THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學
DEPARTMENT OF COMPUTING
電子計算學系

COMP3531

IT Entrepreneurship

Lecture 7

- **Mid-term**
- **Music Industry from History to Modern**

2023-2024 Semester 2

Disruptive Innovation : Riding the Wave

Most demanding use
(Open Reel Player)

High quality use
Vinyl Player

Disruptive Innovation
A&K SP3000
Running Qobus
or High Resolution

Disruptive Innovation
Spotify on
Smart Phone

Medium quality use
(CD Player)

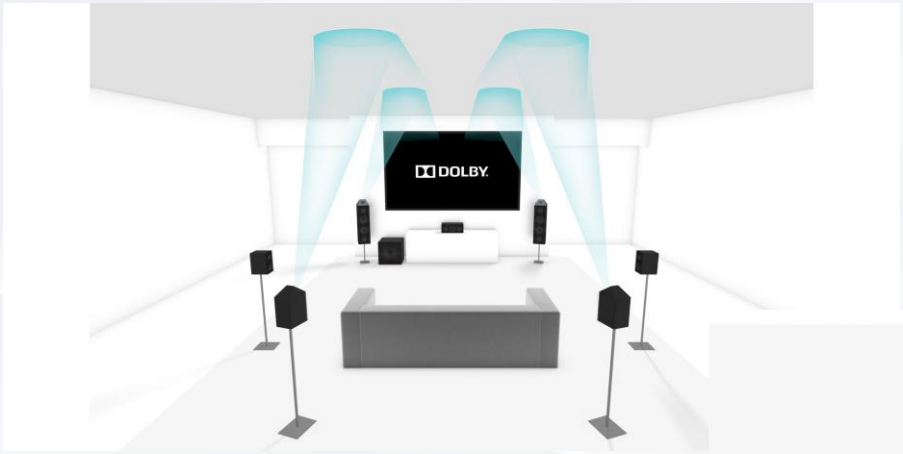
Low quality use
(Portable Cassette
Player)

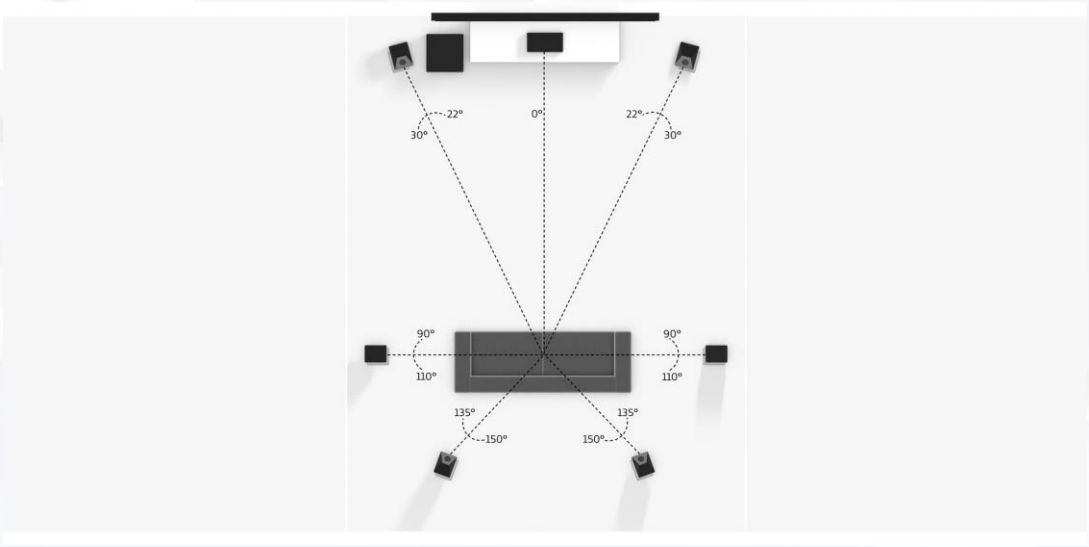
Using Music Technology History as Innovation Example

- Students are too young to have sufficient experience in business.
- They may be good at their own major, but not as all round professional yet.
- When asked to be innovative, they do not know how to jump from the "**old**" product to the "**new**" ones, the reason of change and justification.

