China has Ambitions to be a Tech Giant in this two-part special of insight I travel across the country to understand how it is leading in two key areas renewable energy an artificial intelligence China has a large economy of scale the user case for AI technology is massive China aims to be a world leader in AI by 2030 with an industry worth $150 billion but behind all the ambitious talk where does Chinese AI really stand there's already a gap in between open Ai and the technology level that's being

overed by the Chinese equivalence and will the rest of the world trust artificial intelligence developed in China Chinese companies will always have that perception problem that the data they collect will be used for purposes other than purely commercial even if the truth is something [Music] [Music] else I've just arrived in Eon Beijing but my ride today is is different yes this taxi is driverless today Beijing is one of 10 cities in China where B's driverless ride hailing service Apollo go operates

the company launched a service in August last year the first of its kind for the country okay we look like we're approaching a traffic Junction I hope the cars stops in time okay it stopped that's quite cool I'm told that artificial intelligence controls things like which route the car takes when to start or stop and how fast it goes the car is picking up speed and it's going as fast as a normal car and 40 minutes later I've reached my destination Apollo Park where research and tests on these autonomous vehicles

are done here I'm meeting Wang Chong Chief brand officer of BYU intelligent driving group it's my first time in the driverless car so I was a little bit anxious but it was very eye opening um can you tell me how does it work fore these driverless taxis now serve the etang area in Beijing they can also be found in cities such as Shanghai guango shenen Wuhan and chonging U has been steadily expanding the fleet since its debut last year for the flywheel effects refers to how small winds in business help create

bigger winds in this case the more popular Robo taxis get the more of them there are on the streets feeding more data to the central AI brain data like traffic congestion the number of commuters and pedestrians and [Music] weather by 2014 China is expected to operate 12 million autonomous vehicles which is double that of the [Music] US B's Robo taxi is an example of how China is all in on AI after all the robo taxi success is achieved in part through State backing since 2015 legislation permits

and infrastructure support has expanded China's autonomous vehicle industry it's become part of the country's push for AI advancement to rival the US in the year of 2016 the then president of Barack Obama issued two documents policy initiative on promoting artificial intelligence in the US swiftly after the US government White housee released this two document on promoting AI in the year of 2017 Chinese government issued also one of the first most comprehensive National plan on AI development and even

until these days is the guiding document for Chinese AI development lay out the target lay out the agenda for Chinese AI development from the year of 2017 all the way until 2030 they wanted to achieve uh some significant portion of the AI industry in 2025 I think the target was 400 billion un uh and then I think they Ed the phrase Global dominance by 2030 and that's both from a a framework standpoint so regulatory standpoint as well as some portion of Investments and at the time that they put out the master plan they valued the

AI industry at about 1 trillion yen in 2030 AI is considered to be one of the most important transformative technology in the future and China has a large economy of scale the user case for AI technology is massive according to a PWC report the AI Revolution could see China adding 26% OR7 trillion us to his GDP by 2030 AI can support the country's shift to a consumer oriented economy as well as high-tech driven manufacturing and commerce economic benefits however are not its only impetus AI is like a double Ed sword on

one hand you got you got the uh potentially the positive impact to businesses and the society on the other hand it will also create perhaps some risks in particular in security risks uh so by definition China as well as any other governments who's looking at AI seriously will have to look at security as part of the whole thing it's been a key agenda across um many different countries so you see EU you see how much the US is also pushing it I think that the rhetoric is around having some kind of dominance in AI not only from a

industrial point of view but also from a a security point of view many uh countries think that uh this will give them key advantages in defense in security and in new types of industry and also boost productivity so I think it's a a global Phenomenon with the government backing AI the AI Market size is expected to exceed 26 billion US Dollar by 2026 the ordinary Chinese also supported to push being less wary of this burgeoning technology than their us counterparts a 2021 survey by market research firm ipsos saw 78% of Chinese

people agreeing that the advantages of AI outweigh the drawbacks versus 35% of Americans and if you look AI adoption can now be found in many places in China from the autonomous vehicle I just took to something more mundane gaming this startup over in hjo is experimenting with the use of AI to create a virtual detective game their online community of 200 members contributes story lines to a GPT or generative pre-trained Transformer model which creates clues for a player when prompted this is the same technology

