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首先是中国，然后是世界！
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LESSONS FROM DIDI: THE WORLD'S MOST VALUABLE STARTUP
JEAN LIU — PRESIDENT OF RIDE SHARING GIANT DIDI
+10 CHINESE UNICORNS ON THE RISE
EXCLUSIVE: THE UK COUPLE WHO COST GOOGLE £2.1BN
IDEAS - TECHNOLOGY - DESIGN - BUSINESS

BACKED BY INVESTMENT FROM SOME OF THE BIGGEST GLOBAL TECH COMPANIES – INCLUDING APPLE, TENCENT AND ALIBABA – **JEAN LIU'S DIDI CHUXING** DEFEATED UBER IN CHINA. NOW, THE BEIJING-BASED RIDE-SHARING APP IS LEADING THE WAY FOR CHINESE TECHNOLOGY GIANTS – BY TAKING ON THE PLANET

INSIDE THE WORLD'S MOST VALUABLE STARTUP 义叓 事义

BY JAMES CRABTREE

PHOTOGRAPHY: TRUNK XU

ILLUSTRATION: BRITT SPENCER

BELOW: JEAN LIU, PRESIDENT OF DIDI CHUXING, PHOTOGRAPHED BY WIRED IN DIDI'S BEIJING HQ, DECEMBER 2017

未來的願景

JEAN LIU HAS A VISION. NOT FAR IN THE FUTURE, THE PRESIDENT OF DIDI CHUXING, THE WORLD'S LARGEST RIDE-SHARING SERVICE, IMAGINES CALLING A CAR TO HER BEIJING HOME.

"I probably don't even need to use this," she says, holding up her smartphone. "Now it's just some cool audio app that allows me to just say: "I need to go. Right now."

A vehicle will arrive a minute later. She need not specify what kind of car: Didi's artificial intelligence engine will have guessed the type she wants. The system often offers to send a ride even before she asks, having figured out where she will be going. Sometimes the driver will be human. More typically, it will be a machine.

The car will glide off through free-flowing streets. "There's no traffic lights," Liu explains. "The AI is already integrated." There will be no car parks either: the vehicles, which are all electric, take themselves off quietly to storage facilities outside the sixth ring-road when not needed. Beijing itself, freed of the need to provide parking for six million cars, will be newly pleasant. "We're surrounded by nice parks," she says. "And when you get to your place, you don't even need to bother to park. You just very gracefully get out."

Scenarios like this seem fantastical next to China's present mess of gridlocked expressways and dark, polluted skies. Yet, sitting in Didi's Beijing headquarters one chilly day last December, Liu is optimistic that it can become real, as she lays out her ambitions to transform her company into a global tech and transport giant.

Didi's smartphone app currently works much like its US-based rivals Uber and Lyft, offering rides from drivers in their own cars or regular taxis. What sets the company apart is scale. With 400m registered customers in more than 400 Chinese cities, it delivers 25m rides a day, roughly twice as many as Uber and all the other global sharing apps combined. In the future, Liu imagines an even larger purpose, as Didi uses big data and machine learning to fix the many problems that snarl-up urban areas. "When you redesign the transportation system, you basically redesign the whole city," Liu says. "You redefine how people should live."

Liu, 39, joined Didi in 2014, two years after its foundation, following more than a decade at investment bank Goldman Sachs. She has since become – arguably – China's most prominent female tech executive, winning attention both for the group's rapid expansion and her own far more personal battle, in overcoming breast cancer in 2016.

With her American-tinged accent (a legacy of studying computer science at Harvard), Liu quickly became the point of contact for global investors, while also running day-to-day operations at Didi. Her most recent success came in December with a new $4bn cash infusion, bringing her haul to nearly $10bn last year. The deal also cemented Didi as the planet's most valuable startup (for now), with a $56bn valuation, speeding past Uber, whose most recent round saw its worth fall to just $48bn.

