Khoi Xa

ITAI 2372

A02

**Part 1: AI Advancements**

**What’s the technology, and how does it work (in simple terms)?**

1. A New Molecular Language for Generative AI in Small-Molecule Drug Discovery

Terray Therapeutics is at the forefront of using generative AI for small-molecule drug discovery, powered by large-scale, high-quality data and a combination of computational and experimental methods. The company created COATI, a foundational chemistry model that was pretrained on a dataset containing hundreds of millions of small molecules. COATI converts molecules into mathematical representations, allowing the AI to generate and design new, optimized molecules.

**Why is it considered advanced or groundbreaking?**

Because it helps to generate new Small-Molecule Drug in a much faster time.

**How might it change things in the next few years?**

We may be able to cure all kind of cancer and HIV and may be able to extend our life span.

1. AI-Powered Language Translation in Criminal Investigations

**What’s the technology, and how does it work (in simple terms)?**

LILT accelerates multilingual content creation for enterprises at scale with NVIDIA GPUs and NVIDIA NeMo™.

LILT uses NVIDIA NeMo to enhance inference through generative AI models. NeMo is a cloud-native framework that simplifies AI adoption with tools for training, inference, and data curation. Powered by NVIDIA A100 GPUs, known for accelerating AI and HPC workloads, organizations can scale efficiently from pilot to production using NVIDIA AI Enterprise.

Deployed on AWS, LILT benefits from scalable GPU performance, leveraging AWS and NVIDIA’s long-standing partnership to deliver cost-effective machine learning and HPC solutions.

**Why is it considered advanced or groundbreaking?**

Non-linguists work autonomously, using machine translation to triage a variety of documents for high-value content, including sending bulk translations through their API to the cloud. Linguists can then focus their time and skills on translating evidentiary documents using LILT’s predictive, adaptive translation tool.

**How might it change things in the next few years?**

We may solve crimes when it comes to cryptic faster but human nature will be still the same. So in my opinion, there will be another kind of crime that spurs from this in order for criminals find another way to counter the AI.

1. Wealthsimple Accelerates Machine Learning Model Delivery and Inference

**What’s the technology, and how does it work (in simple terms)?**

Wealthsimple, a leading Canadian investment firm, uses NVIDIA’s AI platform to speed up deploying machine learning models that enhance client experiences. The company boasts to:

Cut model deployment time from months to 15 minutes

Boost inference uptime from 95% to 99.999%

Lower inference latency by 20%

Deliver 145 million predictions in the past year with zero IT issues

**Why is it considered advanced or groundbreaking?**

Using Machine Learning to predict stock to invest.

**How might it change things in the next few years?**

I think there will be a financial crisis, as more and more people use AI to invest. If everyone uses the same software to predict stock price to invest, then everyone will follow the move of the machines, and if so then there wont be any risk, which is against the nature of the free market. The market will stall and freezes because no one want to sell their shares until the AI agrees, and if that the case then no one will be able to make money.

**Part 2: Comparing AI Regulations in Australia and the EU (1 Page)**

Australia: Review their stance on AI governance, risk management, and ethical frameworks. What’s their approach to keeping up with AI advancements?

Australia's center-left government announced plans on 9/5/24 to introduce specific AI regulations, focusing on human oversight and transparency, as AI tools are increasingly adopted by businesses and in daily life although the country has no specific laws to regulate AI yet. Industry and Science Minister Ed Husic introduced 10 new voluntary AI guidelines and initiated a month-long consultation to consider making these guidelines mandatory in high-risk areas.

**European Union**: The EU’s AI Act is one of the most comprehensive regulatory efforts out there. What are its key components, and how does it aim to keep AI development ethical and safe?

Global regulators have expressed concerns about the spread fake news fueled by AI tools. In response, the European Union enacted groundbreaking AI legislation in May, imposing strict rules on high-risk AI systems, moving beyond the more lenient voluntarily compliance approaches seen in some other countries. The countries have 1 year until August 2025 to enforce the internal laws that satisfies the AI Act. Then, in August 2026, the majority of AI rules will kick in.

A screenshot of a calendar

Description automatically generated

Its key component, the Artificial Intelligence Act, specifically has 4 levels of risk, which is categorized as each higher level of risk associated with the level of impact of people lives.

A diagram of a risk level

Description automatically generated with medium confidence

A screenshot of a computer

Description automatically generated

**Now, get creative! Compare the two with a bit of humor:**

* **If AI were a superhero, which country’s laws would be the more helpful sidekick?**

Probably the poorest country with the highest inflation currency out there since every single law in the West takes 2 decades to be passed.

* **Which regulation would be better at stopping a rogue AI from deciding to take over your fridge?**

Make a prompt so that when I say Centerpoint, the fridge will do a hard reset.

**Part 3: Future Trends in AI (1 Page)**

**Will AI systems become our co-workers (or bosses)?**

I think AI going to be a great assistant. Not co- worker or bosses. Simply because the goal of creating AI in the first place is to replace robot with a humanoid form, in other words, a human-like robot- to reduce work redundancy. It’s like replace human in assembly lines with robotic hands, in this case, talking robotic hands.

**Are we heading towards more integration of AI in everyday devices?**

We should be. Main reasons would be:

1/ People love new cool tech

2/ Siri and Alexa made a good impression

3/ Business loves cutting staffs to make more money. ( Amazon) So they definitely would be interested in integrating AI to increase their productivity and profit.

**Citation:**

<https://www.nvidia.com/en-us/case-studies/generative-ai-for-small-molecule-drug-discovery/>

<https://www.nvidia.com/en-us/case-studies/lilt/>

<https://www.nvidia.com/en-us/case-studies/machine-learning-models-and-inference/>

<https://www.youtube.com/watch?v=a2ZBEC16yH4>

<https://www.reuters.com/technology/artificial-intelligence/australia-plans-ai-rules-human-oversight-transparency-2024-09-05/>

<https://www.youtube.com/watch?v=s_rxOnCt3HQ>

<https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence>