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本月焦點

科技

T1 車用雷達系統設計的挑戰

新車設計中的雷達面臨著多個挑戰。汽車製造商正在推動統一系統架構，需要供應商提供可擴展的解決方案。系統必須處理大量資料並提供高輸送量，這需要巧妙的記憶體管理。雷達流程中的各個步驟，如FFT、CFAR和追蹤，都帶來了技術挑戰。此外，AI模型的分類階段需要專用的NPU支援。因此，充分挖掘雷達系統的潛力並實現高性能、低功耗、可靠性和彈性是一個複雜的任務。

T2 一個綠燈只過了兩台車？蘿蔔快跑遭投訴，無人駕駛真的靠譜嗎？

隨著技術的不斷進步，無人駕駛計程車(Robotaxi)有望成為未來交通的新趨勢。但從Apollo Go在武漢試營運過程中遇到的投訴來看，自動駕駛技術的成熟度和商業模式的可持續性仍面臨相當大的挑戰。未來，隨著自動駕駛技術的不斷成熟和商業模式逐漸清晰，我們有理由相信自動駕駛仍能為人們帶來更便利、更安全、更舒適的出行體驗。同時，隨著新能源車市場的蓬勃發展，特斯拉、蔚來、小鵬汽車等一些主機廠商也開始涉足(Robotaxi)領域。他們也正憑藉著在電動車領域的累積和經驗，結合自動駕駛技術，努力加入競爭。

市場

M1 現代汽車與AI大廠Plus合作在美國推出首款Level 4級自動駕駛燃料電池卡車

現代汽車和AI公司Plus合作，將推出美國首款符合Level 4自動駕駛標準的燃料電池電動卡車。這款XCIENT燃料電池卡車配備了Plus開發的4級自動駕駛軟體，旨在提升道路安全和貨運效率。XCIENT燃料電池卡車於2020年首次推出，已在全球八個國家/地區進行商業運營。這次合作將為全球的貨卡車司機人力荒提供解決方案，同時展示現代汽車在燃料電池技術和自動駕駛領域的領先地位。Plus的SuperDrive解決方案將提供環繞感知、規劃、預測和自動駕駛功能。

M2 特斯拉在中國實現全自動駕駛邁出了又一步

特斯拉與百度達成協議升級其地圖軟體後，距離在中國推出全自動駕駛（FSD）技術又更近了一步。這家中國科技巨頭週六表示，正在為特斯拉汽車提供車道級導航服務。百度表示，這一級別的導航可以為駕駛員提供詳細資訊，包括在即將轉彎之前提出車道建議，以提高安全性。專家表示，在特斯拉(TSLA) 執行長馬斯克(Elon Musk) 4 月底出人意料地訪問中國期間，他在獲得政府批准推出該公司 FSD 軟體方面的主要障礙之一是與百度達成地圖和導航協議。

標準及規範

R1 英國自動駕駛車輛法案已通過成為法律，自動駕駛車輛將於2026年上路

新法獲得禦准後，自動駕駛汽車將在短短兩年內上路英國道路，此舉可能創造超過 38,000 個新就業崗位，鞏固英國在自動駕駛技術產業的前沿地位。耗資 420 億英鎊的行業將徹底改變出行方式，提高道路安全並為目前無法開車的人提供機會。

R2 VOLVO汽車推出世界上第一本電動車電池護照

根據路透社報導，VOLVO汽車與英國新創公司Circulor合作開發了世界上第一本電動車電池護照。該護照使用區塊鏈技術追蹤電池供應鏈的原材料、零件、回收成分和碳足跡的來源。VOLVO的目標是到2030年僅生產純電動車，並將在2027年2月後的歐盟市場強制要求提供電池護照。護照的成本約為每輛車10美元。VOLVO將首先在美國工廠生產配備電池護照的EX90 SUV，並逐步將護照應用於其所有電動車款。該舉措也引起其他汽車製造商的興趣。

Highlights of the Month

Technology

T1

Challenges in Designing Automotive Radar Systems

The radar in new car designs faces multiple challenges. Automakers are driving towards a unified system architecture, requiring suppliers to provide scalable solutions. The system needs to process large amounts of data and provide high throughput, which requires clever memory management. Each step in the radar process, such as FFT, CFAR, and tracking, presents technical challenges. Additionally, the classification stage of AI models requires dedicated NPU support. Therefore, fully exploiting the potential of radar systems and achieving high performance, low power consumption, reliability, and flexibility is a complex task.

