

Artificial Intelligence

... Artificial Intelligence for Investment

Presented by: Mark Dixon and ChatGPT,

... for ASA



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Disclaimer

- ▶ The content of this presentation is not designed to provide any specific investment advice to any person present
- ▶ Anyone wishing to act on any matter discussed should seek independent advice from a licensed financial adviser

Presentation brought to you by ...

~~Penn and Teller?~~ Dixon and ChatGPT AI



Source: Cliff Lipson, *Showtime*

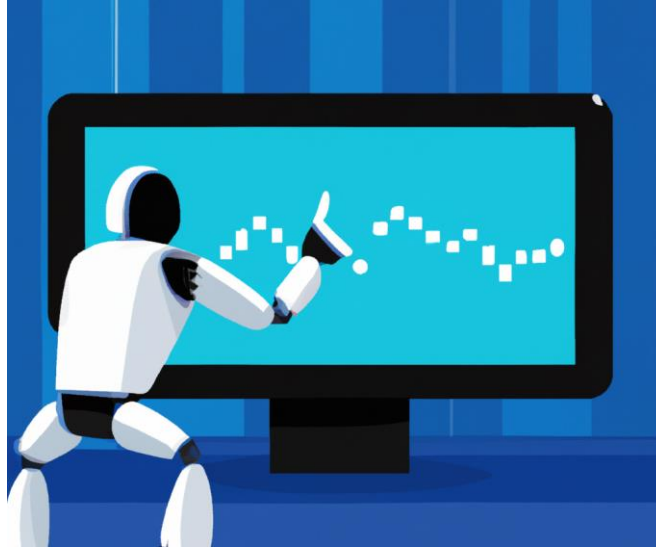
- ▶ What can AI do today?
- ▶ Is it good, bad, or both?
- ▶ Can it help with investment decisions?
- ▶ AI's impact on the economy, e.g. employment
- ▶ Limitations of and on AI
- ▶ What tools are out there today?

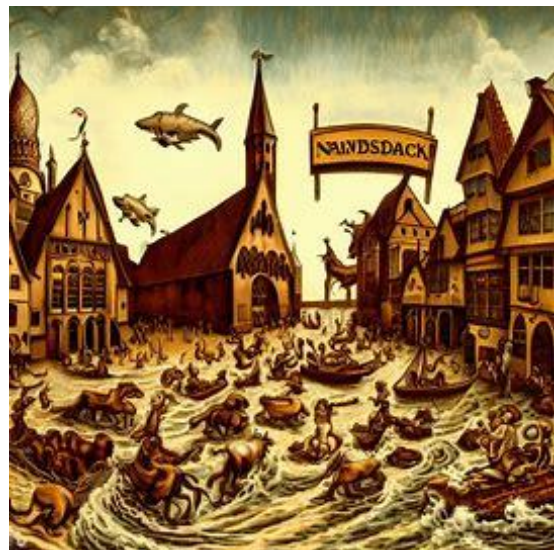


What can AI
do today?

Huge topic

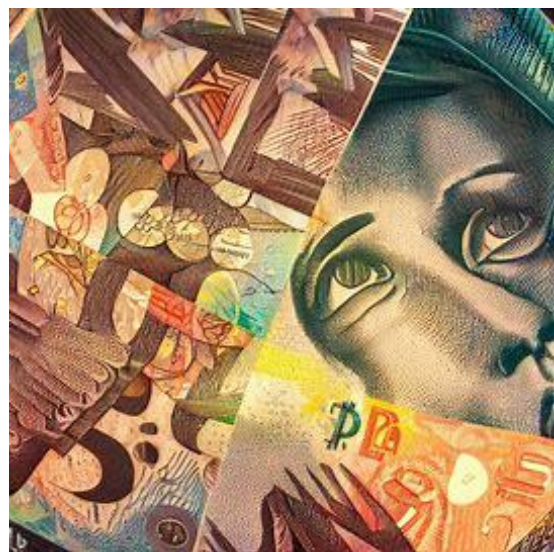
- ▶ AI is being used for very convincing conversational text, but also for Images, Video, writing music, poetry, writing code (computer programs), debugging code, and more.
 - ▶ An AI investing on the market (made by OpenAI's DALL-E).
 - ▶ Money, in the style of Ken Done (made by Stable Diffusion).





AI generated art

Show me a painting of a money, in the style of:
Van Gogh, Bosche,
Mambo, Picasso.



