

Bridging the AI Divide Empowering Resources in Nigeria

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Editor



Presentation @ AI Stellars 4.0, Virtual session on 30th of June, 2026

Presentation Outline

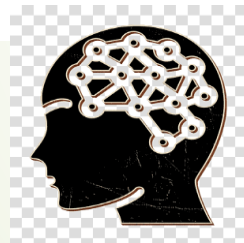
1

Introduction



2

Historical development



3

Empowering Resources in Nigeria



4

Tips for virtual jobs

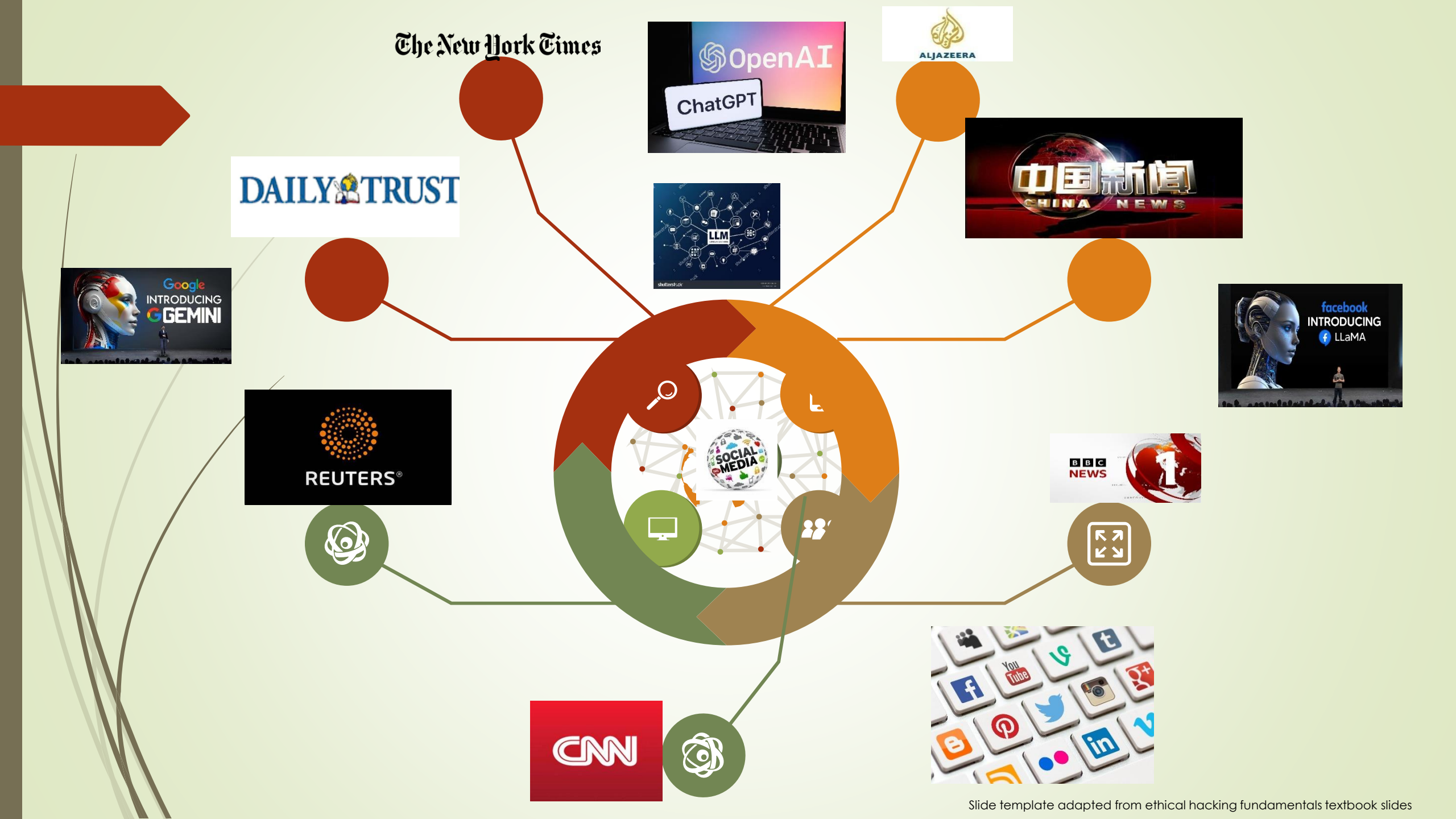
AI Infrastructure

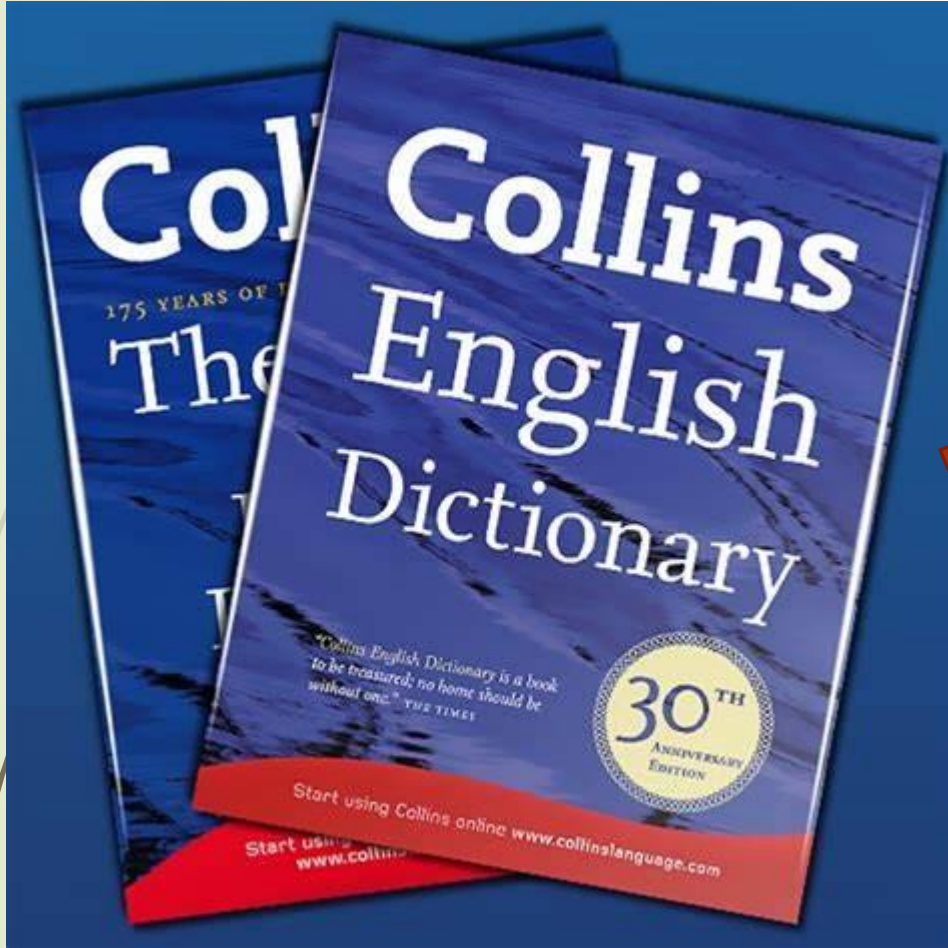


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Trending research topics



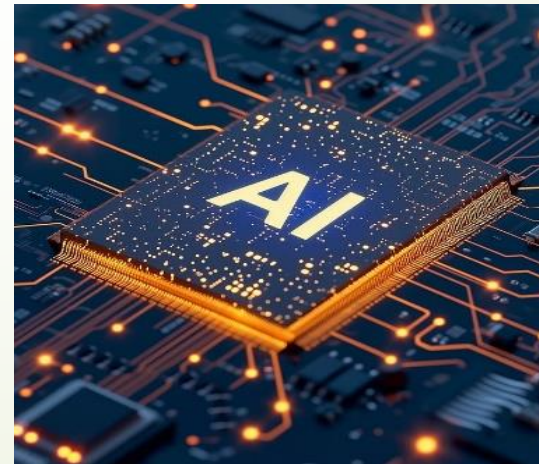
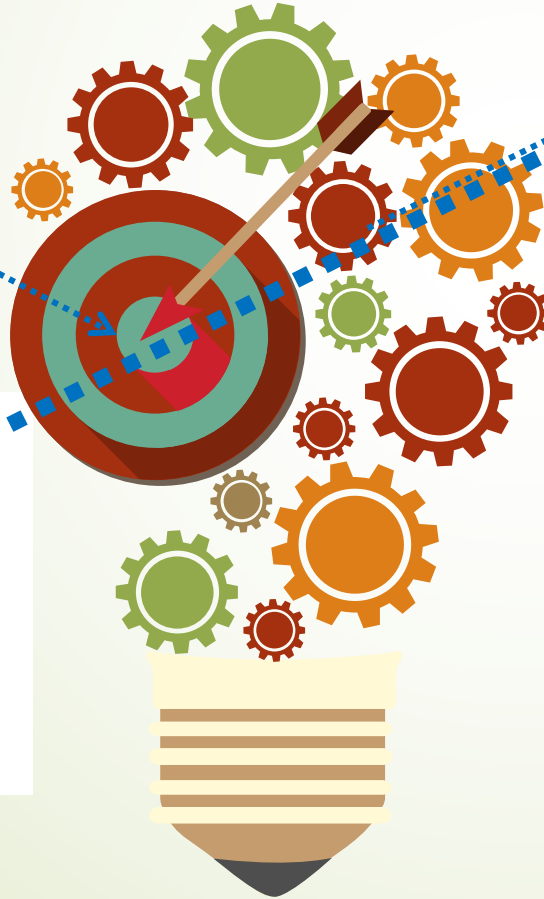