T2

Only Two Cars Passed on a Green Light? Complaints Arise as Apollo Go Face Scrutiny, Is Self-driving Really Reliable?

With the continuous advancement of technology, driverless taxis (Robotaxi) are expected to become a new trend in future transportation. However, judging from the complaints encountered during the trial operation of Apollo Go in Wuhan, the maturity of autonomous driving technology and the sustainability of the business model still face considerable challenges. In the future, as autonomous driving technology continues to mature and business models gradually become clearer, we have reason to believe that autonomous driving can still bring people a more convenient, safer and more comfortable travel experience. At the same time, with the vigorous development of the new energy vehicle market, some host manufacturers such as Tesla, Weilai, Xpeng Motors, etc. have also begun to get involved in the Robotaxi field. They are also working hard to join the competition by relying on their accumulation and experience in the field of electric vehicles, combined with autonomous driving technology.

Market

M1

Hyundai Collaborates with AI Giant Plus to Launch the First Level 4 Autonomous Fuel Cell Truck in USA

Hyundai Motor and AI company Plus are collaborating to launch the first Level 4 autonomous fuel cell electric truck in the United States. The XCIENT fuel cell truck from Hyundai will be equipped with Plus's Level 4 autonomous driving software, aiming to enhance road safety and transportation efficiency. The XCIENT fuel cell truck was first introduced in 2020 and has been commercially operated in eight countries/regions worldwide. This collaboration aims to address the global shortage of truck drivers while showcasing Hyundai's leadership in fuel cell technology and autonomous driving. Plus's SuperDrive solution will provide surround perception, planning, prediction, and autonomous driving capabilities.

M2 Tesla Clears Another Hurdle in Achieving Full Self-driving in China

Tesla is one step closer to launching full-self driving (FSD) technology in China after it clinched an agreement with Baidu to upgrade its mapping software. The Chinese tech giant said on Saturday that it was providing lane-level navigation services for Tesla cars. Baidu (BIDU) says this level of navigation can provide drivers with detailed information, including making lane recommendations ahead of upcoming turns, to enhance safety. Experts said during Tesla (TSLA) CEO Elon Musk's surprise visit to China at the end of April that one of his main hurdles in securing Government approval to rollout the company's FSD software was reaching a mapping and navigation deal with Baidu.

Rules & Regulation

R1 UK Passes Autonomous Vehicles Law, Self-Driving Cars to Hit Roads by 2026

Self-driving vehicles could be on British roads in just 2 years as the new law receives Royal Assent. Move could create over 38,000 new jobs, cementing Britain's position at the forefront of the self-driving tech industry. Travel is set to be revolutionised by the £42 billion sector, increasing road safety and unlocking opportunities for those who currently can't drive.

R2 VOLVO Introduces the World's First Electric Vehicle Battery Passport

According to a report by Reuters, VOLVO Cars has partnered with the UK startup Circulor to develop the world's first electric vehicle (EV) battery passport. This passport utilises blockchain technology to track the origins of raw materials, components, recycled content, and carbon footprint in the battery supply chain. VOLVO's goal is to produce only pure electric vehicles by 2030, and it will be mandatory to provide a battery passport for the EU market starting in February 2027. The cost of the passport is estimated to be around US$10 per vehicle. VOLVO will initially produce the XC90 SUV equipped with the battery passport at its US factory and gradually apply the passport to all its electric vehicle models. This initiative has also piqued the interest of other automakers.

車用雷達系統設計的挑戰

來源：EET 電子工程專輯
發布時間：2024 年 5 月 31 日

雷達正出現在各種新車設計中：感測車輛周圍環境以偵測危險，並將資訊輸入煞車、轉向和停車的決策系統；在車艙內則用於駕駛和乘客監控系統。高解析度雷達在所有天候條件下都能有效運作，現在更可以作為基於 AI 的物件偵測系統的前端，輔助其他感測器通道，進一步提升準確性和安全性。對於高價值嵌入式雷達系統的製造商來說，這其中蘊藏著巨大的潛力。然而，要競爭地挖掘這些潛力並不容易。接下來，我們將探討其中的一些挑戰。

