devices and methods for biometric authentication of a user during access control transactions. In one aspect, an access control processor device, comprising a biometric input sensor configured to receive user biometric information; a biometric verification processor configured to authenticate the input user biometric information; and a communication element configured to activate when the biometric information entered into the biometric verification system is authenticated and maintain an inactive status for the communication element on the payment processor device when the biometric information entered into the biometric verification system is not authenticated."\nUS10698989B2: "Systems and methods verifying a user during authentication of an integrated device. In one embodiment, the system includes an integrated device and an authentication unit. The integrated device stores biometric data of a user and a plurality of codes and other data values comprising a device ID code uniquely identifying the integrated device and a secret decryption value in a tamper proof format, and when scan data is verified by comparing the scan data to the biometric data, wirelessly sends one or more codes and other data values including the device ID code. The authentication unit receives and sends the one or more codes and the other data values to an agent for authentication, and receives an access message from the agent indicating that the agent successfully authenticated the one or more codes and other data values and allows the user to access an application."\nUS11397800B2: "A removable card-enabled BPID Security Device integrates a removable card reader with a biometric authentication component to provide secured access to electronic systems. The device allows for an individual to insert a removable card into an aperture in the physical enclosure of the BPID Security Device, allowing the removable card and the BPID Security Device to electronically communicate with each other. The BPID Security Device is based on a custom application specific integrated circuit that incorporates removable card terminals, such that the BPID Security Device can communicate directly with an inserted removable card. In an alternative embodiment of the invention, the BPID Security Device is based on a commercial off-the-shelf microprocessor, and may communicate with a commercial off-the-shelf microprocessor removable card receiver using a serial, USB, or other type of communication protocol. The device allows for enrolling a user\'s credentials onto the BPID Security Device and for authenticating an individual using the BPID Security Device."\nCA2640915C: "An authentication server, of a user to be authenticated, using a portable object comprising at least one biometric sensor, the portable object being adapted to cooperate with a terminal, the method comprising a step of capturing, by a portable object, a biometric sample to be compared coming from the user to be authenticated. The portable object transmits to the authentication server the biometric sample, in a secure form, and the authentication server determines a signature to be authenticated using the biometric sample, and then compares it to a reference signature. As such, it is the authentication server that creates a signature to be authenticated, using a biometric sample transmitted by the portable object, in a secure manner, and which then carries out the comparison between the signature to be authenticated and a reference signature."\nUS11126635B2: "Systems, methods, and devices for a cyberphysical (IoT) software application development platform based upon a model driven architecture and derivative IoT SaaS applications are disclosed herein. The system may include concentrators to receive and forward time-series data from sensors or smart devices. The system may include message decoders to receive messages comprising the time-series data and storing the messages on message queues. The system may include a persistence component to store the time-series data in a key-value store and store the relational data in a relational database. The system may include a data services component to implement a type layer over data stores. The system may also include a processing component to access and process data in the data stores via the type layer, the processing component comprising a batch processing component and an iterative processing component."\nUS11231705B2: "Methods for data monitoring with changeable routing of input channels are disclosed. An example method includes a data collector communicatively coupled to a plurality of input channels and a data acquisition circuit to interpret the detection values, each corresponding to an input channel. Sensor data is acquired from a first route of input channels and stored together with specifications for the sensors that correspond to the input channels. The sensor data is evaluated with respect to an alarm threshold level and an alarm state set when the alarm threshold level is exceeded. A response circuit changes a routing of the input channels for data collection from a first routing to an alternate routing of input channels, wherein the alternate routing of input channels comprise the first input channel and a group of input channels related to the first input channel."\nUS11126171B2: "Systems and methods for data collection in an industrial environment are disclosed. A system may include a data collector to collect data from a subset of a plurality of input channels based on a selected data collection routine, and a data acquisition and analysis circuit for receiving the collected data and analyzing the collected data using an expert system analysis circuit to determine an occurrence of an anomalous condition for a machine component based on an analysis. The expert system analysis circuit may utilize a neural network. The data analysis circuit may determine an aggregate rate of data being collected and, if the aggregate rate exceeds a current bandwidth allocation rate associated with the network infrastructure, request an increase to the current bandwidth allocation rate from the network infrastructure."