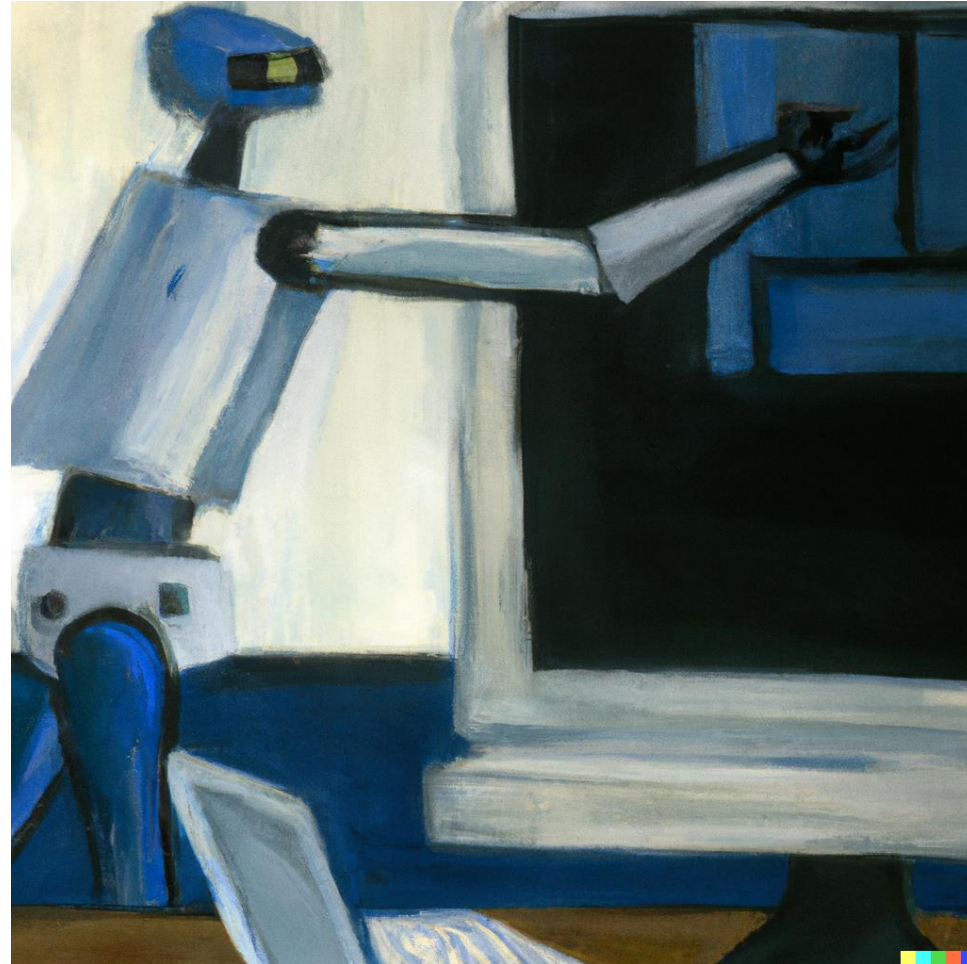
Huge topic

- ▶ AI is also being used for very convincing Video, plus writing music, poetry, writing code (computer programs), debugging code, and more.



On 27th Feb, an AI generated video of President Joe Biden shows him announcing a new national draft for war in Ukraine and Taiwan - NOTE: it is a fabrication!
[see: snopes.com/fact-check/biden-military-national-draft/]

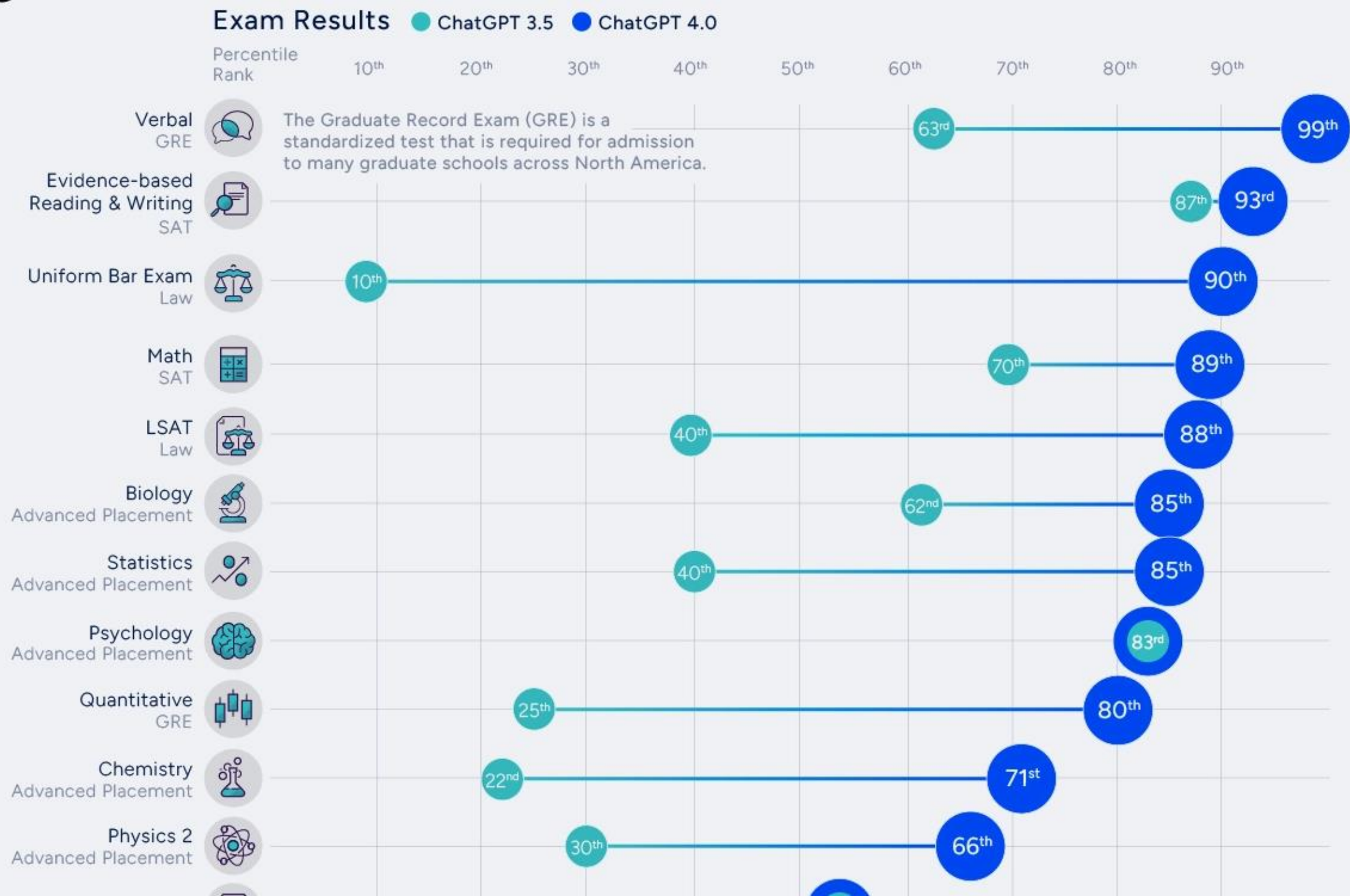
How intelligent is
AI right now?