used in chat GPT so there's a several different parts of we utilize the AI uh the first part is to use AI to generate game assets for example your cloth your feeling your skin and everything from the environment design from the game storytelling and we focus on the community with the story line we don't have to like a train our own model but we use fine tuning is much more like a teaching Ai and like um using our small data set to let AI know what is something we want I think it's convenient and far quicker to get a a

very quick respond from the generation I think it's around two to three months for us to actually launch this game I think it's super fast I think it only used 1/4th of the previous like traditional time to polish such a game at the moment though China lags behind the US in terms of AI advancement something made abundantly clear last year when we got a glimpse of the world's most popular AI chatbot so when open AI introduced US chck GDP last October uh actually the Chinese were caught by surprise a lot

actually the Chinese didn't really anticipate uh open AI was able to you know introduce such a powerful new new Tool in the in such a s manner uh but like many other things the Chinese uh would be doing the Chinese would quick to react to it and they would take this on as a challenge China Tech firms have launched their versions of generative chatbots one after another this year after getting the green light from the government and I think it's time to get up close with one of them I'm at jwin China's Silicon Valley

and I'm here to meet B's generated AI chatbot also known as Ernie bot let's see what it can do or say I'm going to ask Ernie about what it feels about chat GPT Ernie just answered in Chinese I'm going to ask it to translate for me into [Music] English okay Ernie believes chat GPT is a very promising model and development will bring convenience and Innovation to humans H let's see what Mak makes you different from other chatbots it says many differences it can conduct self-optimization and Improvement based

on feedback and the Gathering of more data although the answers it gave seems to be very similar to what other chatbots can do now I'm going to ask Ernie why is China Investing so heavily in AI so Ernie says that China is investing heavily in AI for economic development it's also for social needs as well as it's part of a national strategic status what social needs could AI address for that we'll have to make a trip to Hong Kong [Music] next China's population is aging fast by 2035 there will be 400 million people

aged 60 and over in the country almost double the number in 2019 as the elderly will soon make up a third of the population the demand for Health Services is expected to [Music] rise will there be enough doctors to cope with the country's need needs let's ask [Music] anbot so according to Ernie B the country has 1.4 billion people and 4.3 million doctors that works out to about three doctors per 1,000 people just above the minimum number of 2.5 doctors per 1,000 people recommended by the World Health

Organization adding to the problem medical resources are not evenly distributed between urban and rural areas AI could be the answer over in Hong Kong one startup has created an AI based health and wellness monitoring software our technology called vitals is basically a software-based technology that makes use of the regular camera of your smartphone your tablet or your webcam so your everyday device from actually selecting these regions of interest of the face like the cheeks or the forehead the specific areas that we

we observe the skin to be thinner uh those areas we can actually capture a larger signal specifically this the physiological signal in the body so from there we also move forward to actually apply different signal processing techniques to calculate this physiological signal from the color changes from our skin and then from there we we also have some Downstream uh Big Data models that are used to calculate the subsequent Vital Signs like our blood pressure like our cardiovascular disease risks and so

on it's estimated that China has over 150 Medical AI companies and a report by McKenzie expects advancements and AI for healthcare and Life Sciences to add $25 billion us to China's economy by 2030 and Tech like panop AIS May benefit rural areas in China where doctors and medical infrastructure are lacking with this technology it can function as an early screening tool provide more information to your physician and allow the physician to just provide in general Better Health Care to you another

application or big application for this technology would be surrounding healthy aging Elderly Care and even all the way to neonatal care these industries would traditionally require various types of contact based devices if we could shrink everything down into a iPad or or a smartphone then this will actually provide accessible and and and scalable health care for the the the general population as well this way AI could extend services to underserved [Music] communities in terms of inequality AI

hasn't really made an impact yet um but uh we can see some of the potentials there is a lack of access to high quality Medical Care in the least developed regions in China and some of the treatment can be given online as well one area has the most promise and that is in education for the least developed region in China U many areas in Central and western China has been having this problem of not being able to attract enough teachers enough good teachers to come to uh The Villages or the county [Music]