\nUS11451398B2: "A computer implemented method of validating use of a computing resource by a an executing requester software module from a plurality of discrete software modules, the method including validating a characteristic of the requester software module; generating a first transaction defining criteria for consumption of the computing resource by the requester software module, the first transaction being encrypted with a private key from a public key/private key pair and being added as part of a block of transactions to a blockchain data structure; generating a subsequent encrypted transaction corresponding to a request of the requester software module to consume the computing resource, the subsequent transaction referring to the first transaction, wherein the subsequent transaction is validated by a transaction miner computing component from a plurality of miners by authenticating the transaction using the public key and verifying compliance with the criteria defined in each transaction."\nUS11698818B2: "A computer implemented method of executing a plurality of discrete software modules each including a machine learning algorithm as an executable software component configurable to approximate a function relating a domain data set to a range data set; a data store; and a message handler as an executable software component arranged to receive input data and communicate output data for the module, wherein the message handler is adapted to determine domain parameters for the algorithm based on the input data and to generate the output data based on a result generated by the algorithm, each module having associated a metric of resource utilization by the module, the method including receiving a request for a machine learning task; and selecting a module from the plurality of modules for the task based on the metric associated with the module."\nUS11823017B2: "A computer implemented method of executing a plurality of discrete software modules each including a machine learning algorithm as an executable software component configurable to approximate a function relating a domain data set to a range data set; a data store; and a message handler as an executable software component arranged to receive input data and communicate output data for the module, wherein the message handler is adapted to determine domain parameters for the algorithm based on the input data and to generate the output data based on a result generated by the algorithm, the method including providing a communication channel between modules in order that at least part of output data for a first module constitutes at least part of input data for a second module so as to create a network of modules for combining machine learning algorithms to refine the approximation of the function."\nUS20190294999A1: "Systems and methods for selecting hyper parameters for machine learning algorithms based on past training results are provided. For example, groups of values of hyper parameters may be obtained. Further, in some examples, results of training the machine learning algorithm using different pluralities of training examples and/or the different group of values of hyper parameters may be obtained. Further, in some examples, the results and the groups of values of hyper parameters may be used to select at least one value of a hyper parameter for a prospective training of the machine learning algorithm."\nUS11562293B2: "A computer implemented method of executing a software module includes a machine learning algorithm as an executable software component configurable to approximate a function relating a domain data set to a range data set; a data store; and a message handler as an executable software component arranged to receive input data and communicate output data for the module, wherein the message handler is adapted to determine domain parameters for the algorithm based on the input data and to generate the output data based on a result generated by the algorithm, the method including generating a message as input data for the module, the message including instructions for execution by the module to effect a modification of the machine learning algorithm of the module."\nUS20200034665A1: "Apparatuses, systems, program products, and methods are disclosed for determining validity of machine learning algorithms for datasets. An apparatus includes a primary training module that is configured to train a first machine learning model for a first machine learning algorithm. An apparatus includes a primary validation module that is configured to validate a first machine learning model to generate an error data set. An apparatus includes a secondary training module that is configured to train a second machine learning model for a second machine learning algorithm using an error data set. A second machine learning algorithm may be configured to predict a suitability of a first machine learning model for analyzing an inference data set. An apparatus includes an action module that is configured to trigger an action in response to a predicted suitability of the first machine learning model not satisfying a predetermined suitability threshold."\nUS11568300B2: "A machine learning management apparatus identifies a maximum prediction performance score amongst a plurality of prediction performance scores corresponding to a plurality of models generated by executing each of a plurality of machine learning algorithms. As for a first machine learning algorithm having generated a model corresponding to the maximum prediction performance score, the machine learning management apparatus determines a first training dataset size to be used when the first machine learning algorithm is executed next time based on the maximum prediction performance score, first estimated prediction performance scores, and first estimated runtimes. As for a second machine learning algorithm different from the first machine learning algorithm, the machine learning management apparatus determines a second training dataset size to be used when the second machine learning algorithm is executed next time based on the maximum prediction performance score, second estimated prediction performance scores, and second estimated runtimes."\n'

