Thu, 26 October 2023
Weekly Newsletter

DVN-I
Automotive Interior

NEWSLETTER #184

Editorial

AI Smart Cockpit Drives The Interior Of The Future

FUTURISTIC AUTONOMOUS CAR (REVIEW OF OPTOMETRIC BUSINESS IMAGE)

An AI smart cockpit in a car is a system that uses 'artificial intelligence' to enhance the user experience and provide personalized services to the occupants. It can integrate navigation, driver monitoring, voice assistance, infotainment, e-commerce, payment, and more. And, and an AI driven cockpit can also learn from the user's preferences and behavior and offer customized solutions and recommendations. AI is constantly pushing the possibilities of the cockpit system, and that's what this week's in-depth article covers. That will feed our next reports and the preparation of next year's DVN Interior Workshop at Köln, 23-24 April, especially for the HMI session. Find more information about that event **here.**

This week we also look at seats, audio systems, DMS, voice recognition, new recycled materials—most of the ingredients for a novel car interior.

Thanks so much for being with us at DVN Interior; we appreciate your membership and participation.

Sincerely yours,

Philippe Aumont
DVN-Interior General Editor

In Depth Interior Technology

AI Driven Cockpit: Intuitive Safety and Convenience

SAMSUNG AI DRIVEN COCKPIT AT CES 2019 (SAMSUNG IMAGE)

An AI-based car cockpit is a system that uses 'artificial intelligence' to enhance the in-vehicle experience for both the driver and the passengers.

AI gives rise to a lot of possibilities for car interior design, and can help create a 'smart', comfortable, and personalized experience for the passengers, as well as improve road safety and efficiency. Here are some examples of how AI transforms car cockpits and complete interiors:

AI can use cameras and sensors to monitor the driver and the occupants, and detect their emotions, cognitive states, activities, and interactions, leveraging the driver monitoring system (DMS). This can help prevent driver fatigue and distraction, alert the driver of potential hazards, or adjust the cabin environment according to the passengers' preferences.

AI can be multiplied by machine learning to personalize and improve automation, performing analytical and physical tasks according to user behavior, with intervention of the user.

Deep learning is a subset of machine learning, which is essentially a neural network with three or more layers. These neural networks attempt to simulate the behavior of the human brain, allowing it to "learn" from large amounts of data.

DMS

Driver monitoring systems are an increasingly frequent topic in DVN Interior. They can provide a deep understanding of what's happening in a vehicle, thanks to sensors and AI.

SMART EYE IMAGE

Affectiva's Emotion AI, from Smart Eye, is a good example. It measures complex and nuanced emotions and cognitive states, as well as what else is happening with people in a vehicle: how they are interacting with the environment and each other, what activities are, and what objects they are using. It's built on a deep learning-based software fueled by massive amounts of real-world data, and uses in-vehicle cameras to measure—in real time—the state of the cabin of the driver and occupants.

Infotainment

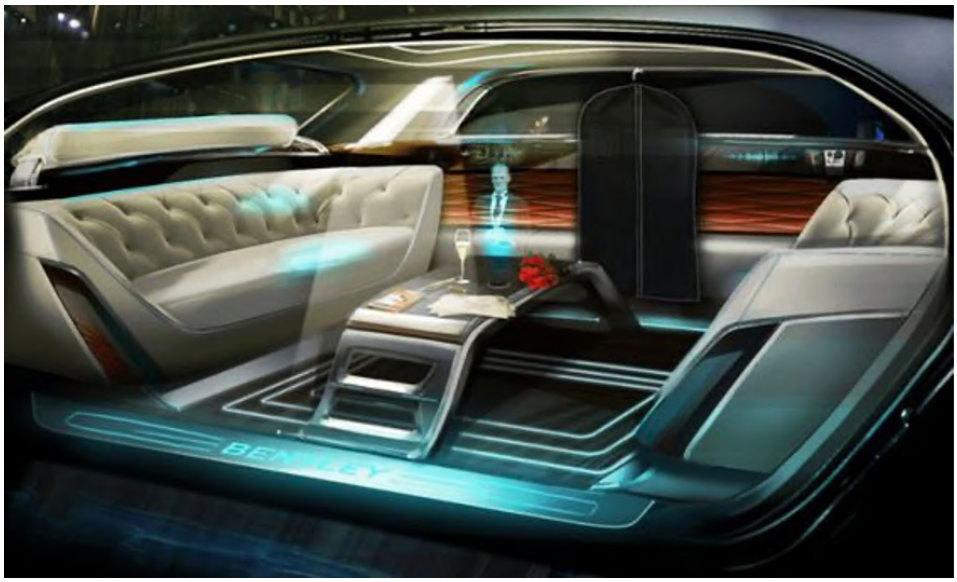
AI can also enable new forms of entertainment and productivity for the passengers, who can use the car as a living room, a bedroom, or an office. AI can provide immersive media content, such as screens, sound systems and virtual reality. AI can also offer voice and gesture control, 'smart' assistance, and personalized services.