AI awarded
BUZZword



AI Chip Demand = Nvidia overtakes Amazon in market value



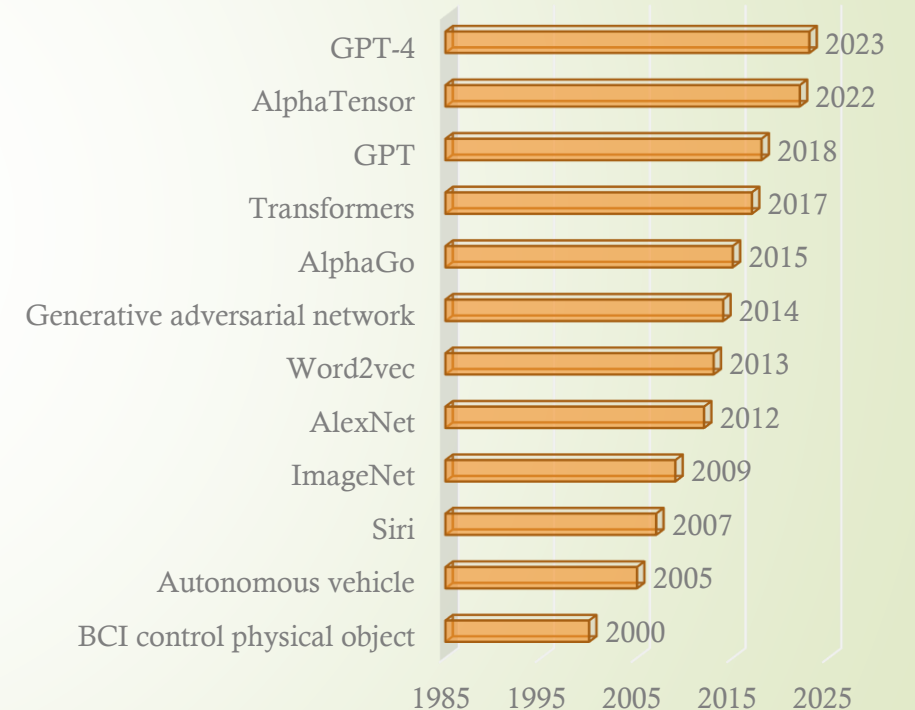
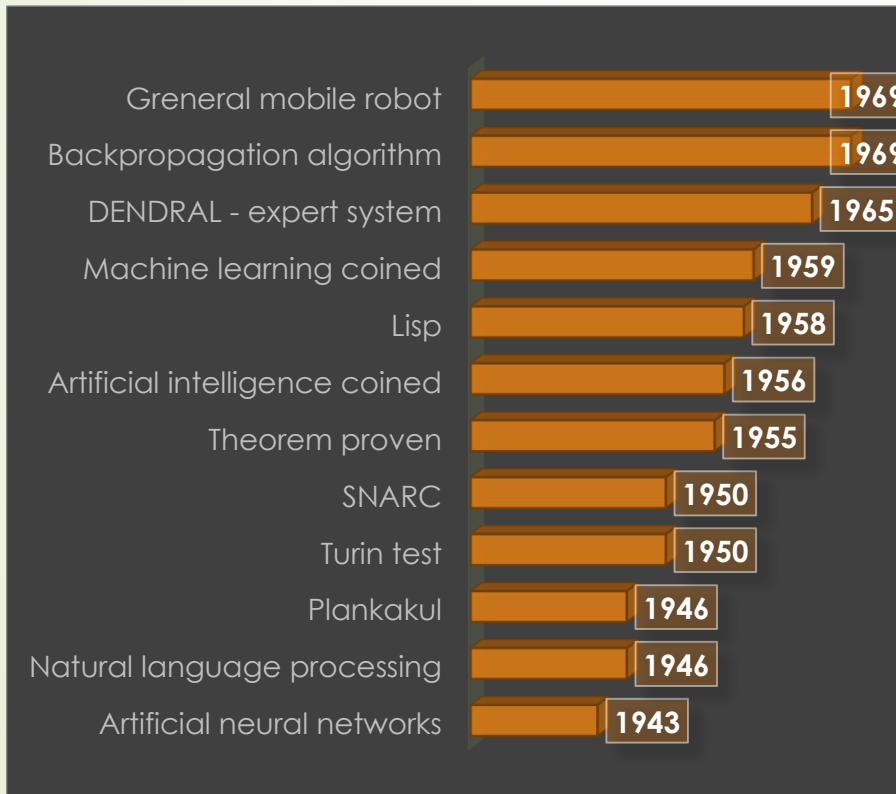
What is Artificial Intelligence ?