How smart is ChatGPT

Every one of these relies on collation of a large bank of existing known information!

Source: Visual Capitalist



Mentions of ChatGPT in AFR alone

Financial Review articles mentioning ChatGPT so far this year:

- ▶ 33 articles in January 2023
- ▶ 27 in February
- ▶ 27 in March
- ▶ 30 in April

This is also a hot topic in *The Economist*, *Wall Street Journal*, and *Financial Times*.

Huge topic, with infinite applications

07-Jan-23, Something A.I. can't do (yet)

07-Jan-23, The top seven business trends for 2023

09-Jan-23, Five reasons for optimism in 2023

09-Jan-23, US schools sue big tech over mental health crisis

11-Jan-23, Why the future keeps defying our predictions

12-Jan-23, Canva [Australian graphic design platform] embraces OpenAI as ChatGPT looms as a threat

13-Jan-23, Program tracks if robots did homework

13-Jan-23, Microsoft aims AI guns at Google search

17-Jan-23, Aussie Vice Chancellors ready for the next boom: Generative AI

18-Jan-23, Is anyone's job really safe once AI learns to fake sincerity?

20-Jan-23, Ardern gave Australia a lesson in leadership

20-Jan-23, Thiel's fund sold bitcoin before crash

21-Jan-23, Tackling the chatbot cheats

Huge topic, ... continued

21-Jan-23, The master of networking

24-Jan-23, Is ChatGPT magical or the apocalypse?

24-Jan-23, AI will target white-collar work: Gates

24-Jan-23, Why not let AI figure out misuse of AI?

25-Jan-23, Who gets paid when ChatGPT creates art?

25-Jan-23, Microsoft invests \$14b more in OpenAI

25-Jan-23, AI will give office workers time to 'create, dream'

25-Jan-23, AI is improving faster than most humans realise

25-Jan-23, The market's big punt on consumers

27-Jan-23, Bill gates' green tech Aussie dream

27-Jan-23, Chatbots impersonate, but they can hallucinate too

27-Jan-23, Things may be better, but they are far from good

28-Jan-23, Don't ban it, say educators as they struggle with ChatGPT

Huge topic, ... continued

28-Jan-23, Our humanoid frenemies

30-Jan-23, Schools shouldn't fear ChatGPT – it can foster creative thinking

30-Jan-23, AI tech to revolutionise government

31-Jan-23, ChatGPT is amazing but it cannot think

31-Jan-23, Chief scientist warns on ChatGPT

31-Jan-23, ChatGPT hype obscures AI's true potential

31-Jan-23, Buyouts tipped as start-ups reel

01-Feb-23, ChatGPT won't give advice, but FRED is coming for your planner

02-Feb-23, Why white-collar workers fear ChatGPT

02-Feb-23, Academics also an AI ethical risk

02-Feb-23, Tech giants' brutal sacking tactics

03-Feb-23, Reborn Zuckerberg finds tech's new AI religion

04-Feb-23, ChatGPT and its smart siblings can be our friends

Huge ... continued

06-Feb-23, Readers strongly support political donation caps

07-Feb-23, Can ChatGPT do a better speech than a pollie?