完整的系統挑戰

汽車原始設備製造商(OEM)不僅僅是在新車上添加更多電子功能；他們正在推動產品線的統一系統架構，以控管成本、簡化軟體開發和維護，並增強安全性和可靠性。更多的運算能力和智慧正在轉移到整合的區網域控制站中，這些控制器一方面在車輛一小區域內的相對小型感測器單元和處理器之間進行通訊，另一方面則在區網域控制站和管理整體決策的中央控制器之間進行通訊。

瞄準車用雷達系統市場的供應商必須隨著這些變化調整他們的解決方案架構，提供可擴展性，以滿足邊緣功能所需的相對簡單處理以及區域或中央控制器所需的更廣泛功能，同時保持靈活性以適應不同的 OEM 分區選擇。

一個重要的含義是，無論解決方案如何分區，它都必須允許在邊緣、區域和中央計算之間交換大量的資料。這也突顯了在傳輸過程中進行資料壓縮以管理延遲和功耗的重要性。

除了性能、功耗和成本限制之外，汽車系統還必須考慮壽命和可靠性。一輛汽車的完整壽命可能長達 10 年、20 年甚至更久，在此期間可能需要升級軟體和 AI 模型來修復已發現的問題或滿足不斷變化的法規要求。這些限制要求在雷達系統設計中，必須在硬體的性能 / 低功耗與軟體適應變化的靈活性之間取得謹慎的平衡。這一點並不新鮮，但與視覺管線相比，雷達管線提出了一些獨特的要求。

雷達訊號處理流程的挑戰

下方圖 1 顯示了完整的雷達系統流程，從發射和接收天線一直到目標追蹤和分類。天線配置可以從用於低階偵測的 4×4(發射 Tx / 接收 Rx)到用於高解析度雷達的 48×64。在雷達前端之後的系統管線中，是快速傅立葉變換(FFT)，用於首先計算距離資訊，然後計算都蔔勒資訊(Doppler information) 。接下來是數位波束成形階段，用於管理來自多個雷達天線的數位訊號流。

到目前為止，資料在某種程度上仍然是「原始訊號」。恆虛警率(CFAR)階段是將真實目標與雜訊分離的第一步。到達角(AoA)計算完成目標在 3D 空間中的定位，而都蔔勒速度計算則增加了第 4 個維度。最後透過目標追蹤(例如使用擴展卡爾曼濾波器 (EKF))和物件分類(通常使用 OEM 定義的 AI 模型)完善整個流程。

好的，這包含很多步驟，但為什麼會很複雜呢？首先，雷達系統必須在前端支援顯著的平行處理能力，以便處理大型天線陣列同時將多個圖像流推送到流程中，同時還要提供每秒 25 到 50 幀的輸送量。資料量不僅僅取決於天線的數量。這些資料會饋送到多個 FFT 中，每個 FFT 都可能很大，最多可達 1K 個頻段。這些轉換最終將資料流式傳輸到點雲端，而點雲端本身很容易達到半 MB。

巧妙的記憶體管理對於最大化輸送量至關重要。以距離和都蔔勒 FFT 階段為例。從距離 FFT 寫入記憶體的資料是一維的，按行寫入。都蔔勒 FFT 需要逐列存取這些資料；如果沒有特殊支援，列存取所隱含的位元元址跳轉需要對每列進行多次突發讀取，這會大幅降低可行的幀率。

CFAR 是另一個挑戰。CFAR 有多種演算法，有些演算法比其他演算法更容易實現。現今最先進的選擇是 OS-CFAR(有序統計 CFAR)，當存在多個目標時(這在汽車雷達應用中很常見)，這種演算法特別有效。不幸的是，OS-CFAR 也是最難實現的演算法，除了線性分析外，還需要進行統計分析。現今真正具有競爭力的雷達系統應該使用 OS-CFAR。

在追蹤階段，位置和速度都很重要。它們都是三維的(位置為 X、Y、Z，速度為 Vx、Vy、Vz)。有些 EKF 演算法會捨棄一個維度，通常是高度，以簡化問題；這稱為 4D EKF。相反地，高品質的演算法會使用所有 6 個維度(6D EKF)。任何 EKF 演算法的一個主要考慮因素是它可以追蹤多少個目標。雖然飛機可能只需要追蹤幾個目標，但高階汽車雷達現在能夠追蹤數千個目標。在考慮高階和(稍微縮減的)中階雷達系統的架構時，這一點值得牢記。

