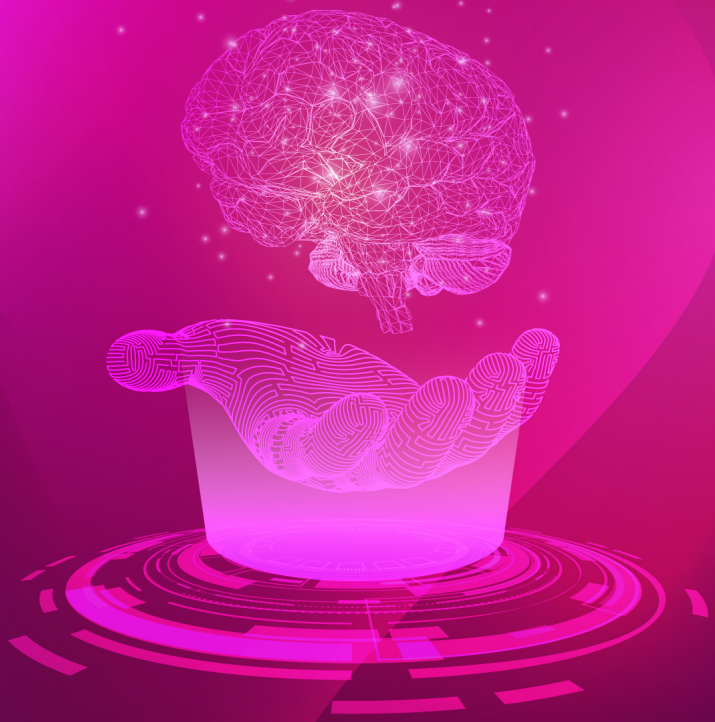
SUMMARY

AI SUPER-POWERS

KAI-FU LEE



QuickRead

FREE BOOK SUMMARIES

Summary of “AI Superpowers” by Kai-Fu Lee

Written by Lea Schullery

Learn how China was able to catch up to the US as an AI superpower and discover the future of artificial intelligence.

Introduction

When it comes to artificial intelligence, there's so much information out there that it's hard to know where to begin. Additionally, people are becoming more and more terrified about the future of our economy as experts already say that AI will have a devastating impact on blue-collar jobs; however, Lee believes that Chinese and American AI will have a strong impact on white-collar jobs as computers become more efficient at diagnosing diseases and providing treatments. Many other experts discuss their solutions to the problem of job losses, including a universal basic income, but Lee discusses an even more radical solution. After struggling with a major health crisis, Lee had a revelation about the future of AI: computers and robots will never be able to replace human-to-human interaction. Therefore, Lee suggests that our government and society adopt a drastic change in mindset to live in a world where humans and AI coexist while simultaneously making our lives more meaningful.

The Rise of Artificial Intelligence

In today's world, the topic of AI Intelligence has come to the forefront of our minds. It was only a few years ago that the topic of artificial intelligence primarily lived in academic research labs and science fiction films. Today, AI is filling the pages of our newspapers as people begin to unleash its powers which already controls our favorite apps and will even be driving our cars in the coming years. The topic is so popular, it has even trickled into the minds of children as young as five-years-old.

When visiting a Beijing kindergarten, Lee was bombarded with questions like, "Are we going to have robot teachers?" "Will people marry robots and have babies with them?" "Are computers going to become so smart that they can boss us around?" and even, "If robots do everything, then what are we going to do?" These questions echoed the many questions that most people have about the future of artificial intelligence. More importantly, however, these questions reveal the growth of AI in the country of China.

You see, it wasn't long ago that China was far behind, maybe even decades behind, the United States in artificial intelligence. However, over the past three years, China has caught "AI fever" and has seen a surge in excitement and enthusiasm which has led to China's growing strength in the field. Today, China has become an AI superpower, the only true national counterweight to the United States in this emerging technology. However, these questions from those young students reveal an even deeper truth about artificial intelligence: everyone is just as confused about the future of AI as these kindergarteners.

So where did artificial intelligence even begin? Well, the history of the topic dates back to the mid-1950s when the pioneers of artificial intelligence sought to "recreate human intelligence into a machine." The goal drew in some of the greatest minds, including Marvin Minsky, John McCarthy, and Herbert Simon. However, it wasn't until the early 1980s when Lee began his own journey in the field. By the time Lee began his Ph.D., artificial

intelligence was separated into two camps: the “rule-based” approach and the “neural networks” approach.