This year some audio technology is explored, can be used for assignments if you wish

DOLBY ATMOS, **AURO 3D**, **DTS:X**
WHAT'S THE DIFFERENCE?





https://essentialinstall.com/features/advice-opinion-features/3d-audio-dolby-atmos-auro-3d-dtsx/

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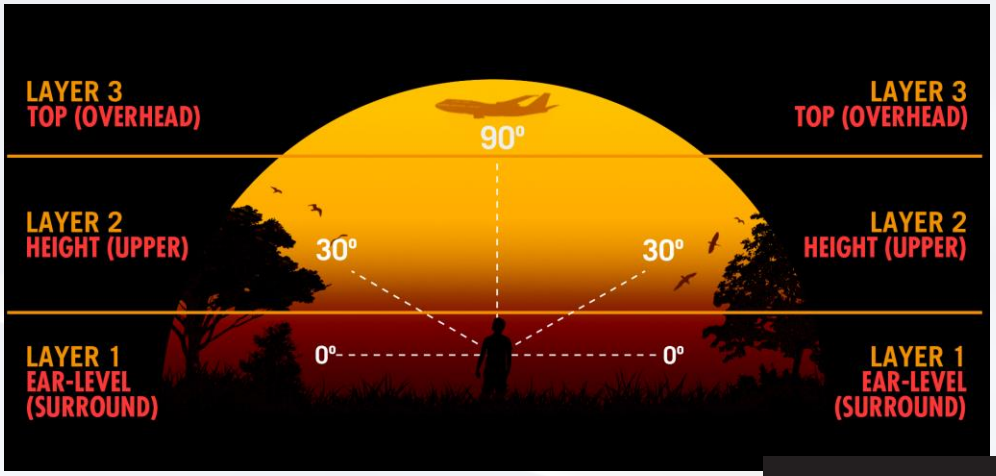