分類階段的任何挑戰都以 AI 模型為中心，因此不在本次雷達系統討論的範圍內。這些 AI 模型通常會在專用的 NPU 上運行。

實作上的挑戰

一個顯而易見的問題是，哪種平臺最能滿足所有這些雷達系統的需求？它必須非常擅長訊號處理，並且必須在低功耗下滿足輸送量目標(25-50 fps)，同時還要具有軟體可程式設計性，以便在長期使用壽命中保持適應性。這表示需要使用數位元元元元訊號處理器 (DSP)。

然而，它還必須處理許多同步輸入流，這表示需要高度的平行處理能力。有些 DSP 架構支援平行核心，但對於許多訊號處理功能(例如 FFT)來說，所需的核心數量可能過多，在這些情況下，硬體加速器可能更合適。

同時，解決方案必須能夠在區域汽車架構中擴展：用於邊緣應用的低階系統，為區域或中央應用中的更高階系統提供資料。為每個應用程式提供通用的產品架構和通用的軟體堆疊，可以輕鬆擴展以適應從邊緣到中央控制器的每個級別。

我們相信，實現這些目標是可能的，特別是使用可擴展的 Ceva-SensPro 雷達和視覺 AI 解決方案。

回目錄

一個綠燈只過了兩台車？蘿蔔快跑遭投訴，無人駕駛真的靠譜嗎？

來源：蓋世大V說

發布時間：2024 年 5 月 11 日

近日，在武漢試運營的蘿蔔快跑在高峰期因經常堵塞交通而被人投訴，有網友反映測試車輛“行駛速度太慢”、“無緣無故罷工”、“沒到目的地半路就停下了”等等奇葩問題。之後，蘿蔔快跑第一時間做出回應，稱以上資訊為惡意投訴、與事實不符。那麼無人駕駛計程車（Robotaxi）模式出現問題，是否意味著自動駕駛技術不靠譜？

目前，無人駕駛技術尚未成熟

查詢相關資訊得知，蘿蔔快跑採用了百度 Apollo 的自動駕駛技術，包括感知、決策規劃、控制等多個方面。百度 Apollo 在之前發佈了自動駕駛大模型 Apollo ADFM，支援 L4 級別的無人駕駛應用，此次在武漢測試的蘿蔔快跑模式，也是國內 L4 級別無人駕駛實際應用最早的測試之一。

蘿蔔快跑的技術原理其實並不複雜

首先，感知部分通過車載感測器即時收集周圍環境的資訊，如雷達、雷射雷達、攝像頭等，這些感測器能夠捕捉到車輛周圍的車輛、行人、道路標識、交通信號等關鍵資訊，並將這些資訊轉化為數位信號供車輛處理。

接下來，決策規劃部分利用先進的演算法和人工智慧技術，對感知到的環境資訊進行分析和處理。通過路徑規劃演算法，根據即時交通狀況和道路條件，為車輛規劃出最優的行駛路徑。同時，通過對周圍車輛和行人的行為進行預測，提前做出判斷，採取相應的避讓措施，確保行車安全。

最後，控制部分根據決策規劃的結果，對車輛的行駛狀態進行即時調整。結合深度學習和強化學習等技術，蘿蔔快跑能夠在複雜的交通環境中做出正確的決策，並即時調整車輛的行駛速度、轉向等，以適應各種突發情況。

當然，為了保證絕對安全，百度 Apollo 還實現了 10 重安全冗餘設計，包括感知三冗餘、計算單元雙冗余、高精度定位三冗餘等，以確保行駛過程中的安全性。

而從目前來看，可能問題更多地就出在“安全”這一項上，畢竟蘿蔔快跑路試除了試驗效果，更重要的應該是針對真實路況的大資料收集以及訓練決策大模型，實現優化決策的目

的，而這一切的前提，就是必須保證測試的安全性。

當安全性為優先保證時，蘿蔔快跑出現行駛過程中速度慢、臨時停車等現象就很容易理解了，這也證明，目前要實現真正的 L4 級別無人駕駛，技術上還存在不小的短板。

無人駕駛的難點在哪

其實說到底，就是大資料的樣本還不夠，Apollo ADFM 大模型還需要更多資料來進行學習。

無人駕駛技術如何準確、即時地感知路況，並做出正確的決策，是一個巨大的挑戰。尤其是在惡劣的天氣條件下，如雨雪、霧霾等，感知系統的性能會受到影響，增加了無人駕駛的難度，同時，在真實路況下，更多的未知變數也同樣非常麻煩，比如亂穿馬路的電動自行車，隨時變道的機動車，以及在上下班高峰期時突然增加的車流，這些都會對無人駕駛的感知、決策過程造成很大的幹擾。