AUDI IMAGE

For example, the Audi AI:ME, presented at Shanghai in 2019, is a concept car focused on passenger comfort at every level. It has a spacious interior, a lounge-like atmosphere and a variety of functions that can be controlled intuitively. Intuitivity is driven by AI, making the car self-learning and, in Audi's words, '*thinking, while also being proactive and personal*' as it displays on the 3D OLED screen elements solicited by the driver

using only their eyes. As a bonus, the infotainment system can be enjoyed in a virtual reality environment thanks to the included VR goggles.

Vehicle Development



BENTLEY'S 2016 'FUTURE OF LUXURY' VISION OF 2036, WITH HOLOGRAPHIC BUTLER (BENTLEY IMAGE)

AI can also influence the design of the car, making it more adaptable to different situations and needs. AI can change the shape, size, and color of the car, or add or remove features such as doors, windows, and seats. AI can also optimize the aerodynamics, energy efficiency and performance of the car.

Cockpit Applications

Mercedes

MERCEDES IMAGE

The Mercedes-Benz MBUX Hyperscreen is a 56-inch-wide screen that covers the entire dashboard and shows everything at once. It uses Nvidia technology and deep neural networks to 'learn' the driver's preferences and promote commonly-used features at relevant times. It shows how AI can create a truly intuitive and personalized experience for the driver and passengers.

The driving principle behind it is that of the 'zero layer': every necessary driving feature is delivered with a single touch. Mercedes, with Nvidia, leveraged AI to promote commonly used features at relevant times while pushing those not needed to the background. The deep neural networks powering the system process datasets such as vehicle position, cabin temperature, and time of day to prioritize certain features—like entertainment or points of interest recommendations—while always keeping navigation at the center of the display.

Stellantis - DS Automobiles

DS AUTOMOBILES IMAGE

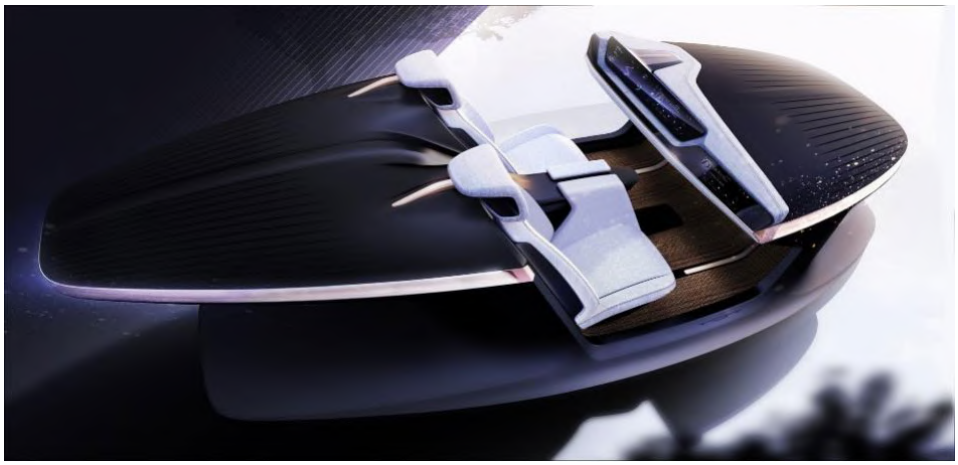
ChatGPT can be accessed using the DS-Iris system, which is available for all DS models. The voice-based use of ChatGPT is made possible by integrating SoundHound AI powered by ChatGPT API software into the DS-Iris system.

“This new technology is intuitive to use and has a very realistic effect, making every ride a unique journey”, said Olivier François, CEO of DS Automobiles. “AI is a technological revolution with unlimited potential that is part of one of the biggest social changes of the 21st century.”

ChatGPT can provide on-demand hints about the most beautiful cultural sights at the destination of a trip, list the works on display at the Louvre Museum in Paris, invent a quiz on any topic, generate a story for children to entertain them during a trip, say can be seen in the coming hours of a trip, make wine recommendations with melon and ham, or answer any other questions.

The service of ChatGPT in the DS cars is based on version 3.5—meaning all its utterances are based on information as of September 2021. Real-time information, such as sports scores or store opening hours, is therefore not available.

Stellantis – Chrysler



STELLANTIS IMAGE

The Chrysler Synthesis Concept presented at CES 2023 is a futuristic vehicle that reimagines the car as an autonomous AI assistant. It has 'smart cockpit' technology that learns the driver’s habits over time and adapts with predictive changes and enhancements. It also has a holographic display that can project information and entertainment on the windshield.