The rule-based approach attempted to teach computers how to think by encoding logical rules: If X, then Y. However, this approach proved to be difficult when possible choices expanded. The neural networks camp, however, attempted to teach computers through trial and error, similar to how the human brain works. Essentially, computers teach themselves as they identify patterns within the data. Unfortunately, progress was hindered until the dawn of the smartphone age when Geoffrey Hinton discovered a way to train new layers in neural networks. This became known as the “deep learning” revolution. This breakthrough led researchers, futurists, and tech CEOs to begin buzzing about the potential of artificial intelligence. Suddenly, technology was able to recognize patterns, optimize for specific outcomes, make decisions, and essentially solve so many different kinds of everyday problems.

China's "Sputnik Moment" that launched an AI Revolution

While the field of artificial intelligence was booming in countries like the United States, Canada, and the United Kingdom, China was nowhere to be found. It wasn't until China's "Sputnik Moment" in 2016, a full decade behind those other countries, that China decided to come onto the scene of AI.

In October of 1957, the Soviet Union launched the first human-made satellite into orbit, which sparked the American government to take action. With fear surrounding Soviet superiority in technological advancement, Americans quickly created the National Aeronautics and Space Administration (NASA) and began funding for math and science education. Thus began the race to space, and just twelve years later, American Neil Armstrong became the first person ever to set foot on the moon. China went through a similar situation in March 2016 when champion Go player, Lee Sedol, attempted to beat one of the world's most intelligent machines, AlphaGo.

The Chinese game of Go, similar to chess, is far more complicated with more combinations than atoms in the universe. While Americans barely noticed, these games between AlphaGo and Sedol drew in more than 280 million Chinese viewers, and after the five-game series, AlphaGo won four-to-one against the legendary champion. Overnight, a fire was lit under the Chinese technology community as they poured greater funding, policy support, and national coordination into the industry, eventually surpassing the United States for the first time.

So how did China get to where they are today? While Silicon Valley frowns upon "copycat" ideas, China has vastly different views and essentially copied everything Silicon Valley was doing. During this time, Americans and other Western countries failed to recognize the power that China was gaining. For instance, Wang Xing was a notorious copycat of Silicon Valley

as he copied sites like Friendster, Facebook, Twitter, and Groupon, almost pixel-by-pixel from their American counterparts. In the process, Wang learned not only how to design products but also how to improve them in the increasingly cutthroat Chinese market.

Because “copycat culture” is so prevalent in the Chinese market, competition is fierce which forces companies to become even more innovative to outdo their competitors, a stark contrast from Silicon Valley where copying is stigmatized. In early 2010, Chinese websites copying Groupon’s group-discount model were popping up everywhere. In the end, Wang Xing’s Meituan beat out the competition due to its ability to constantly adapt. Wang expanded on Groupon’s structure, adding movie tickets, domestic tourism, and even food and grocery delivery to its list of services. Groupon, on the other hand, failed to innovate and sold for less than half its IPO. In the meantime, Meituan is worth $30 billion, ahead of Airbnb and Space X, making it the fourth most valuable startup in the world.

China’s Silicon Valley

China’s answer to Silicon Valley became Zhongguancun (pronounced “jong-gwan-soon”) and while they are similar in theory, their practices are vastly different. The culture in Silicon Valley may be innovative; however, they tend to have a “light touch” when it comes to controlling a market. For instance, food delivery apps simply connect users with a delivery driver and leave the rest to the restaurants.

China, for instance, aims to control the process from the top to the bottom. They don’t simply want to manage food orders, instead, they also own the motorbikes, hire the delivery drivers, and control the payment. Similarly, their version of Uber, called Didi, not only hires drivers but also owns the gas stations and repair shops to keep their rides in service. This revolution is known as O2O: online-to-offline. The reason behind this heavy touch approach is to prevent copycat startups from duplicating their service.

In 2011, technology company Tencent launched the social messaging app WeChat in response to an increase in mobile-first internet users. Those are uses whose only introduction to the internet was through smartphones due to the high price of desktop or laptop computers. This phenomenon of mobile users contributed to the innovation behind WeChat, becoming more than just a social messaging app. In other words, WeChat became the only app you could ever need.