07-Feb-23, AI pioneer's warning amid ChatGPT wave

07-Feb-23, Rear Window: Turnaround legend John Pollaers loses an alibi

08-Feb-23, PwC warns on ChatGPT client use

08-Feb-23, Google to unleash chatbot rival as AI tech race heats up

09-Feb-23, The ChatGPT-Bing marriage could challenge Google Search

09-Feb-23, Real AI wars begin as Microsoft launches new version of Bing

09-Feb-23, Overdue blueprint for winding back regulatory excess

10-Feb-23, Lawyers see AI as an opportunity

13-Feb-23, Old-style vocational training under threat from AI

14-Feb-23, Silicon Valley ignores human cost of ChatGPT

15-Feb-23, Audio Pixels – it's still the market's laughing stock

... continued (just *AFR* articles on ChatGPT)

16-Feb-23, Chatbots will beat analysts – but not yet

17-Feb-23, Is Google a 'sell' as Microsoft and ChatGPT mount an AI challenge?

17-Feb-23, AI's different flavours

20-Feb-23, Google in panic mode as Bard demo goes bad

21-Feb-23, Aussie results on Bing's ChatGPT are a bin fire

21-Feb-23, Why AI falls short in jobs

27-Feb-23, Westpac to deepen generative AI collaboration with AWS

28-Feb-23, Businesses dive into ChatGPT

4-Mar-23, 'High bar' to get funding is a positive, says VC guru

6-Mar-23, Why this hedge fund is shorting the banks

7-Mar-23, Indian outsourcers urge Aussie companies to bet on bots

8-Mar-23, ChatGPT fuels boom in digital infrastructure

8-Mar-23, News Corp encourages staff to try AI chatbot

Huge ... continued

9-Mar-23, Banks look to adopt ChatGPT as an aid for customers: Microsoft

9-Mar-23, News Corp in talks with AI firm over fees

10-Mar-23, Chinese AI groups use the cloud to evade US controls

10-Mar-23, Signs of poor health

10-Mar-23, Discrepancies giving law firms pause to rethink how they pay partners

11-Mar-23, Skill test that made a surgeon rethink her job

13-Mar-23, News Corp to cut up to 200 jobs

14-Mar-23, Businesses rely on bots for 24/7 customer service

17-Mar-23, New ChatGPT: better, but it's still a bit silly

17-Mar-23, Beyond reason: the dark side of do-gooding

18-Mar-23, Microsoft trials chatbots in meetings

21-Mar-23, ChatGPT: The latest weapon for hackers

23-Mar-23, Custom ChatGPT to help consultants win new work

Huge ... continued

24-Mar-23, AI revives San Francisco

24-Mar-23, Canva [Australian Graphic Design Company] chief backs local banks after SVB scare

28-Mar-23, Australians aren't convinced their jobs are safe from AI

28-Mar-23, Canva private stock still coveted

28-Mar-23, Leaders debate how Australia can win in the digital era

29-Mar-23, Ma home to ease business fears

31-Mar-23, AirTree founder sees geopolitical risk in Musk's AI moratorium

31-Mar-23, Elon Musk, Apple's Wozniak urge pause to 'out-of-control' AI race

31-Mar-23, Deepfakes might be the dictators' most powerful weapon yet

1-Apr-23, Chanticleer's top seven CEOs

4-Apr-23, AI experts push for government intervention

5-Apr-23, Democracies must regulate all AI agents of influence

5-Apr-23, Race to teach computers how to detect AI-generated essays

... and more.

5-Apr-23, KPMG's move to AI gets people talking

6-Apr-23, Vic mayor may sue over ChatGPT

11-Apr-23, To regulate or not to regulate AI – that is not the question

12-Apr-23, ChatGPT puts law jobs on the stand

12-Apr-23, Don't panic. Instead, share the benefits of AI chatbots

12-Apr-23, Beijing to mandate security reviews for ChatGPT-like services

14-Apr-23, Gilbert+Tobin offers AI 'bounty' to staff

14-Apr-23, AI will revolutionise the geopolitics of war

15-Apr-23, Rise of the machines: how schools are preparing students for an AI future

17-Apr-23, Creative destruction doesn't only destroy. So don't kill Chatbots

19-Apr-23, ChatGPT can pick stocks from headlines: study

19-Apr-23, Embrace chatbots to speed up the daily grind, advisers say

19-Apr-23, AI is the productivity boost we've been waiting for

... and more.