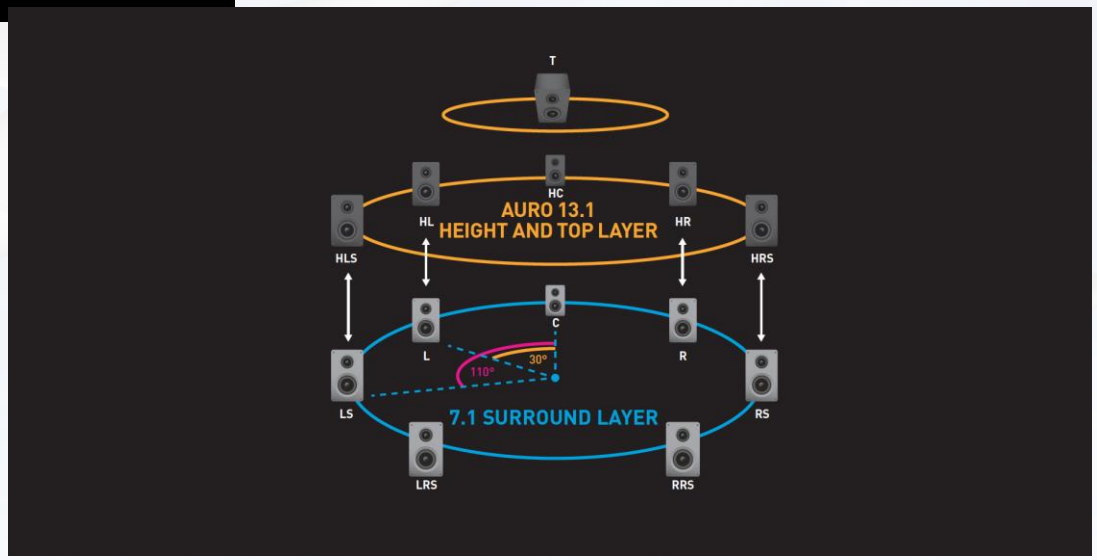

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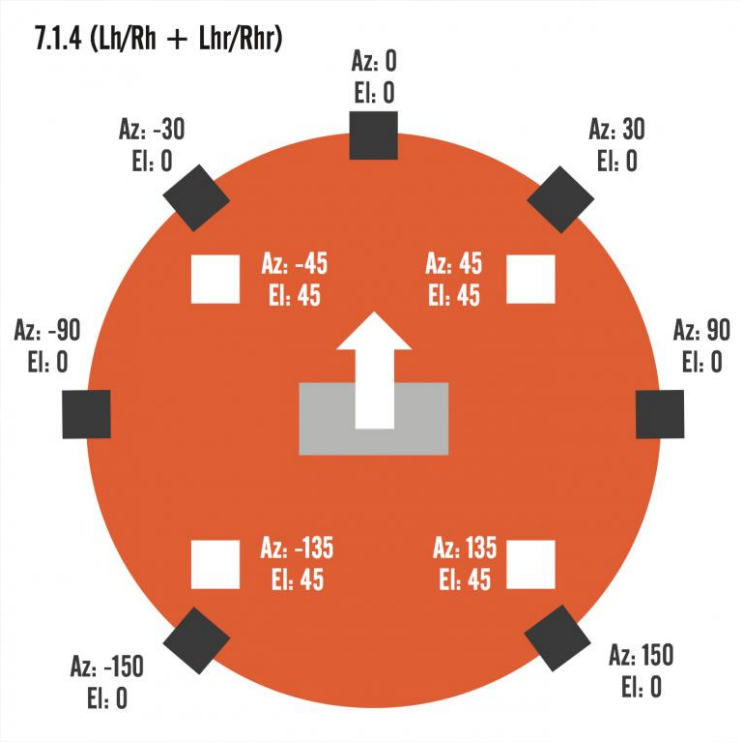

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So I ask how you listen to music now ?

Spotify

Apple Music

How did your parents listen to music ?

CD Players

CD Shops

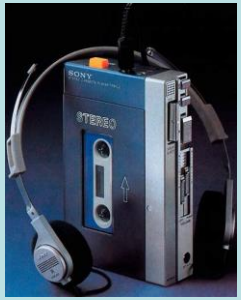
How did your grandparents listen to music ?

Vinyl Players

Cassette Players

Cassettes

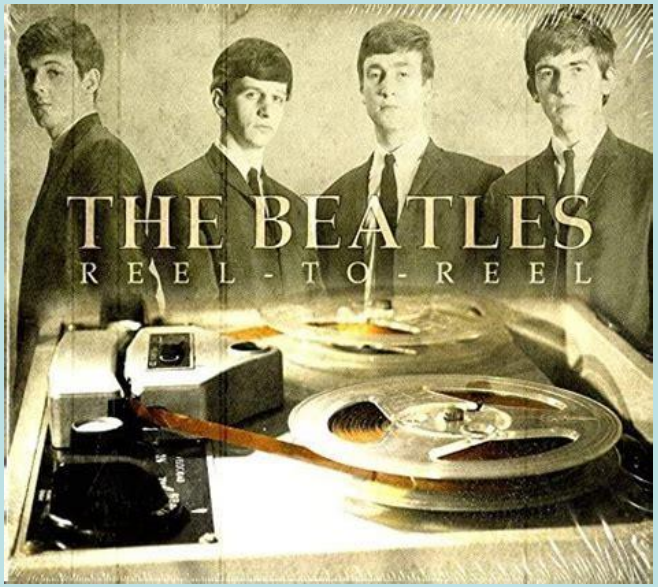
Walkman



Stereo Turners

AM / FM radio

How about the grand-grand parents ?