while China's Urban population has surpassed its rural the rural urban education Gap is widening AI might just level that playing [Music] field since the double reduction policy was announced in 2021 to reduce students academic burden private tuition centers were forced to shut down squirrel AI an education technology company was one of them prior to 2021 their Learning Centers had teachers around to assist students if they face difficulty answering a question on the AI powered Learning System sister now teachers are no longer

in sight at their centers instead it is AI virtual assistants who identify their learning gaps and teach them how to solve a problem the n in very dangerous n usually when the student starts this gorei we give test to them but uh the test is uh based on AI so when we give a very sorrow diagnostic for each student we can understand what scene what content what knowledge point they need this is a school AI learning tablet after the student have tested and we could give a knowledge map like this uh

the green part means this knowledge the student already understand but the red part means the student loophole by gradually understanding of the student we give different learning content for example teachers uh teaching videos to see if the student could understand and then give them exercises to train them so we can like 10 times uh make the education more efficient before that my my my English score is only 50% to 60% and sometimes I even feel the exam but after I use this system to study I have improved my

English score to to 90% because the system knows me a lot and and and I can save my time after 2 years the company has sold over 200,000 tablets in China's big cities but most students in China actually live in rural areas we have student from the tier one tier 2 City to very remote area at that area the teaching quality is really it's uh hard to believe so the student they need a good you know device that can help their kids to really learn and understand what they need to learn so in the past years we have uh helped more

than 10 million poor student to give them free schol AI account to let them have the best teaching quality so AI could be a way for the the government to address structural problems from inequality to an aging population to Resource [Music] security China has the world's second largest population food security has been one of the key concerns for Beijing a growing appetite mixed with decreasing arable land and farm workers mean China increasingly relies on food imports meanwhile climate change is

impacting yields intelligent agriculture is one of the areas highlighted in the 2017 National AI development plan along with intelligent medicine intelligent cities and intelligent manufacture in but there are some ways to go in some of these areas I don't think AI is that important yet when it comes to the Improvement of day-to-day life in food security China is still more reliant on the traditional technology in terms of irrigation uh Improvement of the seed technology and for the industrial sector the AI use is

wider but but still I wouldn't say the latest technology of AI has been that important for the industrial transition most of the Technologies used in Chinese Industries are still more related with automation to use machines uh to replace labor for now ai is still a Nas technology in China however the country is one of the fastest when it comes to Tech adoption as we've seen in things like mobile payments virtual reality and electric vehicles could the same acceleration happen with [Music] AI just wand around China and you can

see how widespread digital payments are today about eight in 10 Chinese adults use digital payments the Fletcher school at T University developed a digital intelligence index it measures a country's digital advancement on the y- AIS and pace of digitalization on the xaxis and China is here this means that while Chinese Tech is not the most advanced it has by far the fastest rate of digitalization in the past decades we have embraced and benefited greatly from the advancement of information communication technology and AI

Innovation is one of the tech breakthrough that we believe will bring great advantage and benefits to the society AI adoption is expected to be equally quick for example China now leads the world in AI patents but new technology is disruptive according to a prediction by Goldman Sachs artificial intelligence is expected to replace 300 million jobs worldwide for China One in five existing jobs could be cut in the next 20 years based on a report by PWC with youth unemployment reaching a record high of over 20% earlier in the

year this is a touchy subject let's ask Ernie what was the top Crossing Chinese movie in 2019 Ernie says the wanding Earth released before the pandemic this film heavily involved the use of computer generator imagery or CGI if wondering Earth was made today perhaps it could be done by artificial intelligence this short film was produced last year by production company versatile media it was awarded best visual effects for narrative short film at the 14th spark Animation Festival [Music] AI for Library

liary one scan of an actor's face can bring the director multiple [Music] benefits so we will not give up we will not in the US this issue was partly behind the actor's strike earlier this year members of the actor's guild picketed movie studios to stop films from replacing real actors with AI generated models meanwhile in China artists boycotted the social media site seongu in September the artists claim that the site's AI image generation tool trick AI was trained on their artworks without permission but Lee takes it all in