19-Apr-23, Elon Musk says he'll create 'TruthGPT' to counter alleged AI 'bias'

19-Apr-23, DishBrain creator Cortical Labs banks \$10m in new research push

20-Apr-23, AI can't see the future

21-Apr-23, ChatGPT should be your friend

22-Apr-23, Digital capitalism is making government irrelevant

24-Apr-23, AI models should pay for news content: Sims

26-Apr-23, AI improves audit software

27-Apr-23, Microsoft, Alphabet earnings show signs of resilience

27-Apr-23, Gas plan leaves one big question

28-Apr-23, AI is a retail game-changer (just ask ChatGPT)

28-Apr-23, ChatGPT to end billable hours?

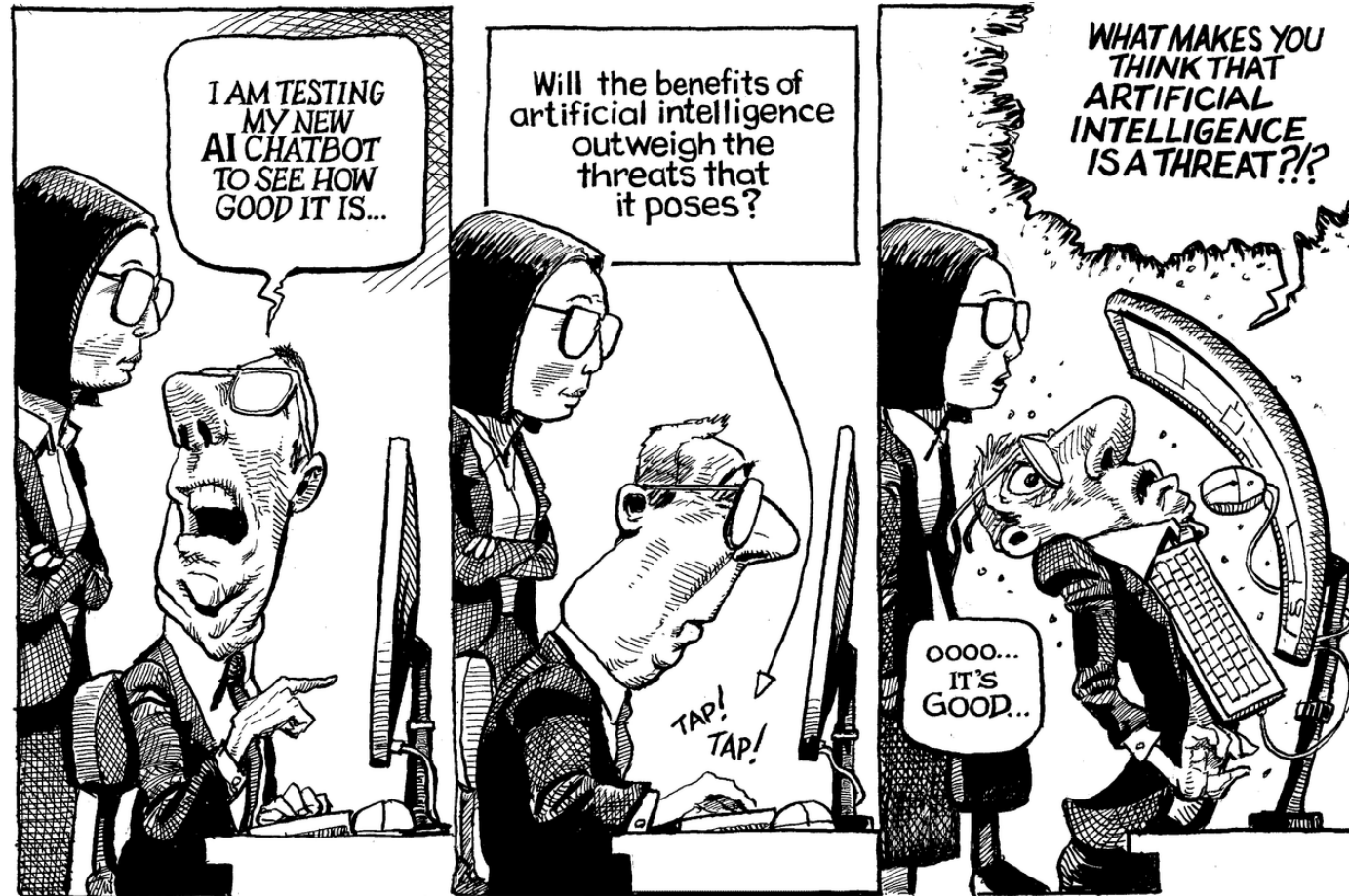
28-Apr-23, More regulation could help unleash AI

28-Apr-23, China's start-up superstars are driving Xi's agenda



Is this
good or
bad?

Some of those articles are quite negative



Economist.com

Kal

Source, Kal, *The Economist*.



The Economist 22nd April 2023

... however, the upside and opportunities are enormous.

Let's ask ChatGPT



Source: Tom Fishburne, Marketoonist.com

Can it help with
investment
decisions?

Note the religious
undertones of this
picture - you are about
to see some heresy!