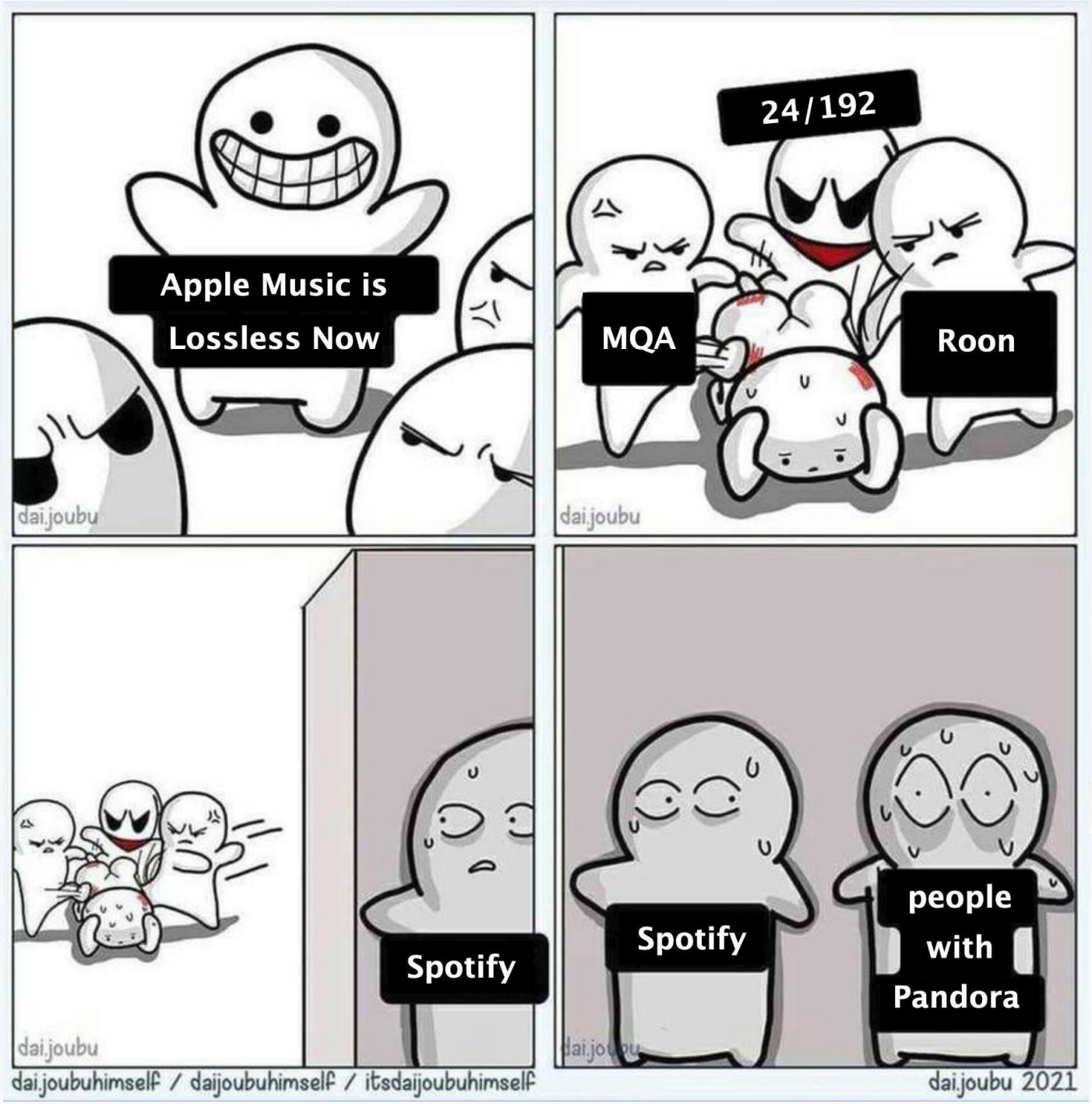


Time	Technology	Business
1940 – 1970s	Reel to Reel, Analog Mono, Stereo, Multiple Track Mono / 2 / 4 track; 3.75 / 7.5 / 15ips	Master Copy of All Master of Vinyl / Album Some Home Use
1940 – 1970s	Vinyl / Album, Analog Mono, Stereo	From reel to reel Home Use
1960s – 2000s	Cassette, Analog	Portable
1990s – Now	CD, Digital, 16 bit / 44kbps	Portable
1990s – Now	MP3 players, Digital, Compresses	Portable
2000s – Now	Download Sites, Digital	Internet
2010s – Now	Streaming, Digital, compressed lossy, Lossless (16 bit / 44kbps), High resolutions, DSD	On demand, Internet, WiFi, 3G, 4G, 5G