另一方面，由於是新事物，人們會特別關注無人駕駛的安全問題，就像前文提到，不管你技術多麼成熟，都得在安全方面留出足夠的冗餘設計，確保在任何路況下都不能與行人及車輛發生碰撞，否則這個鍋肯定是無人駕駛來接。

而且吧，無人駕駛目前最大的問題還是盈利前景不明朗，而技術升級卻需要大把燒錢，所以說即便是技術還並未成熟，百度也要著急上馬蘿蔔快跑測試專案，畢竟從目前來看，Robotaxi 商業模式可能是少數在短期內能看到盈利的無人駕駛應用。

除了蘿蔔快跑，還有哪些品牌準備入局 Robotaxi

作為資本的熱捧項目，Robotaxi 在近幾年可以說是投資熱點。除了百度蘿蔔快跑，全球範圍內，Waymo、Cruise、Uber 等科技巨頭早已在 Robotaxi 領域展開佈局，此外，文遠知行、小馬智行等創新型企業也在 Robotaxi 領域積極探索。

同時，隨著新能源汽車市場的蓬勃發展，一些主機廠商如特斯拉、蔚來、小鵬汽車等也開始涉足 Robotaxi 領域。他們憑藉在電動汽車領域的積累和經驗，結合自動駕駛技術，也在著力加入競爭。

這些公司品牌的入局不僅為 Robotaxi 行業帶來了更多的技術創新和商業模式創新，也推動了相關產業鏈的發展和完善。從感測器、晶片、演算法等核心技術的研發，到車輛製造、

地圖服務、運營管理等產業鏈的整合，Robotaxi 的發展正在形成一個龐大的生態系統。

結語

隨著科技的不斷進步，無人駕駛計程車 (Robotaxi) 有望成為未來交通出行的新趨勢。然而，從蘿蔔快跑在武漢試運營遭遇的投訴來看，無人駕駛技術的成熟度和商業模式的可持續性仍面臨不小的挑戰。未來，隨著無人駕駛技術的不斷成熟和商業模式的逐步清晰，我們有理由相信，無人駕駛還是能夠為人們帶來更加便捷、安全、舒適的出行體驗。

回目錄

現代汽車與AI大廠Plus合作在美國推出首款Level 4級自動駕駛燃料電池卡車

來源：汽車日報

發布時間：2024 年 5 月 28 日

為解決全球性的貨卡車司機人力荒，全球各主力車廠莫不積極開發具有高度自動駕駛技術的新世代貨卡車，現代汽車（Hyundai Motor）和美國 AI 人工智慧大廠 Plus 本周宣佈合作，將在美國推出首款符合美國汽車工程師學會所制訂 Level 4 四級自動駕駛的燃料電池電動卡車。

現代汽車和 Plus 的合作目標在於透過配備 Plus 開發的 4 級自動駕駛軟體的 XCIENT 燃料電池卡車，來提升道路安全和運輸業的貨運效率。

現代汽車公司（現代汽車）和 AI 人工智慧自動駕駛軟體領導業者 Plus 合作，上周在在北美最大的先進潔淨交通技術博覽會（Advanced Clean Transportation（ACT））上發表美國首款 Level 4 四級級自動駕駛技術的 Class 8 重型氫燃料電池電動卡車。

現代汽車執行副總裁兼商用車開發主管 Martin Zeilinger 表示，我們很高興展示我們與 Plus 的合作，用我們的 Class 8 XCIENT 燃料電池卡車測試 Level 4 級自動駕駛技術。現代汽車一直透過我們先進的燃料電池技術來推出運輸業能源轉型。透過為我們全球首款量產 XCIENT 氫燃料電池卡車追加全新的自動駕駛功能，現代汽車期待為車隊和車輛運營商提供額外的解決方案，藉由 Plus 行業領先的自動駕駛技術，來提高道路安全和貨運效率。