STLA Brain provides the electrical architecture powering the infotainment and, presumably, tying into the rest of the electric vehicle that will eventually be built around the cabin. Meanwhile, the STLA Smart Cockpit infotainment system is the user interface, wrapping front-row occupants with a dual-tier, 37.2-inch, sculpted

black glass panel and screen. The Smart Cockpit tech bakes in AI technology that is said to learn the driver's habits over time and adapts with predictive changes and enhancements.

Baidu

GEELY IMAGE

On 12 October, Baidu hosted a media preview for the upcoming Baidu World 2023 event. They also revealed the latest developments in Baidu Apollo's smart cockpit technology, based on the Ernie large model.

Baidu Apollo has created a dedicated large model technology base for automotive cockpits, enhancing the effectiveness of large models within the vehicle cabin based on the Ernie large model. This refinement offers a more human-like intelligent interaction, including improved in-cabin comprehension, multi-modal understanding, active interaction capabilities, dynamic responses, and optimized response times, all tailored to meet users' demands for intelligent cockpits.

To expedite the implementation of AI-powered cockpits, Baidu Apollo has also restructured the technical path for automotive intelligent cockpits. This shift primarily focuses on developing native AI applications centered on large models, combining them deeply with localized vehicle platforms. Baidu Apollo streamlines the development process of intelligent cockpit AI native applications, making it more efficient and cost-effective for automakers to implement these features. It allows automakers to develop their brand-specific models and application scenarios, with Baidu Apollo providing reference templates for quality in-vehicle native applications and a wide range of commonly used plugins for the cockpit environment.

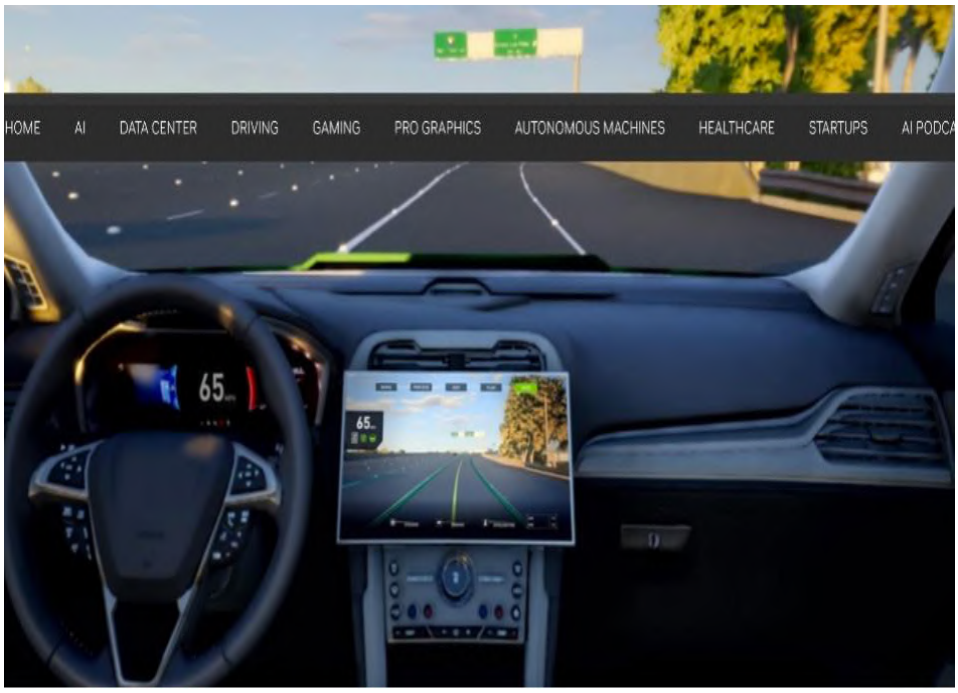
Currently, production vehicles integrated with Baidu Apollo's AI cockpit powered by the large model include the Ji Yue 01, the Cadillac Lyriq, the Buick E5, and the Geely Galaxy L6 and L7, with more models from Geely Galaxy and Haval to follow. Among these, the Ji Yue 01, with voice interaction based on localized large model, leads in areas like millisecond-level responsiveness, always-on interaction, multi-channel simultaneous interaction, and natural language understanding.

Qualcomm

QUALCOMM IMAGE

The Qualcomm Snapdragon Automotive Cockpit Platforms are scalable solutions that support higher levels of compute and computing intelligence for advanced capabilities in next generation vehicles. They can provide intuitive AI experiences for in-car virtual assistance, immersive audio and visual experiences, natural interactions between the vehicle and driver, and contextual-safety use cases. The 3rd-generation Snapdragon platforms are designed to transform in-vehicle experiences, and are now in application for several automakers and tier-1 suppliers.

Nvidia



NVIDIA IMAGE

The Nvidia AI Cockpit uses software-defined, high-performance computing to orchestrate crucial safety and convenience features. It can monitor the driver's activity, head position and facial movements to analyze whether the driver is paying attention, drowsy, or distracted. It can also regularly deliver new features via OTA updates.