Abstract 2

COFFEE MACHINE AND PROCEDURE TO PRODUCE A HOT DRINK.

Abstract

The invention refers to a machine for producing a drinkable food like coffee, tea, shake, soup or such alike, on basis of an ingredient like e.g. tea leaves, coffee (1) or soup powder etc. and of a drinkable fluid like water (B), milk or such alike, whereby before production of the food and during the production and after the production neither the fluid nor the food ingredient is ever in direct contact with the machine itself.

Comparison Prompt 2

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Your task is to compare the "Testing Abstract" to all the others. \n It is important that you focus on comparing the concepts that the abstracts describe, not the way they are written. \n Rank the remaining abstracts on how well they match with the Testing Abstract by giving them a rating from 0 to 10 points. \n 0 meaning they have absolutely nothing in common and 10 meaning they basically describe the exact same idea.\n Your output should be a python dictionary with the title "comparison", each element hast the Abstract number as key and the rating as value.\n I want to convert your output string to an actual dictionary, so make sure the formatting is right.\n\n Testing Abstract: "\nCOFFEE MACHINE AND PROCEDURE TO PRODUCE A HOT DRINK.\nAbstract\nThe invention refers to a machine for producing a drinkable food like coffee, tea, shake, soup or such alike, on basis of an ingredient like e.g. tea leaves, coffee (1) or soup powder etc. and of a drinkable fluid like water (B), milk or such alike, whereby before production of the food and during the production and after the production neither the fluid nor the food ingredient is ever in direct contact with the machine itself.\n "\n CN1640349B: "The coffee maker for brewing powder coffee contained in a cartridge comprises a brewing chamber adapted to receive the cartridge, at least one punching member for punching the cartridge and a pump for feeding brewing water into the brewing chamber. In order to avoid that the prepared coffee shows froth at its surface, the coffee maker comprises means for restricting the amount of water fed by the pump into the brewing chamber per unit of time. This means ensures that the brewing water flows through the cartridge essentially unpressurized."\nCN101232829B: "A brewing apparatus for infusing compacted ground coffee in a grounds cup at a brewing station with heated water under pressure. At a brewing station, a piston head with an active seal that is spaced from the grounds cup wall during motion, extends into the grounds cup. When the piston head begins to compact the ground coffee it activates the seal to form a sealed upper end of a brewing chamber. Hot water is admitted to the brewing chamber to produce the coffee. When the brewing cycle is completed, the piston head displaces further to force additional coffee from the grounds. Then the piston head retracts to allow the infusion chamber assembly to be removed for cleaning."\nCN101374442B: "A coffee maker with combined milling stage and brewing stage is provided. The coffee maker includes a shaft (32), a brewing basket (38), a chopping blade (36) and a locking mechanism (48). The shaft (32) includes a longitudinal axis (23) and is capable of being rotated about the axis. The brewing basket (38) is adapted to receive coffee beans and hot water. The brewing basket includes a sleeve (33). A potion of the shaft (32) is movably fitted within the sleeve (33). The brewing basket (38) is capable of being rotated about the axis (23). The chopping blade (36) is attached to an end of the shaft (32) and position within the brewing basket (38). The locking mechanism (48) is adapted to lock the brewing basket (38) and unlock the brewing basket (38). When the brewing basket (38) is locked, rotation of the shaft (32) drives the chopping blade (36) to rotate about the axis (23) to mill the coffee beans to produce milled coffee power. When the brewing basket (38) is unlocked, rotation of the shaft generates frictional forces on the brewing basket to drive the brewing basket to rotate to generate centrifugal forces, causing the hot water to penetrate the milled coffee powder to produce brewed coffee."\nRU2491875C2: "FIELD: personal use articles."\nAU2016228592B2: "A sugarcane potable water and a production process for a compound sugarcane juice beverage, which comprises six steps of juicing, pretreatment, filtration by a micro-filtration membrane, separation and concentration by a nano-filtration membrane, filtration by a reverse osmosis membrane and compounding. Honey, Pueraria root extract, Lonicera japonica Thunb extract, Dendrobium officinale extract, Vitamin C and Vitamin E can also be added when compounding. The filtration by a micro-filtration membrane can be used for filtering out tiny impurities, germs and microorganisms in sugarcane juice and also can be used for retaining the original flavour of the sugarcane juice. By use of the nano-filtration membrane for separation and concentration and the reverse osmosis membrane for filtration, the sugarcane juice can be separated into sugarcane potable water and concentrated syrup, wherein the sugarcane potable water can be directly drunk and also can be compounded with the concentrated syrup into a raw sugarcane juice beverage with any different sweetness."\nCN102950755B: "It is used for plastic blank the present invention relates to one kind（5）It is shaped to plastic containers（6）Blow moulding machine（4）, including multiple is provided with for clamping blow molding die（30,48）Blow molding die carrier（22）Blowing platform（23）, a kind of be aseptically used to set or transmit the blowing platform（23）Toilet（15）With one kind blowing platform part is provided with for installation（30,48）The blow molding die carrier（22）Lead to the toilet（15）Installation passage（40）, wherein, the installation passage（40）The toilet is located at including at least one（15）Above in outside ambient side（42）With multiple blowing platform（23）Desinfection chamber（41）."\nKR0175926B1: "An improved and optimized design for a universal infusion coffee filter pack designed to fit and provide for consistent brewing of quality coffee in a variety of American style and European style coffeemakers. The infusion coffee pack (34) comprises a first circular piece (40a) of filter paper, having its surface area stretched and increased by at least 3% to form a rounded pocket, and sealed to a second circular piece (50a) of filter paper to form a substantially one half inch (1.27 cm) sealed flange (32) therearound. A metered quantity of coffee grounds (36) is sealed within the rounded pocket, and is provided with a head space (38) of substantially fifty percent or greater of the volume within the round coffee pocket. The first (40a) and second (50a) circular pieces of filter paper each preferably have a diameter of approximately five inches (12.7 cm), and are filled with a metered amount of ground coffee to brew five cups of water. In this optimized design, the presence of the one half inch (1.27 cm) flange (32) in combination with the increased surface area caused by stretching results in a brewed coffee having an increase in soluble solids extraction and a decrease in the standard deviation of soluble solids extraction."\n'