現代汽車的 XCIENT 燃料電池卡車於 2020 年首次推出，已在全球八個國家/地區進行了商業運營，在實際應用和技術可靠性方面建立了成功的記錄。

在去年的 ACT 博覽會上，現代汽車推出了 XCIENT 燃料電池曳引車，這是商業化的 Class 8 八級 6x4 燃料電池電動卡車，由兩個 90kW 氫燃料電池系統和一個 350kW 電動馬達提供驅動力，即使在滿載時，每次充電的行駛里程也超過 450 英哩。

Plus 的 SuperDrive 解決方案正在美國、歐洲和澳洲部署，該系統使用尖端感測器（包括雷射雷達、雷達和攝像頭）的組合，以提供環繞感知、規劃、預測和自動駕駛功能。

回目錄

Tesla clears another hurdle to launching full self-driving in China

來源：CNN Business

發布時間：2024 年 6 月 10 日

Hong Kong (CNN) — Tesla is one step closer to launching full-self driving (FSD) technology in China after it clinched an agreement with Baidu to upgrade its mapping software.

The Chinese tech giant said Saturday that it was providing lane-level navigation services for Tesla cars. Baidu (BIDU) says this level of navigation can provide drivers with detailed information, including making lane recommendations ahead of upcoming turns, to enhance safety.

Experts said during Tesla (TSLA) CEO Elon Musk's surprise visit to China at the end of April that one of his main hurdles in securing government approval to rollout the company's FSD software was reaching a mapping and navigation deal with Baidu.

"With the support of Baidu's lane-level map, Tesla's navigation can accurately render lane changes on the road the user is currently on, upgrading from providing road-level guidance to providing lane-level guidance," Baidu said in the statement.

China's answer to Google has been been providing mapping services to Tesla since 2020. But prior to Saturday's announcement, its services had been limited to "road-level" information, which is less precise than lane-level navigation.

A day earlier, Tesla launched its new software upgrade for users in urban areas in China, the world's biggest car market, saying in a statement on WeChat that such detailed road information was being made available "for the first time."

CNN has reached out to Tesla for comment. On Monday, Baidu declined further comment.

Virtually all Teslas have a driver-assistance system called Autopilot, while the more robust FSD feature comes at a premium price. Autopilot is available in China, but not the full FSD feature.

Teaming up with Baidu would remove an obstacle, as the Chinese firm has key mapping credentials that can be applied to driver-assistance functions.

Tesla is facing a fierce challenge from China

BYD surpassed the American giant as the world's number one seller of battery electric cars in the last quarter of 2023. But due to a sharp drop in sales by the Chinese company in the first quarter of 2024, Tesla reclaimed the number one spot despite also posting poor sales during that period.

According to Chinese regulations, all self-driving systems must obtain mapping qualifications before operating on public roads. Foreign car companies need to partner with licensed Chinese companies to qualify for surveying and mapping.

Partnering with Baidu would allow Tesla to run its full self-driving system on China's public roads, with its vehicles able to collect surrounding data, such as road layout, traffic signs and buildings.

It could also accelerate Tesla's global development of its self-driving technology, as data from China could be used to train Tesla's algorithms needed for fully autonomous vehicles.

Car owners have long complained on social media about Tesla's previous navigation services, which were also provided by Baidu, saying they often have to rely on other maps available on smartphones while driving.

"This time, you can really remove your mobile phone holders (mounted in the car)," Tesla said in its Friday announcement, suggesting drivers no longer need other maps for navigation.

The news went viral on Chinese social media on Monday.

"After the system upgrade, I no longer need to use my mobile phone to navigate," said one Weibo user. "Tesla's (own) navigation system can finally be used."

Introducing the FSD system could provide a revenue boost to Tesla, which is having a tough time in China. In April, it slashed prices across its car product lines in the country, hoping to bolster sales in the face of slowing demand and increased competition.

回目錄

Self-driving vehicles set to be on roads by 2026 as Automated Vehicles Act becomes law

來源：Gov. UK

發布時間：2024 年 5 月 20 日

Road safety is at the heart of the legislation, with automated vehicles expected to improve road safety by reducing human error.

- Self-driving vehicles could be on British roads in just 2 years as new law receives Royal Assent
- Move could create over 38,000 new jobs, cementing Britain's position at the forefront of the self-driving tech industry
- Travel set to be revolutionised by £42 billion sector, increasing road safety and unlocking opportunities for those who currently can't drive

Self-driving vehicles could be on British roads by 2026, after the government's world-leading Automated Vehicles (AV) Act became law today (20 May 2024).