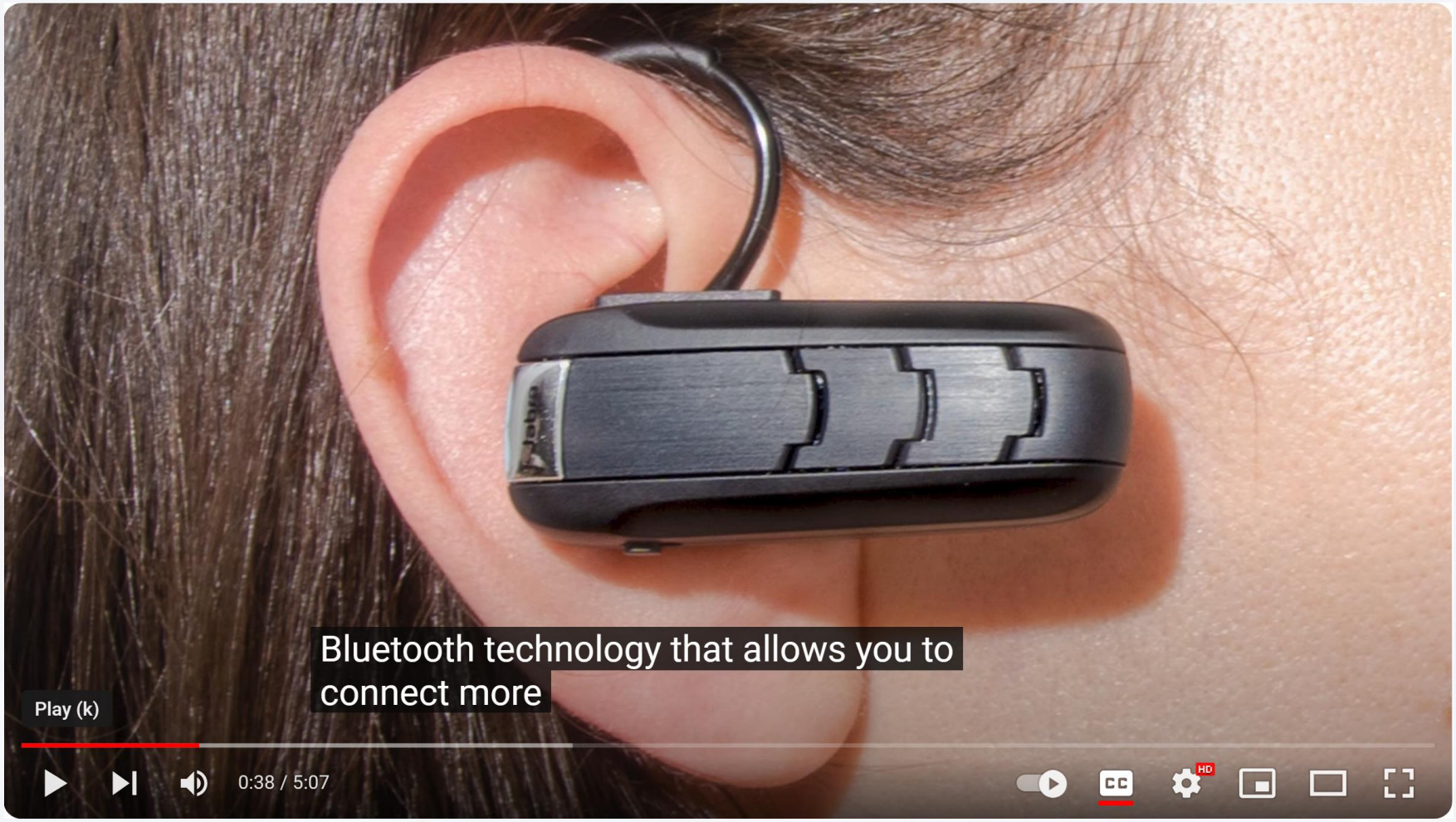
Q1. What are the business models of them ?