To win that global title, Didi first had to fend off Uber at home. Beginning in 2015, Liu waged a fierce rearguard action for control of China's ride-sharing market, following a rapid incursion by its US rival. Through aggressive discounts, the duo racked up huge losses before Uber admitted defeat in mid-2016, selling its operations to Didi, and handing the Chinese company a near-monopoly. "In China, Didi won big," says professor Jeffrey Towson, an American academic studying Chinese internet firms at Peking University. "I think plan A was 'crush Uber'," he adds. "The question now is: 'what is plan B?'"

That plan, Liu now says, is to grow. Didi is working with car manufacturers to build new kinds of cars that are "designed for sharing", she says. Around China, it is tying up with dozens of cities, using localised data to help curb traffic problems. Liu also wants to push into electric and autonomous vehicles, shifting away from human drivers and reinventing their cars as the ultimate smart devices.

More than anything, though, Liu's ambitions are global. So far, few top Chinese internet companies have launched services outside their home market, where they often enjoy regulatory protection against foreign invaders. Didi has largely restricted itself to investing in other ride-sharing companies, including Lyft in the US, Ola in India and Taxify in Europe.

In 2016, however, Liu struck a rare $1bn funding deal with Apple, fuelling speculation that Didi would team up on the Californian group's rumoured ambitions to enter the automotive market. Then, in 2017, Didi opened a research lab in Silicon Valley, hiring staff from Uber and others to accelerate its own self-driving plans.

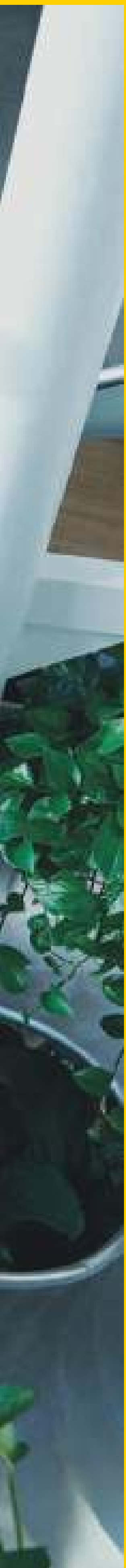
Now, Liu tells me that Didi will "soon" launch its operations outside China for the first time. "We aspire to be a company that serves global transportation," she says. And it is here that her vision carries its greatest significance – the dawn of a world in which Didi, alongside Chinese titans Alibaba, Baidu and Tencent, begins to expand abroad, potentially becoming as well-known and ubiquitous in the west as Uber, Amazon, Google and Facebook are today.

10 CHINESE UNICORNS MEET THE TECH-SCENE STARS ON TRACK TO CONQUER MARKETS IN THE WEST

ZHIHU
Beijing
zhihu.com

Zhihu, meaning "do you know?", is a Chinese question-and-answer website, where questions are created, answered and edited by a community of 65 million registered users, 18.5 million of which are active daily. Between its launch in 2010 and 2016, the site has had six million questions asked and 23 million answers posted. Zhihu attracts Chinese-language internet users seeking expert knowledge and insight into wide-ranging topics. At the start of 2017, the company was valued at £750 million after attracting investment from Capital Today, Tencent, Sogou, SAIF Partners, Qiming Venture Partners, and Sinovation Ventures.

RIGHT: HENRY LIU, CHIEF SCIENTIST, SMART TRANSPORTATION DIVISION, TAKES A RIDE ON THE SLIDE IN DIDI'S BEIJING HQ



Liu's ambitions are born of a simple frustration: Beijing's dreadful traffic. With 22m people, China's capital is among the world's ten most congested metropolises, according to an index from TomTom, the GPS maker. Eight Chinese cities rank in the top 20, far more than any other country. Even Didi's name is a reminder: in Mandarin it means "beep beep", like a car's horn.

Every morning, after packing her three children off to school, Liu endures a two-hour, 40km slog to the office, crawling around ten-lane ring-roads from her home in the city's north east corner. Her destination: Zhongguancun, a sprawling series of software parks tucked inside the fourth ring in the north west, and often described as "China's Silicon Valley".