Abstract 3

A kind of independent vehicular modular wheel set and rear-axle steering control method driven with turning to

Abstract

The invention discloses a kind of for four motorized wheels and the electromobile modularization wheel set of steering, including vehicle frame；Steering motor is fixed on the vehicle frame；And subframe, form accommodation space；The subframe is rotatably supported on the vehicle frame；Subframe described in the output axis connection of the steering motor, the subframe can be rotated around output shaft；Driving motor is fixed in the accommodation space, for wheel to be driven to rotate；Column, wheel hub are rotatably supported on the column；The column has through hole, and the output shaft of the driving motor drives wheel through the through hole；Upper suspension swing arm, both ends are connected to by rubber packing between the upper end of the accommodation space and the column；Lower suspension swing arm, both ends are connected to by rubber packing between the lower end of the accommodation space and the column.Wheel set integrated driving, braking, suspension and the steering of the present invention realizes four motorized wheels with turning to.

Comparison Prompt 3

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One embodiment provides a vehicle incorporating a cellular body design wherein the vehicle is constructed from a varying number of substantially identical cells, assembled end-to-end to produce vehicles of varying size and capacity. Additional embodiments include lightweight passenger vehicles, such as automobiles, manufacturable from COTS parts, including independent suspensions providing large vertical wheel travel. One embodiment provides an automobile-type vehicle having a roll-cage frame, and a lightweight, exo-skeleton external frame, provided in multiple wheel configurations, e.g. three- or four-wheeled configurations. Body panels are quickly and easily attached to the tubular frame and also easily removed and switched and readily replaceable. Bicycles are equipped with electric pedal assist units. Additionally, a pneumatic pedal assist reduces peak power requirements and prolongs battery life. "\nUS20090091101A1: "A vehicle (100) is disclosed. The vehicle may include a base portion (104) and a modular portion (112). The base portion may be a four wheel vehicle having an operator area (114) with seating for at least two occupants in a side-by-side arrangement. The modular portion may be coupled to the base portion resulting in a six wheel vehicle. The wheels (102) of the modular portion may be powered by an engine (500) of the base portion."\nUS5343974A: "A motor vehicle including modular units for operating two rear wheels of the vehicle the motive unit includes a rigid link which is pivotally connected between the rear wheel and the motive unit, and the motive unit is operable by a motor. A rigid link is pivotally connected, and the rear wheels are spring suspended mounted relative to the frame of the vehicle. In an electrical vehicle form, there is a slidable movable battery pack located in a rear compartment of the vehicle for easy installation and removal from the vehicle. Different traction characteristics can be provided to the motive unit including an integrated motor, integrated gear box, and power input-output shaft accessible to secondary power or an energy recycler unit. Steering is effected by a controller which operates the speed of the driven wheels."\nUS5934397A: "A modular vehicle includes a frame having three main sections; a front section, a rear section and a center section. The front and rear sections may be displaced vertically with respect to center section prior to being assembled. Each section is separately assembled and standardized so that various devices may be incorporated to each section and each section may be otherwise modified to allow a specific vehicle to be easily and quickly manufactured."\nUS20190039651A1: "A method for influencing the direction of travel of motor vehicles. The motor vehicle has a first steering system, having at least one steering axle with at least two wheels. The wheels are connected to the steering axle through wheel suspensions that can be adjusted by actuators. A redundant steering system is realized by adjusting a steering roll radius of at least one of the steering axles, according to which a force component acting orthogonally to the direction of travel in the region of at least one wheel is applied to the first steering system."