In addition to chatting with friends on WeChat, you can also order food for delivery, buy groceries, movie tickets, and even plane tickets! But it doesn’t stop there, you can also unlock a shared bike, book a doctor’s appointment, order a prescription, buy some stocks, and even pay for all of these things without ever leaving the app. With the introduction of WeChat Wallet in 2014, China started utilizing mobile payments at fifty times the rate of Americans, totaling more than $17 trillion in 2017. Suddenly, China was not only becoming a cash-free society, but it was also innovating at a faster rate than Silicon Valley.

The driving force behind China's growth was the government's mass innovation campaign, which gave people incentives for those willing to begin a tech startup company. They were subsidizing rent, investing in Chinese tech companies, and reducing their regulations. These incentives not only quadrupled the number of startups, but also quadrupled the government's guiding funds, and in 2015, the Chinese government invested $27 billion in tech startup companies.

The Internet and Business Waves of AI

When it comes to artificial intelligence, four waves are affecting our lives. The first is internet AI which you've likely already experienced. If you watch YouTube, listen to Spotify, or even buy recommended products on Amazon, then you've been targeted by a recommendation engine. By using an AI algorithm, the internet is getting better and better at recommending products we might like and, ultimately, making money.

China, however, has an immense advantage over other countries in the world of internet AI which boils down to its massive user base. In fact, more Chinese people use the internet than the United States and Europe combined; additionally, they have the advantage when it comes to a population of users ready to make online payments to content creators. WeChat Wallet, for instance, allows people to send payments to their favorite online content creators, which fosters more innovation.

Next is the wave of business AI, an area in which the United States has a much bigger advantage over China. This is largely in part due to America's vast record-keeping which allows them to pull from large data sets to make more accurate predictions, thus more accurate decision-making. China, on the other hand, doesn't necessarily have a centralized data system and outsources much of its data, making business AI much more difficult.

One exception, however, is China's mobile services like Smart Finance. Since China skipped the credit card revolution and went straight to online payments, this also means they did the same for personal loans. Through WeChat, Smart Finance allows users to make loans without taking financial history into account. Instead, the app will access data on your phone, including how quickly you type in your date of birth and how much battery power your device has. The app then makes a lending decision based on millions of other users' data and has proven to be a reliable loan service for migrant workers and other underprivileged populations.

While Lee argues that the U.S. has a 90-10 advantage over China in business AI, he believes that China will soon make advancements, particularly in the fields of medicine and law. For instance, with a larger population, doctors in China are becoming overwhelmed and turning to AI to help them make more accurate diagnoses while overwhelmed judges are searching for ways to pass down fair sentences.

The Waves of Perception and Autonomous AI

Imagine walking into the grocery store and grabbing a grocery cart. However, this is no ordinary grocery cart. Instead, this cart recognizes you, knows what you typically buy, and even knows what items are running low in your fridge. After scanning your face, your grocery cart presents you with a seamless list of items and even recipes that you might like to try. The best part? You never have to pay. Since the grocery cart knows who you are, your bill is automatically deducted from your WeChat account. It will even remind you of your partner's favorite wine as you approach the wine section. This is the future of Perception AI which deals with a computer's ability to recognize objects and sounds, much like the way the human brain does.

Perception AI essentially blurs the worlds between offline and online, which Lee refers to as OMO: online-merge-offline. This OMO application is already being used in Shenzhen, China (the hub of technological manufacturing) with the Xiaomi line of products similar to Amazon's Echo. However, the Xiaomi line also includes AI-enhanced speakers, refrigerators, rice cookers, and even vacuum cleaners, all of which are incredibly affordable. This manufacturing advantage gives China a 60-40 lead over the U.S. in perception AI. This advantage will only grow wider in the next few years as Americans and Europeans become more skeptical about user privacy, something that the Chinese population is willing to give up in favor of convenience.

The final wave is autonomous AI, which is simply the culmination of the first three waves. This kind of technology puts robots in place of humans, and Lee predicts that one day we will be using autonomous swarms of drones to paint our houses, fight forest fires, and even provide disaster relief. Of course, the most commonly discussed application of autonomous AI is self-driving cars. Companies like Google and Tesla are already way ahead in the game, transforming motorways to become compatible with driverless cars which will be introduced in just a few years to come.

When it comes to autonomous AI, the United States has about a 90-10 advantage and China is still years behind. However, China is already building roads (a highway the size of Chicago) specially designed for AI vehicles, equipped with sensors in the pavement, solar charging panels, and traffic lights that can “see” cars and pedestrians. So in as little as five years, China and the U.S. could become evenly split at 50-50.