One campus belongs to Lenovo, the computer-maker founded by Liu's father, Liu Chuanzhi, a family heritage that gives her the status of Chinese tech royalty. More than a dozen billion-dollar "unicorn" startups have offices nearby, along with search-engine Baidu and social media colossus Tencent. It was a rare, pollution-free day when I visited, with clear blue skies overhead. Thousands of brightly-coloured bikes filled the pavements, deposited by sharing companies Mobike and Ofo, and used by coders pedalling to work, wrapped-up in gloves and puffer jackets.

Didi's offices are spread out over four large buildings. Visitors are greeted by cheery cartoon models of cars, representing the company's services, including its basic "express" ride and upscale "Didi Luxe" offering. Aeroplane-style white towelettes are stacked in baskets by the lifts, to wipe off grime from the typically smoggy and dusty streets outside.

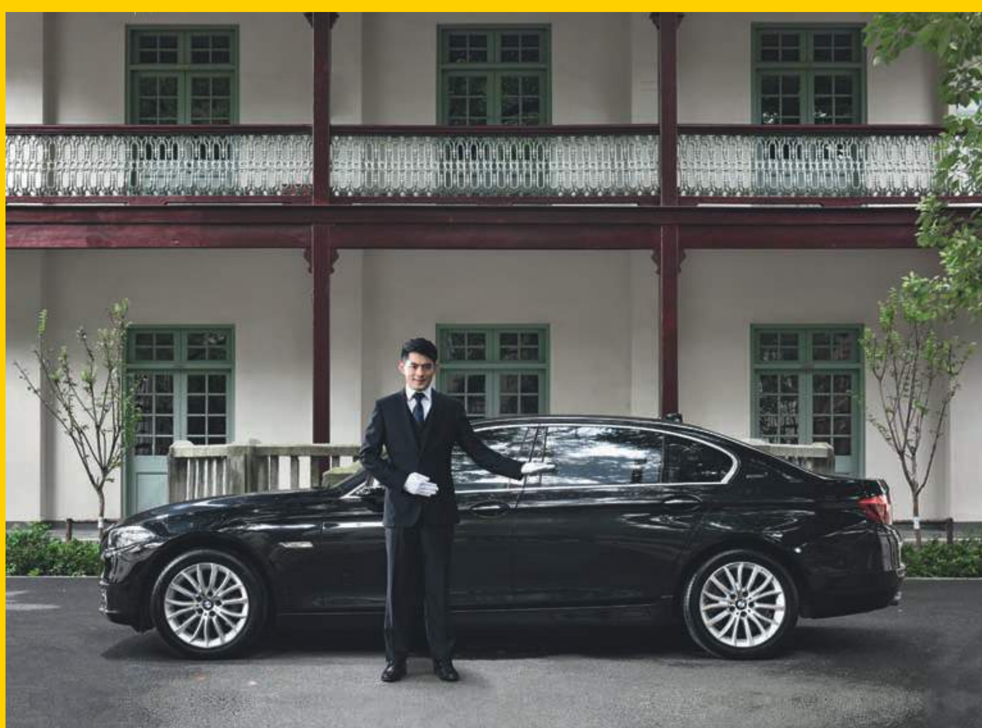
Inside, there are the usual startup flourishes, from table football tables and meditation rooms to a barber's shop, gym and library. Didi's mascot, a smiley-faced orange, appears on almost every wall. (The group's legal trading name, Little Orange Technology, is a reference to its aim to become as influential as Apple.) One open-plan area features a curly steel slide, which playful employees use to slip between floors, while conference rooms come with glass jars filled with artisanal Chinese teas.

The company's 7,000 staff (some 50 per cent of which are engineers and data scientists) communicate almost exclusively in flurries of messages on WeChat, China's dominant social-media platform. (At one point during my visit, I ask an employee how often she receives work email. "Once, maybe twice a day," she replies. "Some days, there are none.") There are occasional hints of a harder edge to the work

VIPKID
Beijing
t.vipkid.com.cn

VIPKID's founder, Cindy Mi, wanted to reinvent the classroom for Chinese students. "The classroom as we know it has not really changed in 200 years," she says. Her Beijing-based education startup provides students aged five to 12 in China with access to English-language teachers in North America, via one-on-one video sessions, at a level that matches top-tier schools in the US.