stride a necessary part of progress his production team has around 50 people 10 times smaller than before this is thanks to digital and AI tools for just like any other re solution that happened before when there's a drastic change in technology or new ways of working new jobs will be developed new job will emerge and one would expect that to happen as well in the new AI era and so to that extent you know I would expect that in China there will be new demands on new jobs that will be created because of AI but there will also be

older jobs that will be replaced because AI be become [Music] PA and then there is the issue of data data is essential to train artificial intelligence like the one behind squirrel ai's educational platform this data uh for example like like different uh questions and uh the different tag of the questions and uh how fast they finish this question and how fast they learn the knowledge point from zero to fully mastered uh and even their facial expression and all of these things we use all this datas to

understand the student much more than their teachers who have taught them for years so if we give them something too difficult it's uh out of their ability range we we can see in their face they're getting nowhere so we could adjust our model uh to be more more suitable for him and also sometimes the the student could get bored maybe he need um uh some rest or maybe change the scenario and uh make him feel fresh 3 years ago the firm won at tech reviews best AI education company award now it wants to look Beyond China's

Shores we want to expand to the US market and also the uh South Asia Market so we may go out of China like uh one year um ahead and we need one year to build our uh content for the international market but uh 80% of our system are actually the same we just change the content in English but not all countries are so ready to hand data over to Chinese companies one recent example is Tik Tok the popular social media platform with a billion Global active users each month its parent company bite dance was

accused of storing us users personal data in China and allowing Chinese authorities access to them if the CCP tells bite dance to turn over all data that Tik Tok has collected inside the US even within project Texas do they have to do so according to Chinese law Congressman first in the context of China there is a great fear justifiable or not that those data coming from for example Europe or the us back to to China will cause potential government surveillance by the Chinese government the fear of Chinese private

companies collecting data overseas uh to my observation is largely exaggerated we see certain companies setting up independent entity overseas which is under the leadership of local uh teams which follows local law and regulations I feel that it's very difficult to separate the politics uh from what is going around from a a data governance or data uh privacy kind of conversation um and Chinese companies will always have that perception problem that you know the data they collect will be used for purposes other than purely

commercial or may be used for purposes that are don't fit either the EU or the US Frameworks even if the truth is something else and this Cuts both ways China is also concerned that data of Chinese citizens are shared outside its borders and so it enacted a number of data security laws in 2021 1 companies which process crossborder data transfers of a million or more individuals personal information must now undergo a strict security assessment this move May further impede Chinese company's expansion

efforts China's regulatory framework now only uh allows Chinese users data to be used in China um that might uh hamper Chinese companies going abroad um and it also Al might include sort of tit fortat regulation or tit fortat actions by other companies right who want access to to China data so from a Industrial Development point of view that may be one drawback so the government has responded with several measures and some have uh quite significant impact uh for example in terms of the data release uh the

Beijing government has released a number of data from the state owned Enterprise and a state Affiliated Research Institute to the industrial sector uh that's related with AI so they can use those datas freely to develop their model in the future I can see that China probably will have to be more clear on what kind of data can be used for industrial purposes and what can be defined as the restricted data so China may have Ambitions to be the global leader in AI by 2030 but outside its borders is there a

market for Chinese AI [Music] [Music] products I've been traveling across China to find out about the country's developments in AI in July this year Beijing published a set of interim rules for generative AI it is the first country to do so the regulations aim to promote the healthy development and regulated application of this technology what this translates to are censorship and control according to the most recent regulation on generative AI content generated by generative AI need reflect the so-called socialist value meanwhile

it need to be moderated if it's generating any content which is politically sensitive or politically controversial Chinese government is more worried about this technology getting out of control because in contrast to machine learning the generative AI has this Innovative ability to have a different answer to the same question if you ask the same question to a generative AI it basically will give you a different answer based on the data set it can access and so far we have seen of course more Capital flowing into the AI

research and development but quite Limited in the generative AI related technology comparing to the machine learning the Chinese internet has been called one of the world's most sensored by the MIT review these same curbs will likely apply to AI data sets they might not want a tool that allows for a lot of different types of information when it comes to politics or elections that is out there and you can see from Ernie right if you ask Ernie certain questions about politics it tends to be rather quiet and so you may