What is Artificial intelligence?



Historical development of AI



Historical development of AI

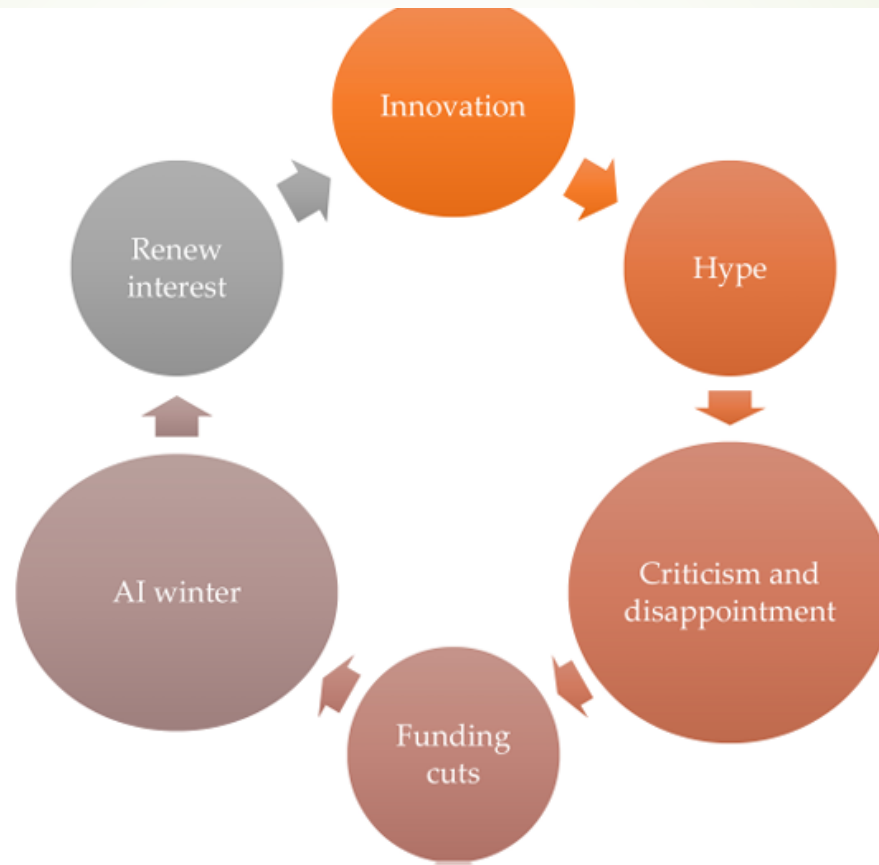


Figure 1.20. The cycle of AI winter experience in history.