Mi founded VIPKID in 2013, and it has since grown into a global virtual school of 200,000 students and 30,000 teachers. In August 2017, it reached unicorn status with a valuation of £1.12 billion after a £562 million investment round led by Sequoia Capital China and Tencent Holdings. Mi predicts more growth: "We expect to have one million students in 2019 and we're growing at about 4,000-5,000 new teachers per month. We believe we'll have ten million students in less than a decade."



BELOW LEFT: A UNIFORMED CHAUFFEUR STANDS NEXT TO A HIGH-END DIDI LUXE CAR

culture too: meeting room posters suggest those arriving ten minutes late should perform a five-minute yoga squat as punishment; it is never quite clear if this is a joke.

In person, Liu is tall, with long, dark hair, swept across her forehead and tied back in a bun. Her office is small, and features a painting by her younger daughter, of a cartoon pig reclining on a green sofa, propped up against the back wall. Above her desk, a framed Buddhist proverb in Chinese script advises her to stay humble and keep in mind "the original goal", like a motto pushing Didi to stay focused on the troubles of commuters. Sitting on a sofa, she admits that bad traffic even lay behind her decision to join Didi, having moved home from Hong Kong in 2012. Unable to buy a car – vehicle licenses in the capital are rationed – she relied on taxis to move around with her children, often enduring long waits in the rain, or being ignored by passing drivers. "Sometimes it was not pleasant at all," she says.

Around the same time, and still at Goldman, Liu met Didi's co-founder Cheng Wei – a visionary but reclusive 34-year-old and Didi's most prominent co-founder – to discuss an investment. Back then, Didi was focused on fixing China's inefficient taxi dispatching system. But, intrigued by Wei's bolder ambitions to reinvent urban transit, Liu signed on in 2014. "When I resigned from Goldman, my boss was saying, "Are you crazy?"" she recalls. "'You're giving all this up for a taxi-hailing business?'"

Didi expanded quickly, offering private car ride-sharing and growing in popularity. More than three quarters of Americans own cars, but in China, it's just one in ten, leading to huge demand for rides. In America, Liu explains, most find it cheaper to own a vehicle than rely on ride-sharing. "Here it's the opposite," she says, especially with high car taxes designed to discourage additional drivers.

Liu's first task was to orchestrate a complex merger with Didi's main domestic rival Kuaidi Dache, rebranding the new entity as Didi Kuaidi in 2015, and later as Didi Chuxing. Then came a larger challenge: repelling Uber, which had announced bold plans to conquer China after first entering the market in 2013. For two years, Uber's founder, Travis Kalanick, poured in funds, subsidising fares and drivers' salaries as part of breakneck expansion into dozens of cities.

Didi slashed its own prices in response. At times the battle became personal: in mid-2015, Kalanick hired Liu's cousin, Liu Zhen, as a senior executive. Both companies burned through cash – Uber lost $2bn; Didi likely even more – and raised billions to replace it. As the war intensified, Liu struck deals, winning funds from Alibaba and Tencent, China's two biggest tech companies (Alibaba had previously invested in Kuaidi Dache, and Tencent in Didi Dache, before the rivals merged). In May 2016, she unveiled her $1bn Apple deal, part of a wider $4.5bn infusion.

Not long afterwards, under pressure from its investors to stem losses, Uber threw in the towel. Liu brokered a peace accord, taking over Uber China in exchange for an 18 per cent stake in Didi. "If not for her, the deal would never have got done, with all the big egos around," says one person involved on Uber's side. "She realised that the fight to the death, where [Didi] would win but still get badly hurt, wasn't worth it."