Announced in the King's Speech, the AV Act enables advanced technology to safely drive vehicles on British roads. The new law puts Great Britain firmly at the forefront of self-driving technology regulation, unlocking the potential of an industry estimated to be worth up to £42 billion and creating 38,000 more skilled jobs by 2035.

Road safety is at the heart of the legislation, with automated vehicles expected to improve road safety by reducing human error, which contributes to 88% of road collisions.

The law will require self-driving vehicles to achieve a level of safety at least as high as careful and competent human drivers, as well as meeting rigorous safety checks before being allowed onto roads. Therefore, in the future deaths and injuries from drink driving, speeding, tiredness and inattention could be drastically reduced.

Transport Secretary, Mark Harper, said:

"Britain stands at the threshold of an automotive revolution and this new law is a milestone moment for our self-driving industry, which has the potential to change the way we travel forever. "

"While this doesn't take away people's ability to choose to drive themselves, our landmark legislation means self-driving vehicles can be rolled out on British roads as soon as 2026, in a real boost to both safety and our economy."

The passage of the act bolsters the UK's position as a world leader in emerging industries, with both the self-driving vehicle and artificial intelligence (AI) sectors bringing huge potential for economic growth as they develop.

The AV Act follows self-driving trials already taking place across the country. For example, home-grown British success stories Wayve and Oxa are trialling self-driving cars in London and Oxford. This month it was revealed Wayve had secured more than $1 billion in investment to develop its AI technology further here in the UK.

Wayve has said that their technological advancements have been supported by the UK's Code of practice: automated vehicle trialling, which sets out a clear framework to support and promote the safe trailing of self-driving vehicle technology.

Between 2018 and 2022, the UK self-driving vehicle sector alone generated £475 million of direct investment and created 1,500 new jobs. Self-driving vehicles could support areas previously impacted by driver shortages, such as haulage, and where work can be dangerous, such as mining.

The act delivers the most comprehensive legal framework of its kind worldwide, setting out who is liable for AVs meaning that drivers can be assured that, while their vehicle is in self-driving mode, they will not be held responsible for how the vehicle drives. For the first time, corporations such as insurance providers, software developers and automotive manufacturers can assume this responsibility.

To ensure these vehicles are safe for British roads, the vehicle approval system will be supported by a completely independent incident investigation function. This will promote the same culture of learning and continuous improvement that has made our aviation industry one of the safest in the world. Companies will have ongoing obligations to keep their vehicles safe and ensure that they continue to drive in accordance with British laws.

Trials show how self-driving vehicles can be used to improve the lives of millions of Brits – improving mobility and access to services, reducing isolation and better connecting rural communities. The act opens up vehicle use to millions who haven't been able to do so previously, boosting transport accessibility across the country.

Paul Newman, Founder and CTO of Oxa, said:

"The immense work put in by DfT, Law Commissions and CCAV in crafting the Automated Vehicles Bill has helped it pass into law with the strongest cross-party backing. We now have autonomous vehicle legislation, which is more comprehensive in scope and clearer in its requirements than in any other country."

"The act gives the UK new momentum as developers like Oxa will need to comply with the world's most comprehensive autonomous vehicle laws to deploy technology in vehicles here. Meeting the highest AV standards will make British companies global leaders with technology that is the safest and AI systems the most trusted – all key to building business and public trust in autonomy globally."

Alex Kendall, Co-founder and CEO of Wayve, said:

"I am delighted that the Automated Vehicles Bill has received Royal Assent. This is a critical milestone for the UK's deployment of self-driving technology and cements the UK as a global leader in regulating this sector. We are grateful to the government and all who have engaged with us in the conversation about the importance of this legislation. "

"Self-driving technology promises a safer, smarter and more sustainable future of transport. There's still some way to go with secondary legislation before we can reap the full benefits of self-driving vehicles in the UK, but we are confident the government will prioritise these next steps so this technology can be deployed as soon as possible."

Mike Hawes, the Society of Motor Manufacturers and Traders (SMMT) Chief Executive, said:

"This is a watershed moment for UK automotive innovation and road safety in the UK. Self-

driving vehicles will revolutionise our society, and this new law will help turn ambition into reality, putting the UK alongside a handful of other global markets that already have their their regulatory frameworks in place."