The True Threat of Artificial Intelligence

As AI begins to grow, more and more people are beginning to fear how robots will affect the future. Some go as far as to believe that robots will eventually rebel against the human population leading to a war between robots and humans. This scenario, however, is far from reality and is not a valid threat as humanity is nowhere near being able to create Artificial General Intelligence that can think, feel, and act like a human.

The real threat, many believe, is AI's replacement of jobs. In 2013, Oxford University conducted a study that found that AI could eliminate up to 47 percent of jobs. However, economists' opinions on this topic drastically differ. Many reports following the 2013 Oxford study revealed automation is more likely to replace certain tasks, but not entire jobs. For instance, many jobs require social aspects that artificial intelligence just simply wouldn't be able to do.

As more people studied the risk of automation and artificial intelligence, more and more organizations began to reveal their varied findings. The Organization for Economic Cooperation and Development (OECD) believed that only 9 percent of U.S. jobs were at risk whereas PriceWaterhouseCoopers (PWC) revealed they think that 38 percent of jobs were at risk due to automation. These discrepancies remain a big reason as to why economists remain divided on the issue. However, the one thing these studies have in common is their failure in accounting for industries that may become fully disrupted by AI from the ground up.

We see this already through companies like Smart Finance, the personal loan company in China that doesn't employ any lending officers. Therefore, these businesses won't be adding automation and then firing employees, instead, they'll be displacing loan officers from the ground-up and disrupt about 10 percent of the job market, a total of 40 to 50 percent in the next ten to twenty years. Of course, Lee argues that these numbers are where the

technology has the potential to exist, but not every company will immediately utilize it.

A Shift in Thinking

Before 2013, Lee was what he called a “workaholic,” defining his success by what he put into his work and putting his work ahead of his family. But all that changed in 2013 when Lee was diagnosed with stage IV lymphoma. When faced with death, Lee realized that his work meant nothing and that his priorities lie in his family and relationships. Money and fame were no longer important to him.

His journey through chemotherapy made him realize the relationship between AI and humans. Sure, Lee’s life, you could say, has been saved due to the science and technology behind his diagnosis and treatment, science that could certainly be replaced by AI. However, Lee believes that it was his loved ones and the supportive community that truly helped him beat his cancer. It was through this experience that Lee changed his worldview and recognized how humans can coexist with AI to make the world a better place.

For instance, doctors will soon be outpaced by AI in that computers will be more accurate in diagnosing and treating patients. But how many people will want to be treated by a machine? Therefore, Lee believes that medical professionals should work on the compassionate side of their work. They should begin training people in how to operate AI and also in communicating with, consoling, and emotionally supporting their patients. This transition would bring in “compassionate caregiver” jobs in which eight years of schooling is unnecessary, thus bringing the costs of caregivers down while improving the quality of healthcare for everyone.

There are many ways in which people are discussing how to offset displaced workers. For instance, some believe that shortening work weeks to three or four days, or fewer hours per day, can allow more people to take on the same job; however, Lee sees this solution as resulting in a decline in income and may not be viable long term. The more socialist approach to this problem is through a Universal Basic Income (UBI) in which wealth is

redistributed and each citizen receives a stipend from the government that covers the basic living expenses.

While a UBI is good in theory, Lee proposes that we take an even more radical approach. Lee suggests that the government create a social investment stipend. In other words, those who invest their time in care work, community service, and education should be rewarded. This change would change our economically driven economy into a socially-productive one. If these incentives were given, people would be more encouraged to care for an elderly parent or even lead an afterschool program. Lee argues this system would reinforce the values that we should be focused on: compassion.

Final Summary

Since as early as the 1950s, we have been exploring the potential of artificial intelligence. What started as an industry in western countries, quickly became a worldwide phenomenon as China not only entered the scene, but also revolutionized the technology and quickly became an AI superpower. This advancement is in large part due to China's government that helped promote tech startup companies and foster innovation. While AI is changing how we live worldwide, people are becoming increasingly concerned about the future of the economy. As AI continues to become more advanced, the threat lies in devastating job losses. However, if we shift our thinking to a more socially-focused society and reward jobs that require compassion and human interaction, then we can effectively coexist with AI and make our world a better place.