Using interior-facing cameras, AI-powered driver monitoring can track driver activity, head position and facial movements to analyze whether the driver is paying attention, drowsy or distracted. The system can then alert the driver, bringing their attention back to the road.

By sensing whether a passenger is about to exit a car and using exterior sensors to monitor the outside environment, AI can warn of oncoming traffic or pedestrians and bikers potentially in the path of the opening door. And if a passenger is not sitting properly in their seat, the system can prevent an airbag activation that would harm rather than help them. It can also use AI to detect the presence of children or pets left behind in the vehicle, helping prevent heatstroke.

Drivers can receive information about their route, as well as what the sensors on the car see, quickly and easily. Augmented reality heads-up displays and virtual reality views of the vehicle's surroundings deliver the most important data (such as parking assistance, directions, speed, and oncoming obstacles) without disrupting the driver's line of sight.

Ecarx

GEELY XINGYUE L (GEELY/ECARX IMAGE)

EcarX is designing equipment for manufacturing a variety of automotive intelligent electronic products such as smart cockpits, intelligent driving systems, vehicle domain controllers, and others. Their SMT production lines are highly flexible for intelligent assembly and testing equipment, thanks to their JiKa Automotive Electronics (XunKa Technology) intelligent manufacturing.

JiKa, situated in Fuyang District, Hangzhou city, is an intelligent factory initiated by JICA Intelligent Robotics, a JV between Ecarx and Geely. This strategic partnership is dedicated to deploying GYMD's smart factory construction solutions to create a digitally native enterprise-level smart factory that integrates agile design and research, intelligent supply chain management, lean manufacturing and delivery, efficient quality control, and safety and eco-friendly practices.

Conclusion

AI as a vehicle technology has the potential to further enhance and even redefine user experience with safety, comfort, and convenience, through huge potential of machine learning, helping personalize the experience without bothering the user with additional unfriendly setups. It is also helping to reduce mental load and fatigue of the driver, by automating tasks, providing assistance and guidance, and alerting when potential hazards or errors.

Interior News

Warwick's Rare-Earth-Free Speakers

INTERIOR NEWS

WARWICK ACOUSTICS IMAGE

Researchers at Warwick Acoustics, a spinoff from Warwick University, say they can eliminate rare-earth elements (REEs) from car audio systems.

The company, which supplies audio components to brands such as Sony, Bose, Harman Automotive, Meridian Audio, McLaren Automotive and JLR, says their technology is moving away from the traditional format of speakers, which have not altered much since the first car radio was installed in the 1930s.

Their audio panels are lighter and thinner than any conventional speaker, and use no REEs. This is achieved by eliminating the magnet and replacing it with a 1-mm-thin electrostatic panel, thus reducing a loudspeaker's weight by up to 90 per cent. The panels also use 100-per-cent (by mass) upcycled and easily recyclable materials in their manufacturing process, and are designed to be easy to disassemble at the end of their useful life.

Warwick's ElectroAcoustic Panels are now in the final phases of industrialization for the first customers. They're primarily aimed at automakers looking to meet rapid transitions to electrification and life cycle sustainability. CEO Mike Grant says, "More and more enquiries are coming in from [automakers] wishing to eliminate sources of REE from their vehicles due to the toxic waste generated in the mine-to-magnet process and supply chain stability".

Forvia Vibe: Immersive Comfort with Warm Vibrations

INTERIOR NEWS

FORVIA IMAGE

Forvia's Vibe technology is seamlessly integrated into the architecture and trimmings of the automotive seat. Through specially-designed electroacoustic transducers, Vibe technology emits warm, low-frequency vibrations though the seat foam, providing an immersive experience for the driver and front passenger. The adaptable designs cater to different automaker constraints, and can be personalized with other features, such as lighting, headphones, heating, pneumatics, or fragrances.

This new technology is set to immerse the driver in a safer, more entertaining, wellbeing-oriented experience. With Vibe, users can alleviate cognitive overload and enjoy enhanced biomechanical benefits. More specifically, Vibe provides three remarkable services:

- **Safety**: haptic alerts for blind spots, lane changes, speed limits and drowsiness.
- **Music & Entertainment**: automatically create vibrations that synchronize with any audio played on the vehicle’s audio system.
- **Wellness**: immersive experience that provides relaxation, recovery and energy-enhancing programs.

After five years of intensive research and development in collaboration with Aurasens—experts in vibro-haptic composition—Forvia has a contract with a premium German automaker to introduce Vibe-equipped seats.

Frank Huber, Forvia's Executive VP of Seating, says the Vibe technology "represents a breakthrough in our comprehensive automotive seating solutions, taking safety, entertainment, and wellness to the next level. Our pride lies in the unmatched technological advances rooted in biomechanics, making Vibe an industry-first innovation".