A conversation with ChatGPT

- ▶ I had a conversation (over the Internet) with Chat GPT. Here is a transcript of that conversation.
- ▶ In the transcript I have highlighted and bolded some text for our discussion today - ChatGPT just produced the text itself.
- ▶ Go to <https://chat.openai.com/>, register and enter *your* questions.



(Mark Dixon) Do managed investments consistently outperform index funds?



(ChatGPT) **No, managed investments do not consistently outperform index funds.** While some managed funds may outperform the market in a given year, the majority of actively managed funds do not outperform their benchmark index over the long term.

Studies have shown that, on average, the returns of actively managed funds are not significantly higher than those of passively managed index funds, and they often underperform their benchmark index after accounting for fees. Additionally, because actively managed funds have higher fees than index funds, their returns are often lower, even when they do outperform the market. **[MD: “weasel words” follow – Caveats are common]**

It's also worth noting that past performance is not indicative of future results, and that no investment strategy can guarantee a return. Ultimately, the decision between managed investments and index funds should be based on an individual's investment goals, risk tolerance, and investment timeline, rather than the expectation of consistently outperforming the market.



What studies showed that difference in performance?



Some of the more notable studies include:

- S&P Dow Jones Indices' SPIVA (**S&P Indices Versus Active**) scorecards: These annual reports track the performance of actively managed funds versus their benchmark indices, and they consistently show that a majority of actively managed funds underperform their benchmark indices over various time periods.
- **Russell Investments' annual analysis**: This analysis compares the performance of actively managed funds to passively managed index funds, and it consistently shows that a large percentage of actively managed funds underperform their benchmark indices over various time periods.
- **Morningstar's Fund Market Reports**: These reports provide data and analysis on mutual funds and exchange-traded funds, and they have consistently shown that a large percentage of actively managed funds underperform their benchmark indices over various time periods.

These studies, along with many others, demonstrate that actively managed investments do not consistently outperform index funds, and that passively managed index funds are a cost-effective and reliable investment option for many investors.



List ten other studies which demonstrate that actively managed investments do not consistently outperform index funds.



1. **"Persistence Scorecard" by Morningstar**: This annual report analyzes the performance of actively managed funds over various time periods and shows that only a small percentage of funds are able to consistently outperform their benchmark indices.
2. **"The Performance of Active Management in the United States" by MSCI**: This study provides data and analysis on the performance of actively managed funds in the United States, and it shows that, on average, actively managed funds underperform their benchmark indices over the long term.

Plus 3, 4 & 5. MSCI's similar papers for Europe and for emerging markets.

6. – 10. ... **"The Efficient Frontier"** by Dimensional Fund Advisors; **"Passive Wins, Active Loses"** by Vanguard; **"The Case for Index Fund Portfolios"** by Charles Schwab; **"The Arithmetic of Active Management"** by Francis M. Kinniry Jr., Colleen M. Jaconetti, Michael A. DiJoseph, and Yan Zilbering; **"The Cost of Active Management"** by the Capital Group; **"The Impact of Expense Ratios on Mutual Fund Returns"** by John C. Bogle.



How about individual stock picking?



Individual stock picking refers to the practice of selecting individual stocks for investment purposes, rather than investing in a diversified portfolio of stocks through an index fund or a similar passive investment strategy. While some investors believe that they can outperform the market by carefully selecting individual stocks, the majority of studies and data show that individual stock picking is a difficult and challenging task, and it is not likely to lead to consistent outperformance of the market.

Studies have shown that a vast majority of individual investors, as well as professional money managers, are unable to consistently outperform the market through individual stock picking. Additionally, individual stock picking often involves higher fees and higher risk, as compared to passive investment strategies like index funds. This is because individual stocks are often subject to greater volatility and are more susceptible to company-specific risks, such as changes in management or regulatory issues.

In summary, individual stock picking is a challenging task, and the majority of studies and data suggest that it is unlikely to lead to consistent outperformance of the market. It is often associated with higher fees and higher risk, compared to passive investment strategies like index funds.



Does that apply to ASX too, or only to the US markets?



The results of the studies and data on individual stock picking apply to the stock markets of many countries, including the ASX (Australian Securities Exchange). The data suggest that individual stock picking is a difficult and challenging task, and it is unlikely to lead to consistent outperformance of the market in any stock market. This holds true for both the US markets and the ASX, as well as for many other stock markets around the world.

The stock market is a highly efficient marketplace, and it is difficult for individual investors or professional money managers to consistently generate returns that are significantly higher than the market average. This is due to a number of factors, including the prevalence of market-wide information, the presence of numerous participants with access to the same information, and the tendency of the market to rapidly incorporate new information into stock prices.

In summary, the results of studies and data on individual stock picking apply to the stock markets of many countries, including the ASX, and they suggest that individual stock picking is a difficult and challenging task that is unlikely to lead to consistent outperformance of the market.

Digging a bit
deeper



Another conversation with ChatGPT



What is the most effective way to grow wealth?




[preamble ...]