In an internal email at the time, Liu described waging "an Earth-shaking war". In person, she is at pains to avoid martial language, recalling her anxiety as she walked into Uber's Beijing office on August 1, 2016, the day of the deal. "The natural instinct is, 'Let's not go there'. There will be emotional turmoil," she says, explaining her worry that her arrival might demoralise Uber's workers, most of whom now work for Didi.

Instead, she tried to win them round. "I shared my personal story... I shared my dogs' story, even," she says. (Liu owns two dogs: a Golden Retriever and a poodle.) "When I got my poodle she was supposed to be a teddy bear," she explains, with a giggle. "She kept growing, and became a giant Poodle. Like a sheep." The impossibility of fitting three children and two hefty animals into a Beijing taxi became part of her own motivation to fix China's transport, she told the crowd.

"The only reason we 'won' is because we didn't get carried away," Liu says now, arguing that Didi's edge came from launching "six or seven" new products during the war, from carpooling and car rental to inter-city buses. Others see a simpler explanation: Didi, and its backers, could not afford to lose. "I never expected Uber to win," says Yanbo Wang, a Chinese academic who studies tech startups. "For Uber, burning through $2bn in China was a huge amount. But for Didi, and for TenCent and Alibaba, spending $2bn to win at home? It was nothing."

For Uber, defeat still means it has a stake in Didi – its exact value couldn't be confirmed, but a Didi representative

TUJIA
Beijing
tujia.com

Tujia is China's answer to Airbnb. Co-founded in 2011 by CTO Melissa Yang and CEO Luo Jun, it successfully harnesses China's growing tourism industry, which has been propelled by rising disposable incomes and government support for the sector. The site lists 300,000 properties in 345 locations around China, tailored to Chinese travellers. Private homes include the amenities you would find in a hotel: all properties are expected to have regular cleaning services, luxury villas come with a butler, and customers can choose to rent other items, such as bicycles, during their stay. The short-term property rental firm is the country's biggest, and is valued at more than £1.12 billion. The latest investment round raised £225 million from Chinese travel agent Ctrip.com, All-Stars Investment, China Renaissance's New Economy Fund, and G Street Capital.

said it was much less than £10 billion. Still, Liu insists on portraying their deal as a partnership, not a victory, in the process distancing herself from the aggressive "move fast and break things" Silicon Valley tech culture that Kalanick, in particular, embodied.

Partly, this is a clash of American and Chinese leadership styles. Where Kalanick was famously assertive, Liu describes herself as shy, saying she had to learn to speak up in business settings early in her career. "I'm just one of the many Chinese girls who see the merits of working hard, putting your head down," she says.

Her consensual approach was also informed by her own fight against cancer. "It was sort of like torture," she recalls of lying in a Beijing hospital in 2016. "But on that bed, I figured out that I will never regret what I do, if it's something I feel wholeheartedly."

"It's not about getting your big ego served," she says of running Didi, and the battle with Uber along with it. "It's not about winning or losing. If I think I'm winning, then going to that office would be the wrong idea."

首席技術官

BOB ZHANG IS THE GROUP'S 34-YEAR-OLD CHIEF TECHNOLOGY OFFICER.

A graduate of the elite Chinese Academy of Sciences and a former engineer at Baidu, Zhang joined Didi having first met Cheng Wei in the group's "very tiny office" back in 2012. Now, with his short, spiky hair and a dark blue shirt, he sits behind his cluttered desk in Didi's HQ, talking excitedly about the self-driving future.

Fully autonomous cars might take a few decades to arrive, Zhang says: "In ten years, I think the most likely model is a mix of autonomous vehicles and a human." At present, his plans are less advanced than rivals such as Alphabet's Waymo, which added 500 mini-vans to its self-driving fleet last year alone. By contrast, Didi is testing more than ten vehicles in China and the US, Zhang says. But as he looks to expand that number, he has one powerful weapon: vast amounts of data.

Didi operates 25m daily rides driven by around four million drivers. Together, these throw up "more than 70 terabytes", covering everything from where drivers go to how fast they drive. Poring through all this, Didi's machine learning algorithms "can show the future", Zhang says.