Tesla Driver Drowsiness Warning with Cabin Camera

INTERIOR NEWS

TESLA IMAGE

For years, Tesla has been criticized for minimal driver monitoring with its L^2 'Autopilot' and 'Full Self-Driving' driver-assist packages. They used only steering wheel torque detection; in theory drivers had to move the wheel to let the system know they still had their hands on it, but the internet is full of videos showing hacks and workarounds to defeat that minimal safeguard.

Nevertheless, torque detection is still the primary way Tesla does 'driver monitoring'. But now they've started to roll out a new "Driver Drowsiness Warning" feature, which uses the cabin camera for driver monitoring. The feature has begun appearing in Tesla's European owner's manual:
The Driver Drowsiness Warning is designed to notify drivers who appear to be drowsy by monitoring driver facial characteristics as well as driving behavior to determine patterns indicative of drowsiness. When driver drowsiness is detected, an alert is displayed on the touchscreen in the cards area and an alert is sounded.

Tesla says the feature only activates when driving over 65 km/h for at least 10 feet with 'Autopilot' disengaged.

The feature has not yet appeared in the North American owner's manual, and Tesla is not the first automaker to launch driver alertness monitoring technology. Mercedes-Benz and others has had similar feature for almost a decade.

Mercedes MBUX: Voice Control of Smart Home Devices

INTERIOR NEWS

MERCEDES-BENZ IMAGE

Mercedes-Benz is adding a new feature to their MBUX voice assistant. Starting this week, the technology gets a smart home functionality that allows users to control their home appliances and security equipment with their voice from the vehicle.

The new MBUX Voice Assistant smart home feature supports products from Philips Hue, Samsung SmartThings, TP-Link and Chamberlain MyQ, to control devices including lights, smart outlets, thermostats, motion detectors, and garage doors.

The service also allows users to check the status of multiple home appliances and systems with a simple voice request: "Hey Mercedes, is everything okay at home?" The system might reply, "All windows are closed and the lights are still on in the bedroom." The new update can connect to different smart home systems at the same time.

The new feature set comes as Mercedes releases a major update to their MBUX infotainment system this month. The OTA upgrade brought Dolby Atmos sound, along with updates to the voice assistant, which lets users control infotainment functions like playing a song or reading the news, and the NewsFlash app.

Mercedes is also bringing the YouTube web app to the S-Class, EQE and EQS with Entertainment Package Plus. The Hyperscreen in the EQE and EQS also gets enhanced functionality, allowing passengers to listen to dynamic content with in-car audio and select a personalized photo for the dedicated screen.

The updated system also includes automations that make it easier to change multiple vehicle settings such as HVAC, seat cooling, and the radio station with one command.

Kia to Recycle Pacific Plastic for Future EVs

INTERIOR NEWS

THE OCEAN CLEANUP IMAGE

A non-profit organization called The Ocean Cleanup has reclaimed a 55-tonne haul of plastic from the Pacific Ocean, and Kia plans to use it, once it's been recycled, in new EV models.

The Ocean Cleanup, based in the Netherlands, has a seven-year global partnership with Kia, agreed in April 2022: Kia integrates into their manufacturing recycled ocean plastic, harvested by TOC.

The Ocean Cleanup landed their latest catch at Victoria, Vancouver Island, Canada. It was removed from the Pacific Ocean using TOC's System 002 extraction technology after the collection vessel travelled through the Great Pacific Garbage Patch.

Recycling will begin shortly, and Kia will use some of the material in future models. Kia has implemented 30 sustainable solutions in various product areas. In the EV9, they've included what they call their ten must-have sustainability items. The recycled plastic and bio-based components in the EV9 weigh around 34 kg.

Kia Senior VP and Head of Global Brand and CX Charles Ryu says, "Initiatives such as this one perfectly aligns with Kia's transition to a sustainable mobility solutions provider and our Plan S strategy, through which we embrace the needs of our customers and the protection of our environment by acting as a responsible corporate citizen".

Kia plans first application with recycled ocean trash into such items as key fobs and carpets.

Mocom, Wipag, Consolidation for Sustainability

INTERIOR NEWS

COCKPIT CARRIER (L), CLIMATE CONTROL (R) — MOCOM IMAGES

Mocom, headquartered in Hamburg, Germany, is a global compounder of thermoplastic polymers. They're cooperating for sustainability through a consolidation with Wipag. This move emphasizes the company's focus on sustainable products as well as plastics for lightweight and lighting applications. Both companies are part of the family-owned Otto Krahn Group, based in Hamburg, and will operate in the market under the Mocom brand name.

The consolidation also offers Mocom the opportunity to reposition themselves in the market. Knowledge of circular economy concepts and use of recyclates are important pillars in the strategic orientation. The compounder will provide enhanced advice to customers and partners on sustainability, the use of recyclates, and circular solutions.