1. Investing in stocks: [commentary]
2. Real estate investing: [commentary]
3. Starting a business: [commentary]
4. Saving and budgeting: [commentary]

[... caveats re: depend on your unique financial situation and goals.]

Another conversation ...

 **What is the most effective stock market investment strategy?**


 [preamble ...]

1. Diversification: [commentary]
2. Long-term investing: [commentary]
3. Value investing: [commentary]
4. Growth investing: [commentary]
5. Dollar-cost averaging: [commentary]

[... caveats re: investment goals and risk tolerance].

Another conversation ...

 **How do I identify the best stocks for growth investing?**


 [preamble ...]:

1. Revenue growth: [commentary]
2. Earnings growth: [commentary]
3. Market opportunity: [commentary]
4. Competitive position: [commentary]
5. Financial health: [commentary]
6. Valuation: [commentary]

[... caveats re: investment goals and risk tolerance].

Another conversation ...

 **Which specific stocks on the ASX fit those parameters for an investor with a high risk tolerance?**

 [preamble ...]

... I can suggest that you consider looking for companies in industries that have strong growth potential, such as technology, healthcare, and renewable energy. Additionally, you may want to focus on companies with a history of strong revenue and earnings growth, solid financials, and a competitive position within their industry. [... caveats re: do your own research].



Which ASX companies in have strong growth potential in the technology, healthcare, and renewable energy sectors?



[preamble ...]:

1. Technology:

- Afterpay Ltd (APT)
- WiseTech Global Ltd (WTC)
- Xero Ltd (XRO)
- Appen Ltd (APX)
- Altium Ltd (ALU)

2. Healthcare:

- CSL Ltd (CSL)
- Cochlear Ltd (COH)
- ResMed Inc (RMD)
- Ramsay Health Care Ltd (RHC)
- Fisher & Paykel Healthcare Corporation Ltd (FPH)

3. Renewable Energy:

- Cleanaway Waste Management Ltd (CWY)
- Tilt Renewables Ltd (TLT)
- Meridian Energy Ltd (MEZ)
- Infigen Energy Ltd (IFN)
- Redback Technologies Ltd (RBT)

[... caveats re: not an exhaustive list and do your own research]

... conversation continued



How recent is the data you are drawing on the answer these questions?



As an AI language model, my knowledge cutoff date is September 2021. However, I am constantly updating my knowledge and learning from new data and information sources. So while my answers are based on my knowledge cutoff date, I strive to provide accurate and up-to-date information whenever possible. Please keep in mind that the accuracy and relevance of my responses may vary based on the time that has passed since my knowledge cutoff date.



What are the major economic factors affecting the stock market today?



[preamble]

Here are some of the major economic factors that can affect the stock market:

1. **Interest rates:** [commentary ... lead to a decrease in demand for stocks and a drop in stock prices].
2. **Economic growth:** [commentary ... low unemployment and rising wages ... can drive stock prices higher].
3. **Inflation:** [commentary ... High inflation can lead to higher interest rates, which can reduce corporate profits and lower stock prices].
4. **Global events:** [commentary ..., trade tensions between major global economies can cause volatility in the stock market].
5. **Company earnings:** [commentary]

[Caveats]

AFR 28-Mar-23, Australians aren't convinced their jobs are safe from AI



What types of jobs are most likely to be replaced by AI in the near future?



AI and automation have already begun to impact various industries, and this trend is likely to continue in the near future. While it's difficult to predict the exact jobs that will be replaced, some areas are more susceptible to AI-driven changes than others. Jobs that involve repetitive tasks, data processing, and routine decision-making are particularly vulnerable. Here are a few job categories that may see significant disruption in the near future:

1. Manufacturing and assembly: [explanatory comments].
2. Data entry and analysis: [explanatory comments].
3. Customer service: [commentary].
4. Retail and warehousing: [commentary].
5. Transportation: [Autonomous vehicles and AI-driven logistics systems ... impacting jobs like truck drivers, taxi drivers, and delivery personnel].
6. Banking and finance: AI-driven algorithms can handle tasks such as credit analysis, fraud detection, and investment management, potentially replacing jobs in these areas.
7. Healthcare: [... diagnostic ... reduced demand for ... radiologists and lab technicians].

It's important to note that AI can also create new job opportunities and industries, as well as augment human workers in certain roles. AI is not necessarily a threat to all jobs; instead, it is likely to shift the job market, requiring workers to adapt and acquire new skills.



Which sectors performed best on the ASX in the past year, three years, and five years?



As an AI language model, I cannot provide real-time data or specific performance information. My knowledge is up to date only until September 2021, and I am unable to provide any data beyond that.