AI currently matches thousands of riders and drivers each minute, as part of a decision-making platform the company calls "Didi Brain". This already predicts where riders are likely to want cars 15 minutes ahead of time, guessing right 85 per cent of the time. As it seeks out more patterns, Zhang says, the system will see forward an hour, or even a full day, using reinforcement learning, a powerful AI technique in which computers learn via experimentation, much as a child might use trial and error.

Self-driving technology is also the main focus of Didi's new lab in Mountain View, California. Located not far from Google's headquarters, the facility opened last year, and now houses 100 researchers, part of a global team of more than 500 AI specialists. Zhang's own US focus is clear from his office, where his digital clock shows the time in Beijing and Silicon Valley. A photograph of his wife and young son sits on the shelf: the child's nickname is "Zuck", Zhang explains, in honour of Mark Zuckerberg and his decision to donate much of his fortune to charity, a move the Facebook founder announced around the time the child was born.

Zhang's new lab is working partly on safety, in the sense of stopping hackers tampering with his autonomous vehicle systems, or indeed the cars themselves. But the machines also pore over data drawn from sensors in driver's phones, showing acceleration patterns or sharp turns. Mix this with customer feedback on drivers, for instance, and the system learns to spot and punish impetuosity behind the wheel, while rewarding safer drivers with more fares.

Virtual and augmented reality is a second lab priority, and one Zhang studied at university. At first, car windshields and windows will become interactive displays, he explains, allowing drivers to see roads hidden by buildings. But when the machines are finally in control, the same screens will stream video calls, entertainment, or let riders peruse menus from restaurants up ahead.

RIGHT: JEAN LIU IN HER OFFICE AT DIDI'S BEIJING HQ. THE CALLIGRAPHY ON THE WALL BEHIND HER IS A BUDDHIST PROVERB WHICH ADVISES HUMILITY

NETEASE CLOUD MUSIC
Beijing
music.163.com

NetEase Cloud Music launched in 2013 as a music streaming service where users could create playlists of their favourite songs and videos. It then added a social media aspect that encouraged listeners to learn about the music and performers, and engage with friends. The Beijing-based startup, founded by William Lei Ding, has since grown to unicorn status – it's now valued at £870 million, attracting investment from China International Capital Corporation, Hunan TV & Broadcast Intermediary and Shanghai Media Group. As of April 2017, NetEase has 400 million users who have created around 600,000 playlists.

CAMBRICON
Beijing
cambricon.com

Cambricon is developing a brain-inspired processor chip that simulates human nerve cells and synapses to conduct deep learning. The Beijing-based startup, founded in 2016, was valued at £750 million in August following a commitment by the Chinese Academy of Sciences of £1.05 million for R&D. If successful, the chip will be the first processor to conduct deep learning by simulating human nerves. What sets the chips apart from existing neural networks that require thousands of GPU-based accelerators, is a more efficient design that uses less power. In 2016, it released its first chip, 1A, designed for smartphones, security surveillance, unmanned aerial vehicles, wearables and autonomous driving vehicles. The company, founded by brothers Chen Yunji and Chen Tianshi, has six investors, which includes Chinese e-commerce giant Alibaba Entrepreneurs Fund.


初心

新一代

BACK IN HER OFFICE, LIU IS PLANNING MORE PHYSICAL CHANGES TO VEHICLES, AS SHE WORKS WITH AUTOMAKERS TO DESIGN A "NEW GENERATION OF CARS" DESIGNED FOR SHARING.

Didi offers a few augmentations, including special air purifiers installed in many of its "Luxe" cars. But last year, it also signed a deal with NEVS, the successor to Saab, to build new electric vehicles, nearly a quarter of a million of which now operate on Didi's platform. Liu's sharing plans remain secret, but she drops hints: future cars will not have boots, as few passengers carry luggage; she imagines sitting in a "Volkswagen-designed sharing car," with "a beautiful glass window, to divide me and the other passenger."