\nCN115003586A: "The invention relates to a method for controlling a steer-by-wire steering system of a motor vehicle (1), wherein the motor vehicle (1) comprises two axles (10, 20) each having two wheels (RL, RR, FL, FR), wherein the two front wheels (FL, FR) can be steered by means of front wheel steering and the two rear wheels (RL, RR) can be steered by means of rear wheel steering, and the motor vehicle (1) comprises a steering system with two axles (10, 20)20) and via a differential to drive two wheels of the corresponding axle, wherein the motor vehicle (1) comprises an on-board braking system, and the method comprises the steps of: checking the speed of the motor vehicle; enabling rear axle steering if the motor vehicle speed is less than 40 km/hr; when the steering of the rear axle is in the enabled state, the following steps are implemented: deactivating front wheel steering and rear wheel steering; by means of a set point wheel steering angle (alpha) RW,ref ) To determine the set point position of the first steering column (S) R,ref ) (ii) a Determining a differential drive torque (Δ T) between the two rear wheels (RL, RR) by means of a control unit in order to reach the reference position (S) R,ref )。"\nCN111836745B: "The invention relates to a steering method for an autonomously steered vehicle having a hybrid steering system with a hydraulic steering support device, an electromechanical steering support device and a control device for monitoring and controlling the driving process of the vehicle. The method comprises the following method steps: identifying a functional fault during an autonomous driving procedure; the control unit switches the steering to a steering brake, in which the steering is performed by braking at least one wheel, so that a steering torque results from the braking force acting at the steering radius, which steering torque leads to a deflection of the wheel. The invention also relates to a servo steering assembly enabling the method of the invention to be carried out."\nCN106080263B: "The invention discloses a kind of electric wheel truck chassis system and its optimization method, chassis system includes differential steering module, differential braking module and Active suspension module；Differential steering module includes steering wheel torque rotary angle transmitter, rack and pinion steering gear, two wheel hub motors, vehicle speed sensor, two wheel speed sensors, yaw-rate sensor and differential steering control ECU；Active suspension module includes flexible member, damping element, forcer and guiding mechanism；Differential braking module includes brake pedal position sensor and differential braking control ECU.Under steering/damped condition, using steering response, steering sensitivity, suspension ride comfort as performance indications, using the parameter of three modules of the invention as optimized variable, chassis system is optimized based on the algorithms of NSGA II, system is set to obtain preferable steering response and steering sensitivity while ensure automobile ride, so as to improve the whole synthesis performance of electric wheel truck chassis system."\nUS7338335B1: "A hybrid electric system designed to lower fuel consumption in heavy-duty long-haul vehicles, and in medium and light duty vehicles (trucks, buses, vans, SUVs, recreational vehicles, and the like), utilizing a multiplicity of thermal engines, regenerative power road-wheels, solar cells, and frontal area reducing adjustable-height suspension that are utilized singly or in combinations as suits the vehicle\'s mission."\nSE1951159A1: "The present invention relates to vehicle steering system arrangement (100) comprising a steerable vehicle suspension and power assisted vehicle steering with a feedback torque actuator (130), the steering feel being controlled by means of a torque and/or angle control system, TAC, (132). The steerable vehicle suspension comprises a plurality of vehicle suspension parameters and the geometry and/or dimensions of one or more of the vehicle suspension parameters or elements is/are designed to reduce or minimize the steering force required for steering the vehicle in driving. The torque and/or angle control, TAC, (132) is used for, based at least on directly or indirectly sensed and/or calculated steering wheel angle, controlling the wheel steer angle and providing feedback control by controlling the feedback torque actuator to generate a target feedback torque, and a target steering feel, and hence reducing or eliminating driver feedback provided by the vehicle suspension, such that the steering effort, if there is a fault in the steering control so thet the assistance is lost, will be low enough for the driver to handle safely, hence without needing failoperational steering gear."