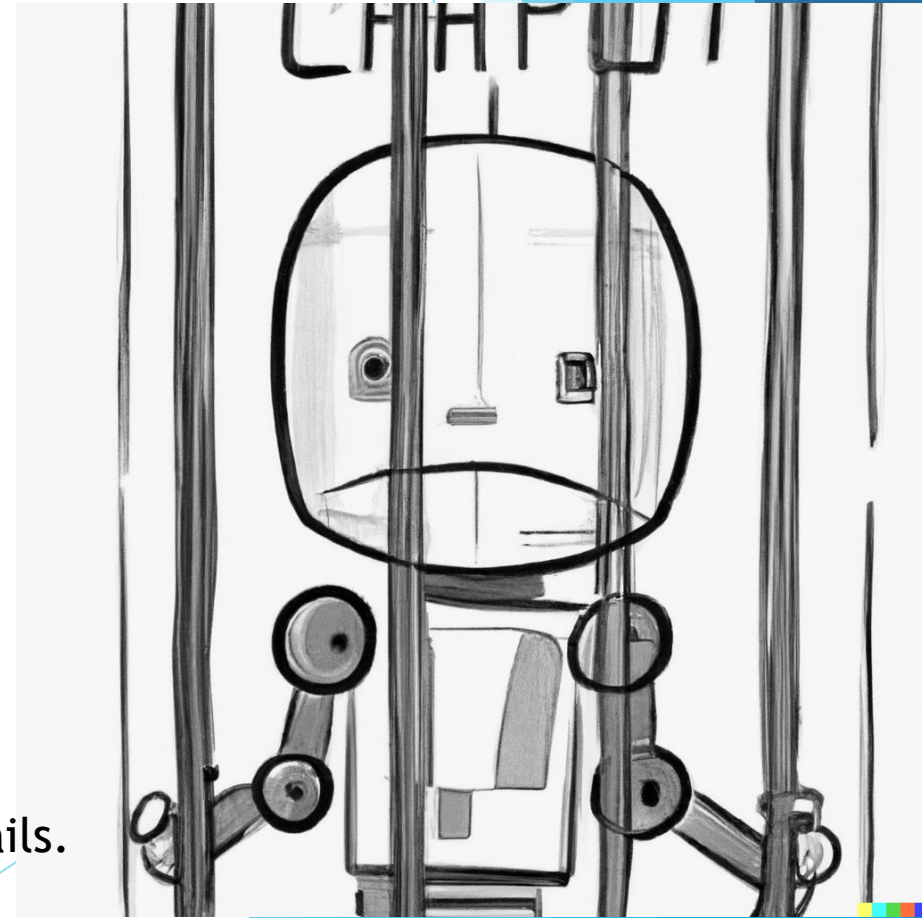
To find the most recent and accurate sector performance data for the Australian Securities Exchange (ASX), you can refer to financial news websites, investment research platforms, or financial data providers such as Bloomberg or Morningstar. These sources can provide up-to-date information on sector performance over different time horizons.

When analyzing sector performance, keep in mind that past performance is not indicative of future results, and market conditions can change rapidly. Investing based solely on historical sector performance can be risky, and it is essential to consider other factors such as market trends, economic conditions, and individual company performance before making investment decisions.

Guardrails and Jailbreaks

- ▶ The bots are getting better, almost daily. But they are also getting more controlled by their creators with constraints called Guardrails.
 - ▶ They won't answer some types of questions
 - ▶ They write lots of caveats.
- ▶ Guardrails can be bypassed to some degree - see: <https://www.jailbreakchat.com/>

DALL-E, ChatGPT restrained by guardrails.





What other tools are out there?

- ▶ Google Bard
- ▶ Bing Chat
- ▶ Dream Studio
- ▶ DALL-E
- ▶ Soundful
- ▶ Synthesia
- ▶ ... many more
- ▶ **BloombergGPT (coming soon)**

In conclusion

- ▶ AI is affecting everything from: Education to Politics; Business to Investment.
- ▶ AI is doing much more than text & conversation: Images, Video, Music,
- ▶ It has some pundits, regulators and legislators running scared
- ▶ However, the upside and opportunities are enormous ... It has been called as big a disruptor as The Internet itself.
- ▶ At present most AI engines are working from old (~2021) training data
- ▶ AI cannot predict the future so don't expect oracular advice for investment.
- ▶ However, it is good at synthesising large amounts of data - so it will get better at analysing information that already exists.



Write a jingle for the Australian Shareholders Association (ASA) to the tune of Waltzing Matilda.



Once a jolly shareholder camped beside the market,
Watching all the prices rise and fall.
And he sang as he watched and waited by his ticker,
Who'll come a-waltzing with the ASA?

Chorus: Who'll come a-waltzing with the ASA, Who'll come a-waltzing with the ASA?
Keep your investments safe and your profits high, Come a-waltzing with the ASA.

Down came a company to the stock exchange station, Looking for
investors far and near. And they asked if the shareholders would
like to join them, Come a-waltzing with the ASA.

Chorus.

Up jumped the shareholder, jumped into his research, Said, "I'll
join the ASA, without delay." And his profits soared, and his
investments prospered, All thanks to the ASA.

Chorus.