The compounder increasingly focuses on the extensive ECO portfolio and compounds for lightweight applications, which are used in e-mobility. Based on post-consumer recyclate and post-industrial recyclate, Mocom offers a broad product portfolio of sustainable materials under the brands Altech Eco and Alfater XL Eco. Mocom also develops custom compounds made from bio-based raw materials. Their extensive lighting portfolio is also complemented by recyclate-based solutions such as Alcom LB Eco, which is used in reflector applications due to its highly reflective and light-tight properties, as well as Alcom LD Eco for light-diffusing applications.

In order to further expand the range of sustainable lightweight solutions, a new production building is currently being built in Germany for the manufacturing of high-quality carbon fiber reinforced compounds. Starting in 2024, more than 3,000 tons of high-quality carbon fiber reinforced compounds can be produced. The reuse of carbon fibers from post industrial waste significantly reduces the CO_2 footprint of the resulting very light, highly durable plastics.

The Design Lounge

Talking Cars to my Niece

THE DESIGN LOUNGE

By Athanassios Tubidis

WIKIMEDIA IMAGE

Her six-grader project had to do with alternative fuel & automobiles and seems like I was the best one to answer these questions in her proximity. We, car designers, have a talent for talking about amazing things that seem exciting at first glance but often, only few people can fully comprehend and appreciate on an applied level. Unlike corporate execs, project planners, engineers and marketing people, this time my 'audience' had a different profile, abilities, and expectations. Part of my storytelling, was spontaneously and often passionately, inspired by deep car-knowledge with references to the automotive saga as a unique era of glory and tails. I vividly sensed that some of it sounded, in times, lyrical when confronted to the Gen Aser's pragmatic attitude, tech savviness and environmental awareness – all together in an unexpected maturity, paired with her anxiety for the future.

Our dialogue was set on different skillsets, text messages vs voice messages and that had already set the pace: I was late on every single answer. Because voice messages disappear once you hear them, my written reactions were somewhat timed. In other words, she dictated timing and practicality of the entire debate from

the get going, unbeknownst to me and my natural rhythm that could vary from one subject to another, based on self-confidence and improvisation, spontaneity, or emotions.

French army captain Cugnot was certainly one of the first to successfully employ a device for converting the reciprocating motion of a steam piston into a rotary motion, creating in 1769 what is believed to be the first ever automobile. Easily outwalked, the gigantic three-wheeler was conceived on the idea of transporting canons for the Napoleonian wars, moving with just over 2m/h. It is also the first car ever to have an accident. The absence of any kind of pressure regulation in the boiler made it very difficult to control and it eventually run out of control, against a wall. Prior to any existing insurance policy, it was also the first time that the following ethical debate took place: ‘was it the fault of the driver or the fault of the car’?

And a voice message interrupted the allure of my essay: "Just like today with autonomous cars, same debate, right?".

…and I was still in 1769! Slightly disconcerted, I decided to change tactics by switching into dictated-text-messages (a superpower that I keep secret in my smartphone) since I still had to cover over two centuries of automotive history and that had to happen before her next voice message strikes. I also decided to brake the historical flow and just pick isolated examples.

Chrysler turbine car for instance in the 1960s was an interesting scenario because it did not refer to a specific type of fuel. It could run on just about anything including cooking oil, wine or whisky, Channel № 5 or as the Mexican president drove it during one of his campaigns, on tequila. Another one was Stanley Steam Car in 1908 which was a steam engine’s ‘modern’ take almost a century and half after Cugnot’s attempt. Benz Patent-Motorwagen in 1886 is considered to be the first gasoline internal combustion automobile, while in 1478, an era that people were very much intrigued by clocks, Leonardo DaVinci had created a spring loaded self-propelled cart, replicating a clock mechanism. Young Ferdinand Porsche had made a series of hybrid cars using both electric and gasoline engines while during WW2, tens of thousands of cars were converted into wood burning devices to reassure motion. In 1957, Ford studied a program of nuclear cars, yet the only one we know is the Nucleon which is (luckily) just a nonfunctional scale model. GM Sunraycer in 1987 drove 3000km on an average speed of 120km/h on solar energy, a feat that is still impressive to this date, while Toyota Mirai is the first hydrogen production car since 2014, etc. Automotive history evolved in constant and direct relation to energy, the type of fuel implemented at any time and context. ‘Horseless carriages’ were indeed the attempt to substitute horses with another type of alternative energy source and that is the beginning of the automobile era. Steam and electricity already existed yet people did not know and could not decide which energy source would have been the right one to choose for the brightest future of their horseless carriages.

A voice message scrolled down my screen: "Just like today, same debate, right?".

Chloe is 12 and beyond any gen X,Y and Z native label, her approach and interest to the world of cars is coming from a very naïve yet educated estimate for the upcoming future. Generation Alpha is environmentally conscious, and their digital dexterity and tech-savviness are unique accelerators to their understanding of the world. What is more intriguing though is their real-time practice of composing a narrative by picking preexisting blocks. In a postmodernism approach of my design era, I’d like to think of her just like a newborn in a world of a rich heritage in stories and sets, compelling visuals, strong labels an characters, free to use them all and put together her own car story. Just like each one of us did!