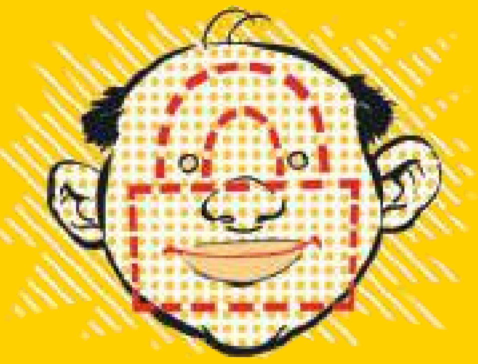
Improved design will help to fit more passengers into each car, but Liu says AI holds the key to making its service more efficient – and in the process, meeting China's burgeoning demand for rides. Didi executives can pull up real-time city maps on their laptops, which suck in data from millions of cars. The map of Beijing is divided into 15,000 hexagons, each just 500m across, with pulsating red dots showing traffic snarl-ups. "Every cell, every second," Liu says proudly of her algorithms. "Rainy day, sunny day, big day, work day, rush hour, peak hour. They are constantly learning."

Didi is not alone in investing heavily in AI; all of the big Chinese tech companies are pouring in money. Last year, President Xi Jingping issued a target to make his country the world's dominant AI power by 2030. Supported by the sheer size of its online population, not to mention China's relatively lax privacy laws, there is a determination to make it so.

But for Didi, machine learning helps solve more basic problems, like traffic signals. "They're sometimes manually operated every 90 seconds by someone sitting in a room," Liu says. In the eastern city of Jinan, Didi algorithms now power "smart" traffic lights,

SENSETIME
Hong Kong
sensetime.com

SenseTime is an AI startup that provides text, vehicle and face recognition to mobile internet financial services and security companies – and now, to Honda. The car manufacturer is focusing on AI and, in 2017, announced a partnership with SenseTime to power its autonomous cars in the future. The technology has also been used by Chinese authorities to track and capture suspects by identifying them using cameras in public spaces such as airports and at festivals. SenseTime was valued in July at £1.10 billion after raising a £307 million funding round through 19 investors, including Qualcomm, Star VC, IDG Capital and Infore Capital. Founded in 2014 by Xiaolan Xu, the startup is expected to expand overseas in the near future.



MEITUAN-DIANPING
Beijing
meituan.com

Meituan-Dianping is a little-known startup (at least in the west) that is best described as a mashup between Yelp, Groupon and Uber Eats. The company, formed through a 2015 merger, is now the world's fourth most valuable tech firm, coming in at £22 billion. Its platform delivers food, provides reviews, sells groceries, clothes and movie tickets, and has proved attractive to investors such as Tencent Holdings and Sequoia Capital, who contributed to its latest £3 billion funding round.

ABOVE, L-R: BIANCA YIN, TRAINING SPECIALIST, DIDI COLLEGE; MELODY TU, SECRETARY GENERAL OF DIDI WOMEN'S NETWORK

Much depends on the success of Didi's global move, not least its lofty $56bn valuation. Still, Liu starts with advantages, not least money. Most analysts think the company remains loss-making, but it has still raised $20 billion in total, and has cash reserves of $12bn. More could come via a mooted US floatation, almost certainly the largest since Alibaba's $25bn IPO in 2014.

which optimise patterns based on real-time car data, cutting congestion by ten per cent. Similar projects are under way in dozens of cities, along with plans to improve traffic lane management and bus systems.

Machine learning helps Didi manage its millions of drivers – most are working part-time – while learning the preferences of its passengers, notably their dislike of loud radios. Users of Didi's upscale Luxe service prefer drivers in smart uniforms, the machines discovered, although they didn't much care if their chauffeur opened their car door. An AI-powered arbitration system now also judges whether a driver or passenger is at fault when rides get cancelled, cutting complaints by more than a third.

Liu gives short-shrift to claims that Chinese tech firms are "copycats" picking up ideas born in Silicon Valley. With its vibrant smartphone culture and ubiquitous systems of mobile payments, she argues US companies are looking east for inspiration. "This is not copied *by* China. This is copied *from* China," she says, showing just the briefest flash of irritation.