question how viable that may be in terms of exporting that type of generative AI software abroad right where it may not be as good as some of its other competitors uh because of being quiet on certain issues one month after the regulations were released Chinese Rivals to chat gbt were made available to the [Music] public B's only bought user base has since reached 70 million not far behind chat gpt's 100 million weekly active users [Music] worldwide anniebot has been useful on my journey so far but if I compare it to

chat GPT it's not as robust or as refined the open AI people have a head thought on this and you know this whole learning process as you know is all learned by algorithms right the learning process is a multiplicative process and so once you have a head start it's very difficult in a way for the late comers to C catch up with you so there's already a gap in between the technology level that is being offered by open Ai and the technology level that's being over by the Chinese equivalence and there is one more

advantage that chat GPT has over its Chinese competitors one major constraint is the lack of data and that's quite counterintuitive because China has tremendous amount of data and the lack of protection really for uh when it comes to the privacy of consumers um but most of the global websites are written in English not Chinese only about 1.5% of the global websites are written in Chinese so that has created this uh dilemma for the local companies if they train their AI model with English then there's a very little user case in the

Chinese contest but for Chinese internet users they usually generate content or interact with the internet through super app on their phones and those super apps like WeChat or wayo they have uh walls we call them a w garden and that has created additional barriers for those AI models to pick up uh the data uh in either the mobile environment or from internet and that's a fundamental flaw there are also structural problems that Chinese AI firms have to address last year the US announced a ban on the sale of super Computing chips and

Advanced chipm Equipment to China AI specific chips like the Nvidia h800 and a800 were recently added to the band list these chips was specifically designed for the Chinese markets the Biden Administration also issued an order to restrict us investments into China I think that most of the the concerns comes with uh the application of AI to to Military and defense uh and that has always been a concern with uh with technology um and and and that will remain as long as these two powers are sort of uh in some sort of

rivalry in July FBI director Christopher Ray warned that cyber attacks by Chinese AI will present an unparalleled threat to the US for both the Chinese and US Government they believe that there are only a handful of technologies that are important for the next 20 years for China AI technology and the chips are the two top Cho choice for the Chinese government since most of the AI companies in China rely on foreign suppliers uh like tsmc or uh the industrial designers the chip designers like Nvidia the restrictions on their

design chips has become a major constraint for the future development for Chinese AI the China us relation is probably not going to improve significantly in the coming decade so China now Focus or stress very heavily on the self-reliance of Hightech I think that what it means from a practical standpoint is that China's AI developments comes at more cost so it might have to use uh different types of chips or more of them or or pay over the odds uh to get that type of technological uh advancements so it

increases the cost for China while Hardware has been grabbing the headlines there is also another layer to the AI Wars the talent pipeline China now produce for example about 1.4 million Engineers every single year uh and that is about four times as much as that in the US many of those talents uh in the AI industry would study abroad uh mostly in the US and work a few years for Tech giants like Google or Amazon and then come back to China but now this channel is mostly cut on many of those talents if they want to

work for both sides it has practically become impossible last October the US prohibited green card holders and foreign Nationals who live in the US to support China with technology in producing Advanced Computing chips and for Chinese local universities the technological knowhow in the industry is quite lagging or we do need more collaboration or more of a coming back of foreign talents or foreign professors in the relevant field to come to China and then we can have this kind of technological infusion throughout the

industry but now um that road seem to be closed more or [Music] less these are hurdles for China in the race for AI Supremacy but there's one thing that could allow the industry to catch up the full weight of the government behind it we do see that in the US there is this bottom up approach towards AI Innovation and in general technology breakthrough but in China the scenario is quite different in a sense that as we know the Chinese Society Chinese economy is very much government L AI will will

receive the most attention and some of most important fundings from the state so I have no doubt that China will catch up in many areas uh in the context of AI competition and eventually the two countries will be quite similar in their computational model um when it comes to the use of AI I can't say for sure that China is already at the top of the world in AI but CH is certainly at least one of the leaders is within the pack that's leading the world so is that is already pretty clear in my journey across China I was

surprised by how commonplace AI had become everyone wants in on the action from the classrooms to clinics to Cinemas the biggest challenge it seems lays outside its borders is from trust to Tech Beijing will have to convince the world of its AI viability if it wants to be a global Leader by 2030