Hongqi L5 Fuses Tradition, Modernity

THE DESIGN LOUNGE

HONGQI IMAGES IN THIS ARTICLE

The ultra-luxe retro Hongqi first launched in 2014 and for a while was the official state car of China. Essentially it was a Chinese take on the Rolls-Royce Phantom, only more exclusive, more expensive, and more imposing. And now there's a new one!

Hongqi (which is pronounced 'haang-CHEE' and translates to 'red flag' in English, but looks as though it would be pronounced like "Honky", a derogatory racial slur) has a slightly redesigned front end with a new lower grille and even more chrome than before. The same retro headlight and monster grille combo remains and just gets a light update, while the wheels look much more expensive than the generic alloys on the previous car.

There's loads of chrome down the sides too, as well as a Phantom-like profile and two-tone paint. The rear gets a redesigned bumper with big exhausts and upright LED lighting.

Through a combination of modern techniques and traditional crafts, the wooden parts of the car bring to its interior charming elegance. Straight wood grain accompanying natural lacquer displays a poetic beauty. There are tiny jade spots for—in the Chinese cultural perception—good luck. There's fine leather and silk, crafted so as to blend Eastern and Western æsthetics.

The overall design of the dashboard is derived from curve of the eaves of ancient Chinese buildings. The instrument panel has square and circle designs, a reference to the traditional Chinese philosophical idea of a circle within a square.

SEATS

Top-grade full-function seats feature a headrest whose shape is derived from that of the official hat in the Tang Dynasty. Together with the massage function of the seats, the seats attempt to create comfort which makes the limousine equal to the cabin of a private aircraft. In the meantime, the adjustable seat back equipped with adjustable 5-shift heating and 3-shift ventilating system is a total display of luxury and nobility.

TOUCH LCD SCREENS

The 8-inch, 800x600 resolution touch LCD screens offer convenient control and display of the entertainment system and the functional system of the car, resulting in a more comfortable and pleasant feeling for driving and riding.

LIQUID CRYSTAL DISPLAY

A 6.5-inch, 640x480 resolution liquid crystal display imbedded within each of the front row headrests brings to the entire interior an emboldened taste of technology. In addition, an 8-inch add-on LCD screen with a resolution of 800x600 is optional for installation at any time.

INSIDE HANDBARS

Each of the four inside handlebars on the front and rear doors has a jade inlay with a shape inspired by the golden ratio at 23x35mm, and the fine lines forming an image of "cloud and dragon" that are elaborately festooned on it reflect identity and virtue: a car adorned with jade is like a gentleman wearing jade.

News Mobility

Mercedes Drive Pilot vs. Los Angeles Traffic

NEWS MOBILITY

MERCEDES-BENZ IMAGE

Mercedes-Benz is the first automaker to receive licenses for highly automated L^3 driving in the US states of California and Nevada. The head-up and driver displays as well as the two LEDs in the steering wheel give off turquoise light, which also comes from the front and rear lights and on the exterior mirrors. This indicates autonomous driving without human intervention.

Drive Pilot is approved for use at speeds of not more than 40 mph, or 60 km/h. That's a speed range particularly suitable for stop-and-go, slow-and-go traffic jam situations. In Europe, the function is therefore also called congestion pilot.

The comfort gain is enormous; you can lean back, relaxed, on the six-lane freeway. A video is playing on the central screen, which you can give full attention. Even talking to the passenger is more pleasant, as you are allowed to turn your eyes permanently in their direction, off the road. You can also read something or answer mails.

That also means that if you hold a tablet or smartphone between the steering wheel and your face, the airbag would propel the object into your face with full force in a crash. Oops…! Of course, Mercedes-Benz is among most realistic, responsible automakers who equip their cars with not just cameras, but also radars, lidars, and HD road maps to prevent an accident. But even an excellent L^3 system cannot influence the way other drivers drive.

So Drive Pilot works great—on highways during the day and in good weather. The assistant refuses to work below 4°C because the sensors can detect rain but not ice on the road. Microphones in the front wheel arches analyze rolling noise, which changes when the road is wet. In rain, in tunnels, at night, in construction sites, and when no HD road map is available, the system remains off. Drive Pilot must detect a vehicle ahead and the lane markings must be clearly visible. The driver must not fall asleep (or otherwise keep their eyes closed) or leave the driver's seat.

A tone and red lights signal the alert for the driver to resume control; they have ten seconds to comply before emergency braking starts, the hazard warning lights switch on, and the car slows down until it comes to a stop in its lane. The vehicle does not yet move automatically to the right-hand edge of the lane. It automatically places an emergency call and unlocks the doors for first responders, but remains a traffic obstruction in the lane. Stopping in the left lane of the highway is a daunting thought.