Liu is yet to show off these capabilities abroad, but that too is about to change. Will Didi open its app in foreign markets? "We will," Liu says, coyly. When? "I would say we will do it rather soon." She declines to give specifics, although Reuters reported in December that Didi was planning to launch in Mexico. Then in January 2018, Liu struck another deal, buying Brazilian ride-hailing company 99Taxis (Didi previously invested $100m in the firm).

Didi's new Silicon Valley lab will also be "just the first" of a series of global research facilities, Liu says. She also does not entirely rule out an eventual foray into the US, although she says she prefers markets with just one other big existing ride-hailing competitor. Either way, her global expansion is now all-but certain to see Didi rekindle its hostilities with Uber, be that in the US or in other markets.

Yet there will be challenges too, not least avoiding the blunders Uber made during its foreign expansion, from regulatory rows to the boardroom battle that cost Kalanick his job. So far, Didi has been more fleet-footed, but expanding abroad still means adapting to unfamiliar foreign customers and regulatory systems.

As it grows, Didi could face heightened scrutiny at home, too. Some observers think Beijing's communist authorities are already worried about the might of their tech behemoths, and may in time curb their powers. There are early signs of trouble: regulations unveiled in 2016 made it harder for domestic migrant workers to drive private cars in Beijing, hitting Didi, which often relied on out-of-town labour. Liu admits the decision caused problems. "In the big cities like Beijing, and Shanghai, it will have some impact," she says, implying it made it harder to recruit drivers.

Some Didi drivers are fearful, including one from Hubei, a province close to Beijing, who took me for an evening spin across town in his well-maintained silver Kia. He wakes at 5.30am, he says, driving for ten hours a day, the most the app allows. A Didi enthusiast, he worries the new migrant regulations will force him to leave the platform. He is less anxious about robotic competition, mocking the idea that machines could master Beijing's treacherous streets. "It needs comprehensive skills to drive here," he says. "Your eyes need to look in six directions, and you need to hear in eight."

At present, Didi's business remains a curious hybrid of high-tech and low, pairing machine learning with millions of relatively low-skilled drivers. But its push for self-driving cars suggest a different future, with fewer humans, or indeed none at all. Liu says rapid growth will protect her driver's future. Didi accounts for just two per cent of car journeys in China, but it aspires to ten or more. "Think about how much bigger the market will get," she says. "We still can afford 20m drivers."

Ultimately, Liu faces a final, larger challenge. Where Uber and its US peers talk of upending established economic models, she wants Didi to be seen as a calming force. "You talk about why we're different from Silicon Valley firms, why we don't just talk about disruption," she says, suggesting some tech companies are insulated from the real-world risks her drivers and passengers face. "When you order something from an e-commerce company you don't expect to be killed or robbed, right? In this business, you do."

"You cannot afford to be disruptive, if you haven't thought about everything," Liu says finally, summing up the anti-Uber philosophy that will guide her during the battles ahead. "I think the key is: be humble. And be open minded. And not to think you know everything."

James Crabtree is associate professor at the Lee Kuan Yew School of Public Policy in Singapore. His book, The Billionaire Raj, *is published in mid-2018*

NIO
Beijing
nio.io

Beijing-based NIO, formerly known as NextEV, manufactures smart, electric and autonomous vehicles. Beside making cars for consumers, the company also participates in the FIA Formula E Championship, the world's first single-seater, all-electric racing series. Their NIO EP9 is a track-only, electric-powered, two-seater all-wheel drive supercar, which debuted in the Saatchi Gallery in London in 2016. In April 2017, NIO announced it would produce ten further EP9s for pre-order to public customers with £1.11 million to spare. Its concept car, scheduled for release in 2020, includes an AI digital assistant that learns and adapts to the needs of both driver and passenger. The auto-tech startup was founded by William Li in 2014, and it's now valued at £2.16 billion, with backing from 24 mainly Chinese investors.