\nUS20190152513A1: "A steer-by-wire system for a motor vehicle includes at least two wheels which are steerable independently of one another in a normal operating mode of the steer-by-wire system, at least two steering actuators, each one being assigned to one of the steerable wheels and being configured for adjusting a steering angle of the particular steerable wheel, and at least one steering electronics system which is signally connected to the steering actuators and which is configured for controlling the steering actuators individually on the basis of steering commands."\nAU2009295555B2: "A pneumatic vehicle is provided with a first sub- assembly with a chassis, part of the vehicle body, a pair of B-pillars, a pair of rear rails, wheels, an elongate aluminum compressed load bearing air tank oriented longitudinally in the chassis, side panels connected to the tank and the wheels, a heat exchanger to heat the compressed air, and an air motor driven by the heated, compressed air and connected to a wheel. A ventilation system has a restrictive solenoid valve for directing air to the heat exchanger. The air tank is provided with a carbon filament reinforced plastic layer, and a fiberglass and aramid-fiber layer. A second sub-assembly includes part of the vehicle body bonded to the first-sub-assembly using a structural adhesive, a pair of A-pillars, and a pair of roof rails. Seating includes inflatable components for adjustment."\nKR100421832B1: "A modular track suspension system is readily adapted for attachment to any presently manufactured full-size automotive vehicle built with a load-carrying frame, being easily substituted for the vehicle\'s conventional wheeled undercarriage either during or following final assembly. The module uses a pair of endless rubber tracks, one track under each respective side of the vehicle; and each track is frictionally driven by tandem pairs of dual-wheels with rubber tires, each tandem pair of wheels being driven, respectively, by an intermediately positioned drive-unit axle. The dual-wheels are each movable in a vertical plane, and each dual-wheel can move separately and independently of the similar independent movement of the other dual-wheel with which it is tandemly paired. Each dual-wheel is also resiliently biased in the direction of the terrain on which the vehicle is standing or moving. Driving torque is delivered to the two endless tracks through a plurality of differentials appropriately and simply connected directly with the vehicle\'s drive shaft. In all preferred embodiments, an additional differential that is connected with, and is responsive to, the operation of the vehicle\'s steering wheel superimposes additive and subtractive steering torques to the already differentiated driving torques being delivered to the left-side and right-side tracks for controlling the vehicle\'s direction."\nCN114929563A: "The invention relates to a vehicle steering system (10) having: -at least one servomotor (18), -a steering handle (12) by means of which a desired driver steering angle (FW) can be preset by the driver; -a controller (24) having a driver assistance function (32) with which an auxiliary steering Angle (AW) for actuating the servomotor (18) can be preset autonomously of the driver; and the control device has at least one further function (34) with which a restoring torque can be preset according to the obtained angular difference in order to reduce the angular difference; wherein, if the driver specifies the driver steering angle (FW) with the driver assistance function (32) activated, a restoring torque can be preset by means of a further function (34) on the basis of the angular difference between the driver steering angle (FW) and the assistance steering Angle (AW). The invention further relates to a method for operating a vehicle steering system (10) and to a vehicle having a vehicle steering system (10)."\nUS10858040B2: "Methods for controlling a feedback torque actuator and at least one yaw and/or lateral vehicle state actuator in a steer-by-wire steering system include measuring an input signal with a sensor, determining from the input signal a measure of a torque applied by the driver via a steering wheel, transforming the measure to a desired yaw and/or lateral vehicle state, controlling the yaw and/or lateral vehicle state actuator for vehicle state control, and defining a steering-wheel torque to steering-wheel angle relation describing steering feel. If the vehicle position control results in a yaw and/or lateral vehicle state error, this error is transformed to a change in the steering-wheel torque to steering-wheel angle relation describing steering feel. This new steering feel relation is used as an input signal for controlling the feedback torque actuator in order for the driver to get feedback of the yaw and/or lateral vehicle state error."\nUS20100269920A1: "The RABBAT ELECTRIC HYBRID VEHICLES have no mechanical transmission of power, only ductile wires connecting various sections of the car."\n'