MonoXiver Helps Turn Two Dimensions into Three

NEWS MOBILITY

NORTH CAROLINA STATE UNIVERSITY IMAGE

Researchers at North Carolina State University have developed a new method to help artificial intelligence create 3D information from 2-dimensional images. Until now, 2D images have provided useful detail, but couldn't match the real-world environment. The new method and its research were recently presented at the International Conference on Computer Vision in Paris, France. This development could prove extremely useful for the industry, because cameras are considerably cheaper than other 3D navigation hardware such as lidar.

Existing techniques that extract 3D data from 2D images make use of bounding boxes. These techniques train AI to scan a 2D image and place 3D bounding boxes around objects in the 2D image, such as each car on a street. These boxes are cuboids, which have eight points and help the AI estimate the dimensions of the objects in an image and where each object is in relation to others. However, the bounding boxes of existing programs can be imperfect and often fail to include parts of a vehicle or other object that appears in a 2D image.

Tianfu Wu, an associate professor of electrical and computer engineering at NCSU, says the new MonoXiver method uses each bounding box as an anchor point and has the AI perform a second analysis of the area surrounding each box. This second analysis results in the program producing many additional bounding boxes surrounding the anchor.

To determine which of these secondary boxes has best captured any missing parts of the object, the AI does two comparisons. One looks at the geometry of each secondary box to see if it contains shapes that are consistent with the shapes in the anchor box. The other looks at the appearance of each box to see if it contains colors or other visual characteristics that are similar to those in the anchor box.

"We used the MonoXiver method in conjunction with MonoCon (top) and two other existing programs that are designed to extract 3D data from 2D images and MonoXiver significantly improved the performance of all three programs. We are excited about this work, and will continue to evaluate and fine-tune it for use in autonomous vehicles and other applications", Wu says.

General News

Access Europe, BMW Collaborate on In-Car Video

GENERAL NEWS

ACCESS EUROPE / BMW IMAGE

Access Europe, a software solutions provider for TV and automotive markets, has partnered with BMW to install Twine4Car video entertainment in vehicles. Twine4Car is a browser-based technology which, according to Access, is designed to enhance the car user's comfort and enjoyment. It serves both Linux- and Android-based car platforms, and aims to provide passengers with access to a wide array of video and gaming entertainment options.

The software can be integrated with various content sources and online streaming sources, and also be customized to the car screen size and resolution to enable the user to watch video content or play games with clarity and detail, Access says.

Additional collaborations with other automotive manufacturers are ongoing to integrate Twine4Car into further upcoming vehicle models, with Access stating their goal for these software solutions to become a standard feature in future vehicles.

Forvia Commercial Vehicle Business in Europe and NA to Cummins

GENERAL NEWS

CUMMINS IMAGE

Forvia confirms the successful completion of a transaction first announced this past May, transferring designated parts of Forvia's commercial vehicle exhaust aftertreatment business in Europe and in the USA to their longstanding partner Cummins. The transaction is valued at €199.2m.

Cummins acquired two plants located in Roermond (Netherlands) and Columbus (Indiana, USA) as well as their related programs. By integrating this business, Cummins expands their capabilities in providing innovative solutions for the commercial vehicle industry.

The decision to transfer this business to Cummins is part of Forvia's strategy to focus on ultra-low emission solutions for light vehicles—they are a leader in that sector—and on their roadmap to bring a comprehensive portfolio of hydrogen storage solutions to market.

The closing of this transaction is the final step in the execution of the €1bn asset-disposal program Forvia announced in Q2 2022, aimed at accelerating the deleveraging of the Group after the acquisition of a majority stake in Hella.

Cummins, founded in 1919 and headquartered in Columbus, Indiana, makes diesel, natural gas, electric and hybrid powertrains, and powertrain-related components. They employ approximately 73,600 people, with sales of $28.1bn in 2022.

Brose Sitech Starts Operations in China’s Anhui Province

GENERAL NEWS

BROSE IMAGE

After six months of planning and construction, Brose Sitech's Anhui factory held an inauguration ceremony on 18 October, marking the official commencement of operations. Situated in Hefei, Anhui province, this facility stands as Brose Sitech's second production base in China.

The new plant is equipped for seat frame manufacturing and complete seat assembly, primarily aimed at providing seat systems for Chinese-made Volkswagen models. Brose Sitech is actively exploring collaborations with other automakers as well, and the Anhui factory has already secured two new supply orders.

Initiated in April 2022 and completed six months later in October, the new plant has a total floor area of 13,000 m^2. The factory recently received the CCC (China Compulsory Certificate) product certification, and passed the evaluation for Volkswagen Anhui's Tavascan project.

Brose Sitech is a joint venture between Volkswagen and Brose. With nine production facilities across four countries including Germany, Poland, Czechia, and China, the company boasts nearly 5,000 employees, specializing in the production of automotive seat modules and seat frames. In China, Brose Sitech (Shanghai) and Brose Sitech (Anhui) are the two operating entities.