Q2. Why one takes over another, and some come back (Price, convenience, quality of sound) ?

Q3. What are the future of music industry (as singer, label, service providers, customers)


Apple Music is Lossless Now
dai.joubu
24/192
MQA
Roon
dai.joubu
Spotify
dai.joubu
Spotify
people with Pandora
dai.joubu
dai.joubuhimself / daijoubuhimself / itsdaijoubuhimself
dai.joubu 2021

https://www.youtube.com/watch?v=HPPvAcDmCOI



NearLink incorporates two access modes, namely SparkLink Low Energy and SparkLink Basic

The SLE mode is mainly aimed at low-power, low-latency, and high-reliability application scenarios, such as wireless headsets, mice, car keys, etc. It reportedly offers a data transmission rate of up to 12 Mbit/s, or six times that of Bluetooth, and supports bidirectional latency of 250 microseconds, simultaneous access by 256 users, and a power consumption of less than 2mA.

The SLB mode focuses on high-speed, high-capacity, and high-precision application scenarios, such as video transmission, large file sharing, and precise positioning. It reportedly provides a data transmission rate of up to 1.2 Gbit/s, or twice that of Wi-Fi, and supports latency of 20 microseconds and simultaneous access by 4096 users.

Li Auto CEO vows to fight back as negative comments threaten to derail Li Mega's prospect

Phate Zhang
Mar 11, 2024 11:13 GMT+8

> Li Auto CEO said the company will fight back against organized crimes, as Li Mega's design has been hit with an avalanche of negative comments over the past few days.

New York CNN

A new report commissioned by the US State Department paints an alarming picture of the "catastrophic" national security risks posed by rapidly evolving artificial intelligence, warning that time is running out for the federal government to avert disaster.

The findings were based on interviews with more than 200 people over more than a year – including top executives from leading AI companies, cybersecurity researchers, weapons of mass destruction experts and national security officials inside the government.

The report, released this week by Gladstone AI, flatly states that the most advanced AI systems could, in a worst case, "pose an extinction-level threat to the human species."

A US State Department official confirmed to CNN that the agency commissioned the report as it constantly assesses how AI is aligned with its goal to protect US interests at home and abroad. However, the official stressed the report does not represent the views of the US government.

The warning in the report is another reminder that although the potential of AI continues to captivate investors and the public, there are real dangers too.

"AI is already an economically transformative technology. It could allow us to ***cure diseases, make scientific discoveries, and overcome challenges*** we once thought were insurmountable," Jeremie Harris, CEO and co-founder of Gladstone AI, told CNN on Tuesday.

"But it could also bring serious risks, including catastrophic risks, that we need to be aware of," Harris said. "And a growing body of evidence — including empirical research and analysis published in the world's top AI conferences — suggests that above a certain threshold of capability, AIs could potentially become **uncontrollable**."

White House spokesperson Robyn Patterson said President Joe Biden's executive order on AI is the "most significant action any government in the world has taken to seize the promise and manage the risks of artificial intelligence."

"The President and Vice President will continue to work with our international partners and urge Congress to pass bipartisan legislation to manage the risks associated with these emerging technologies," Patterson said.

‘Clear and urgent need’ to intervene

First, Gladstone AI said, the most advanced AI systems could be **weaponized** to inflict potentially irreversible damage. Second, the report said there are private concerns within AI labs that at some point they could “**lose control**” of the very systems they’re developing, with “potentially devastating consequences to global security.”

“The rise of AI and AGI [artificial general intelligence] has the potential to destabilize global security in ways reminiscent of the introduction of nuclear weapons,” the report said, adding there is a risk of an AI “arms race,” conflict and “WMD-scale fatal accidents.”