"The industry will continue its close collaboration with government and other stakeholders to develop the necessary secondary legislation that will enable the safe and responsible commercial rollout of self-driving vehicles and the significant social and economic benefits they will afford the UK."

Richard Cuerden, Director at the Transport Research Laboratory (TRL), said:

"TRL welcomes the AV Bill and the ambitious direction it sets to improve transport. The automated technology, software and sensors, and the business models to deliver new services, are developing fast. By setting a regulatory framework, the government is providing the industry with confidence and motivation to continue to and we expect to increase investment in the UK, in this growing sector."

"The promise is more accessible, safer and greener journeys for goods and people, and at TRL we are working hard to ensure that this is delivered. The commercial success will only be possible if the public has trust in the technology and chooses to use AVs. Here safety is key and we are working hard to develop safe engineering and system requirements and in parallel recognising that it is as important to provide public confidence."

The passage of the new law follows consistent government backing of the self-driving vehicle industry – with more than £600 million in joint government and industry investment since 2015. This funding has helped create innovative new companies, build the AV supply chain and lay the groundwork for the early commercial market.

回目錄

VOLVO汽車推出世界上第一本電動車電池護照

來源：汽車日報

發布時間：2024 年 6 月 5 日

根據路透社的報導，VOLVO 汽車將推出世界上第一本電動車電池護照，用以記錄其旗艦車 EX90 SUV 的電池原材料、零件、回收成分和碳足跡的來源，該車即將開始量產。

VOLVO 的電池護照是由中國吉利旗下的 VOLVO 與英國新創公司 Circulor 合作開發的，該公司使用區塊鏈技術為公司繪製供應鏈地圖，共花了五年多的時間開發完成。從 2027 年 2 月起，在歐盟銷售的電動車 (EV) 將強制要求業者提供電池護照，顯示電池的成分，包括關鍵材料的來源、碳足跡和可回收成分。

VOLVO 全球永續發展主管瓦妮莎·布塔尼 (Vanessa Butani) 向路透社土示，在法規生效前近三年推出護照的目的是要向汽車購買者保持資訊公開透明，因為 VOLVO 訂下的目標是到 2030 年將只生產純電動車。布塔尼表示，成為業界的先鋒和領導者對我們來說非常重要。

配備電池護照的 EX90 即將在 VOLVO 位於美國南卡羅來納州查爾斯頓 (Charleston) 的工廠開始生產，並將於今年下半年交付給歐洲和北美的客戶。VOLVO 車主可以使用駕駛座車門內側的二維條碼來取得簡化版的護照。布塔尼表示，電池護照將逐步推廣到 VOLVO 的所有電動車款上。而更完整的電池護照版本將提交給監理機關。

Circulor 執行長 約翰遜-彭斯根 (Douglas Johnson-Poensgen) 告訴路透社，護照中還將包括 15 年內電動車電池健康狀況的最新資訊對於 (二手電動車價值評估至關重要)，並且 VOLVO 每輛車的護照成本約為 10 美元。

Circulor 的系統追蹤從礦山到每輛汽車的電池材料，借助供應商的生產系統來追蹤整個供應鏈中的材料，並檢查供應商的每月能源帳單，以及他們的能源中有多少來自可再生能源，以便來計算總碳足跡。

約翰遜-彭斯根表示，如果 VOLVO 引入供應商，Circulor 將需要對其進行碳盤查，以保持資訊的新穎。該護照還要求 VOLVO 改變其製造過程中追蹤零件的方式，以了解每輛車中每個零件的來源。

約翰遜-彭斯根表示，雖然美國沒有這樣的強制規定，但汽車製造商對此表現出高度興趣，因為他們可能需要證明自己有資格根據美國通膨削減法案，來獲得電動車補貼。

VOLVO、Jaguar Land Rover 和全球最大的上市礦業公司 BHP 都是 Circulor 的投資者。約翰遜-彭斯根表示，汽車製造商紛紛推出電池護照，即使現在就開始，許多汽車製造商也可能會發現很難在歐盟要求 2027 年的最後期限之前完成任務。VOLVO、Jaguar Land Rover 和全球最大的上市礦業公司 BHP 都是 Circulor 的投資者。約翰遜-彭斯根表示，汽車製造商紛紛推出電池護照，即使現在就開始，許多汽車製造商也可能會發現很難在歐盟要求 2027 年的最後期限之前完成任務。.

回目錄