Abstract 4

Safety and stability control method against automobile tire blowout

Abstract

A safety and stability control method against automobile tire blowout, which is used for manned and unmanned driving vehicles and based on vehicle braking, driving, steering and suspension systems. The present method establishes tire blowout determination based on a tire pressure detection mode, a status tire pressure mode and a steering mechanics state mode, and uses a safety and stability control mode, model and algorithm, and control structure and process against automobile tire blowout. On the basis of a tire blowout state point, the vehicle braking, driving, steering, steering wheel steering force and suspension balancing control are carried out in a coordinated manner by entering and exiting a tire blowout control state and switching between a normal mode and a tire blowout control mode, so as to realize tire blowout control in which real or unreal tire blowout processes overlap. In cases where a tire blowout process state and the motion states of the wheel and vehicle with a blown tire are changed rapidly, the technical difficulties of the wheel and the vehicle being seriously unstable due to tire blowout and the extreme tire blowout state being difficult to control are overcome, solving the safety technical problems associated with automobile tire blowout.

Comparison Prompt 4

'The following texts are abstracts from patent specifications. Your task is to compare the "Testing Abstract" to all the others. \n It is important that you focus on comparing the concepts that the abstracts describe, not the way they are written. \n Rank the remaining abstracts on how well they match with the Testing Abstract by giving them a rating from 0 to 10 points. \n 0 meaning they have absolutely nothing in common and 10 meaning they basically describe the exact same idea.\n Your output should be a python dictionary with the title "comparison", each element hast the Abstract number as key and the rating as value.\n I want to convert your output string to an actual dictionary, so make sure the formatting is right.\n\n Testing Abstract: "\nSafety and stability control method against automobile tire blowout\nAbstract\nA safety and stability control method against automobile tire blowout, which is used for manned and unmanned driving vehicles and based on vehicle braking, driving, steering and suspension systems. The present method establishes tire blowout determination based on a tire pressure detection mode, a status tire pressure mode and a steering mechanics state mode, and uses a safety and stability control mode, model and algorithm, and control structure and process against automobile tire blowout. On the basis of a tire blowout state point, the vehicle braking, driving, steering, steering wheel steering force and suspension balancing control are carried out in a coordinated manner by entering and exiting a tire blowout control state and switching between a normal mode and a tire blowout control mode, so as to realize tire blowout control in which real or unreal tire blowout processes overlap. In cases where a tire blowout process state and the motion states of the wheel and vehicle with a blown tire are changed rapidly, the technical difficulties of the wheel and the vehicle being seriously unstable due to tire blowout and the extreme tire blowout state being difficult to control are overcome, solving the safety technical problems associated with automobile tire blowout.\n "\n US20210213935A1: "A safety and stability control method against automobile tire blowout, which is used for manned and unmanned driving vehicles and based on vehicle braking, driving, steering and suspension systems. The present method establishes tire blowout determination based on a tire pressure detection mode, a status tire pressure mode and a steering mechanics state mode, and uses a safety and stability control mode, model and algorithm, and control structure and process against automobile tire blowout. On the basis of a tire blowout state point, the vehicle braking, driving, steering, steering wheel steering force and suspension balancing control are carried out in a coordinated manner by entering and exiting a tire blowout control state and switching between a normal mode and a tire blowout control mode, so as to realize tire blowout control in which real or unreal tire blowout processes overlap. In cases where a tire blowout process state and the motion states of the wheel and vehicle with a blown tire are changed rapidly, the technical difficulties of the wheel and the vehicle being seriously unstable due to tire blowout and the extreme tire blowout state being difficult to control are overcome, solving the safety technical problems associated with automobile tire blowout."\nCN110481541B: "The invention relates to a safe and stable control method for automobile tire burst, which is used for vehicles with people and unmanned vehicles, is based on vehicle braking, driving, steering and suspension systems, and belongs to the field of automobile tire burst safety. The method determines tire burst detection, tire pressure state and steering mechanical state mode, and adopts a safe and stable control mode, a model and an algorithm, a control structure and a flow of automobile tire burst; based on the tire burst state point, vehicle braking, driving, steering wheel rotating force and suspension balance control are coordinated through entering and exiting of tire burst control and conversion of normal and tire burst control modes, and real or non-real tire burst process overlapping tire burst control is achieved; under the condition that the tire burst process state, the tire burst wheel and the vehicle motion state change rapidly, important technical barriers that the tire burst of the wheel and the vehicle is seriously unstable, the tire burst extreme state is difficult to control and the like are broken through, and the important problem which puzzles the tire burst safety of the automobile for a long time at present is solved."\nCN110481540B: "The invention relates to a safe and stable control system for automobile tire burst, which is used for manned and unmanned vehicles, is based on vehicle braking, driving, steering and suspension systems, and belongs to the field of automobile tire burst safety. The system establishes tire burst judgment of detecting tire pressure, state tire pressure and steering mechanical state modes, and adopts an automobile tire burst safety and stability control mode, a model and an algorithm, a control structure and a flow; based on the tire burst state point, vehicle braking, driving, steering wheel rotating force and suspension balance control are coordinated through entering and exiting of tire burst control and conversion of normal and tire burst control modes, and real or non-real tire burst process overlapping tire burst control is achieved; under the condition that the tire burst process state, the tire burst wheel and the vehicle motion state change rapidly, important technical barriers that the tire burst of the wheel and the vehicle is seriously unstable, the tire burst extreme state is difficult to control and the like are broken through, and the important problem which puzzles the tire burst safety of the automobile for a long time at present is solved."\nUS20210188252A1: "Disclosed is a car flat tire safety and stability control method for manned and unmanned vehicles based on vehicle braking, driving, steering and suspension systems. The method establishes flat tire determination by tire pressure detection, a state tire pressure and a mechanical steering state, and adopts a car tire burst safety and stability control mode, model and algorithm, and a control structure and procedure. Based on a flat tire state point, the control over vehicle braking, driving and steering, a steering wheel gyroscopic force and suspension balancing is executed in a coordinated manner by means of switching between entering and exiting flat tire control and between a normal mode and a flat tire control mode, thereby realizing overlapped flat tire control of a real or unreal flat tire process. In the case of sharp changes in a flat tire process state, a flat tire wheel and a vehicle motion state, the technical problems of the severe instability of wheels and a vehicle due to a flat tire, the technical difficulties in controlling an extreme flat tire state are resolved, and the problem of the car flat tire safety technology is solved."\nUS11760339B2: "In some embodiments, a rapid-response active suspension system controls suspension force and position for improving vehicle safety and drivability. The system may interface with various sensors that detect safety critical vehicle states and adjust the suspension of each wheel to improve safety. Pre-crash and collision sensors may notify the active suspension controller of a collision and the stance may be adjusted to improve occupant safety during an impact while maintaining active control of the wheels. Wheel forces may also be controlled to improve the effectiveness of vehicle safety systems such as ABS and ESP in order to improve traction. Also, bi-directional information may be communicated between the active suspension system and other vehicle safety systems such that each system may respond to information provided to the other."\nCN105691381B: "The invention discloses a kind of four motorized wheels electric automobile stability control method, joint utilizes phasor and safe speed area judging stability, accurately judges whether current motoring condition is stablized in real time.The present invention proposes a kind of four motorized wheels electric automobile stabilitrak at the same time, it is the four motorized wheels system and four-wheel independent brake system of the method Comprehensive Control four motorized wheels electric automobile using optimal torque distribution, so that the work that four wheels are more coordinated, improves accuracy and practicality of the stability controller on four motorized wheels electric automobile."\nWO2020187259A1: "A safety monitoring method and system for an autonomous vehicle. Said method comprises: a lateral control safety monitoring step, establishing a correlation between a lateral acceleration of a vehicle, a longitudinal vehicle speed and a steering wheel steering angle, acquiring a maximum steering wheel steering angle corresponding to a given maximum lateral acceleration at different vehicle speeds, taking the maximum steering wheel steering angle as a steering angle threshold, determining whether the steering wheel steering angle is greater than the steering angle threshold, and if so, limiting the steering wheel steering angle within the steering angle threshold, otherwise, normally outputting; and a longitudinal control safety monitoring step, with regard to different longitudinal control states, acquiring an acceleration threshold corresponding to a given maximum target acceleration at different vehicle speeds, and determining whether the target acceleration is greater than the acceleration threshold, and if so, limiting the target acceleration within the acceleration threshold, otherwise, normally outputting. The safety monitoring method and system for an autonomous vehicle design a safety monitoring policy for an automated driving system from the perspective of lateral control or longitudinal control respectively, so that a more integrated design is achieved."\nCN202491633U: "The utility model relates to a safety wheel for a son-mother tire automobile. A son wheel rim structure for fixing a son tire is additionally arranged at the middle position of a standard wheel rim; two tires can be simultaneously arranged on one wheel rim, namely the son tire and an external mother tire. The son tire has a solid structure made of an elastic material, and the mother tire is positioned outside the son tire and is used for covering the son tire. Compressed gas is filled in a cavity between the mother tire and the son tire. The safety wheel structure for the son-mother tire automobile can ensure the comfort in running vehicles in the normal state, can reduce the damage caused by tire blowout under high-speed conditions, and ensures the safety of continuous driving of the vehicles when air in the tires is insufficient."\nUS20090266465A1: "The universal system and device of the present invention, once inserted in a conventional pneumatic tire, allows the driven vehicle to be operated in a normal operating condition, as well as in both a low tire pressure and in a run flat condition. For such purpose the tire embodies this device, spherically shaped and not limited in size or quantity. The device is manufactured from rubber, neoprene or equivalent, and in various shore hardness as needed, to permit installation in all tire shapes and sizes, and can be accommodated on all standard or special vehicle rim sizes or configurations. The device is adaptable to automobile, trucks, motorcycles, bicycles or any vehicle that utilizes pneumatic tires and their various uses, including freeway driving, off road, snow and ice, and will adapt to any new configurations of tires and rims such as the low profile tires."\nCN104080593A: "A self-sealing tyre for vehicle wheels is described, comprising: a carcass structure, a tread band applied in a radially external position to said carcass structure at least in a crown area of the tyre, a liner applied in a radially inner position to said carcass structure, a layer of sealing material applied in a radially inner position to said carcass structure and which extends axially at least in all the crown area of the tyre in which said sealing material comprises a partially chemically crosslinked composition comprising an unsaturated styrene thermoplastic elastomer."\n'