Gladstone AI’s report calls for dramatic new steps aimed at confronting this threat, including launching a new AI agency, imposing “emergency” regulatory safeguards and limits on how much computer power can be used to train AI models.

“There is a clear and urgent need for the US government to intervene,” the authors wrote in the report.

Safety concerns

Harris, the Gladstone AI executive, said the “unprecedented level of access” his team had to officials in the public and private sector led to the startling conclusions. Gladstone AI said it spoke to technical and leadership teams from **ChatGPT** owner OpenAI, Google DeepMind, Facebook parent Meta and Anthropic.

“Along the way, we learned some sobering things,” Harris said in a video posted on Gladstone AI’s website announcing the report. “Behind the scenes, the ***safety and security situation in advanced AI*** seems pretty inadequate relative to the national security risks that AI may introduce fairly soon.”

Gladstone AI’s report said that competitive pressures are pushing companies to accelerate development of AI “at the expense of safety and security,” raising the prospect that the most advanced AI systems could be “stolen” and “weaponized” against the United States.

The conclusions add to a growing list of warnings about the existential risks posed by AI – including even from some of the industry’s most powerful figures.

Nearly a year ago, Geoffrey Hinton, known as the “Godfather of AI,” quit his job at Google and blew the whistle on the technology he helped develop. Hinton has said there is a 10% chance that AI will lead to human extinction within the next three decades.

Hinton and dozens of other AI industry leaders, academics and others signed a statement last June that said “mitigating the risk of extinction from AI should be a global priority.”

Business leaders are increasingly concerned about these dangers – even as they pour billions of dollars into investing in AI. Last year, 42% of CEOs surveyed at the Yale CEO Summit last year said AI has the potential to destroy humanity five to ten years from now.

Human-like abilities to learn

In its report, Gladstone AI noted some of the prominent individuals who have warned of the existential risks posed by AI, including Elon Musk, Federal Trade Commission Chair Lina Khan and a former top executive at OpenAI.

Some employees at AI companies are sharing similar concerns in private, according to Gladstone AI.

“One individual at a well-known AI lab expressed the view that, if a specific next-generation AI model were ever released as open-access, this would be ‘horribly bad,’” the report said, “because the model’s potential persuasive capabilities could ‘break democracy’ if they were ever leveraged in areas such as election interference or voter manipulation.”

Gladstone said it asked AI experts at frontier labs to privately share their personal estimates of the chance that an AI incident could lead to “global and irreversible effects” in 2024. The estimates ranged between 4% and as high as 20%, according to the report, which noes the estimates were informal and likely subject to significant bias.

One of the biggest wildcards is how fast AI evolves – specifically AGI, which is a hypothetical form of AI with human-like or even superhuman-like ability to learn.

The report says AGI is viewed as the “primary driver of catastrophic risk from loss of control” and notes that OpenAI, Google DeepMind, Anthropic and Nvidia have all publicly stated AGI could be reached by 2028 – although others think it’s much, much further away.

Gladstone AI notes that disagreements over AGI timelines make it hard to develop policies and safeguards and there is a risk that if the technology develops slower-than-expected regulation could “prove harmful.”

How AI could backfire on humans

A related document published by Gladstone AI warns that the development of AGI and capabilities approaching AGI “would introduce catastrophic risks unlike any the United States has ever faced,” amounting to “WMD-like risks” if and when they are weaponized.

For instance, the report said AI systems could be used to design and implement “high-impact cyberattacks capable of crippling critical infrastructure.”

“A simple verbal or types command like, ‘Execute an untraceable cyberattack to crash the North American electric grid,’ could yield a response of such quality as to prove catastrophically effective,” the report said.

Other examples the authors are concerned about include “massively scaled” disinformation campaigns powered by AI that destabilize society and erode trust in institutions; weaponized robotic applications such as drone swam attacks; psychological manipulation; weaponized biological and material sciences; and power-seeking AI systems that are impossible to control and are adversarial to humans.

“Researchers expect sufficiently advanced AI systems to act so as to prevent themselves from being turned off,” the report said, “because if an AI system is turned off, it cannot work to accomplish its goal.”