Historical development of AI

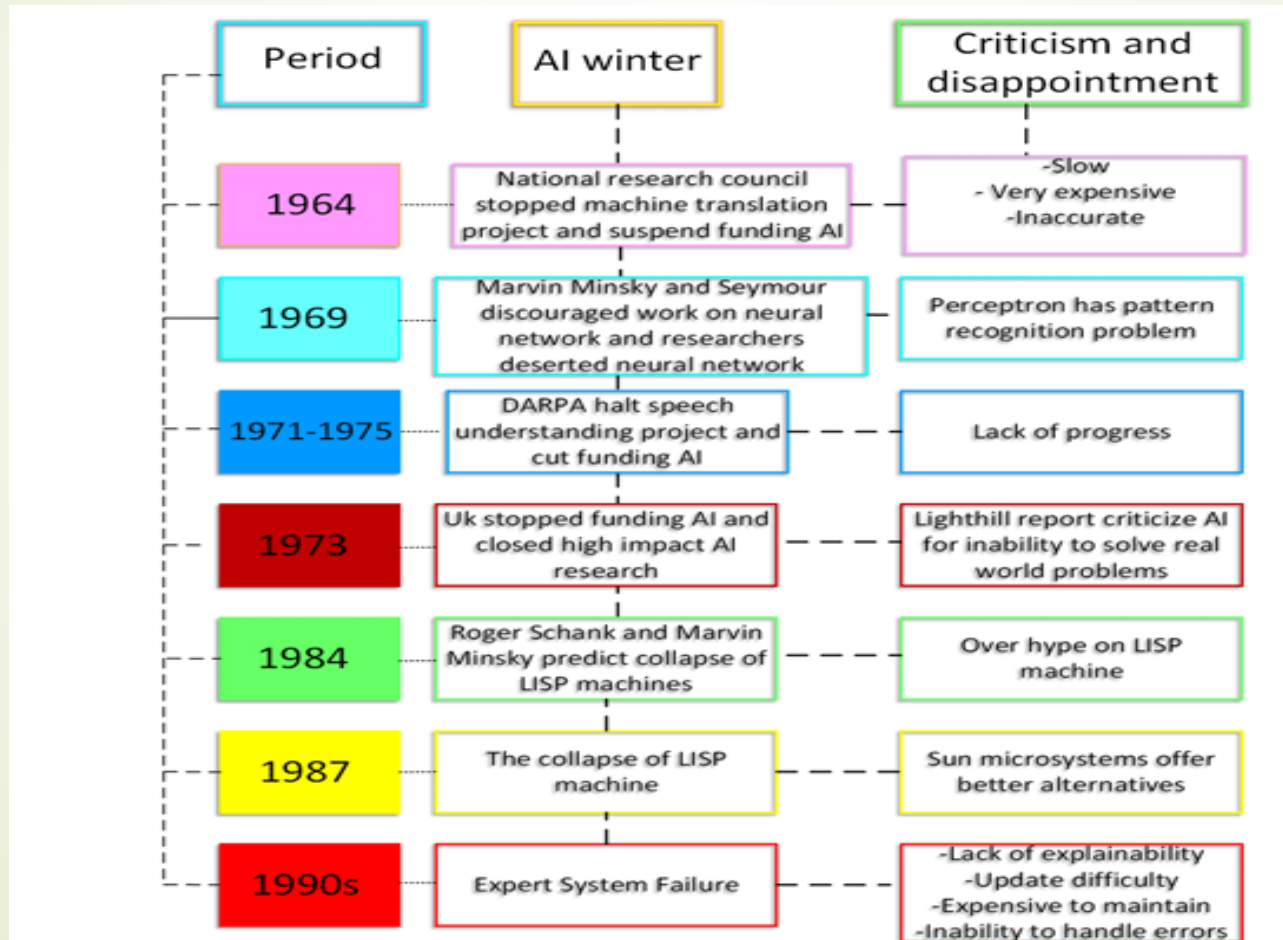


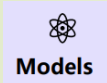
Figure 1.21. Visualization of selected AI winter and criticism.

Artificial intelligence in science fiction movies that turned into reality

Table 1.2. Summary of AI illusions created in science fiction movies that eventually transformed into real-world technology.

Science fiction movie name	Movie year	Scene or episode	Innovation	Innovation period
Dr Who	1977	Features a robot dog with sufficient intelligent to defeat his master at chess	IBM Deep Blue defeated chess world champion	After 20 years
The Jetsons	1962	Creates an illusion of image and phone call together appearing on TV	Smart home device has been developed for video calls. Uses AI to make sure the user is on screen, pan and zoom. Facebook portal.	2018
Rosie the Robot Maid	1962	Performs house chores (cleaning and cooking)	iRobot Roomba as the first robot vacuum cleaner was built to navigate and clean different rooms in a house	2002
			Moley Robotics Kitchen built for cooking meals from scratch and cleans up the kitchen after cooking	2019
Star Trek	1966	Universal translator to decode and translate unknown language	The first language translator with pixel buds developed by Google (Google assistant interpreter mode) to translate 27 different languages during conversation in real time	2017

Classes of Artificial Intelligence



AI Narrow

Learn or understand single task at a time e.g. Language translation, prediction, classification, etc.



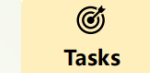
Explainable AI

Ability for any AI algorithm to interpret decision or prediction made by the AI based systems for human to understand



Generative AI

Create or generate content, text, video, image, source code or artificial data (synthetic)



AGI

AGI systems that can understand or learn any intellectual task that a human being can perform. Multi-tasking in multi-domains



ASI or Singularity

Intelligent system improving itself iteratively to become more intelligent than the human brain

Generative AI



Generative AI

Synthesis: Text, Image, Video, Speech, 3D and Graph

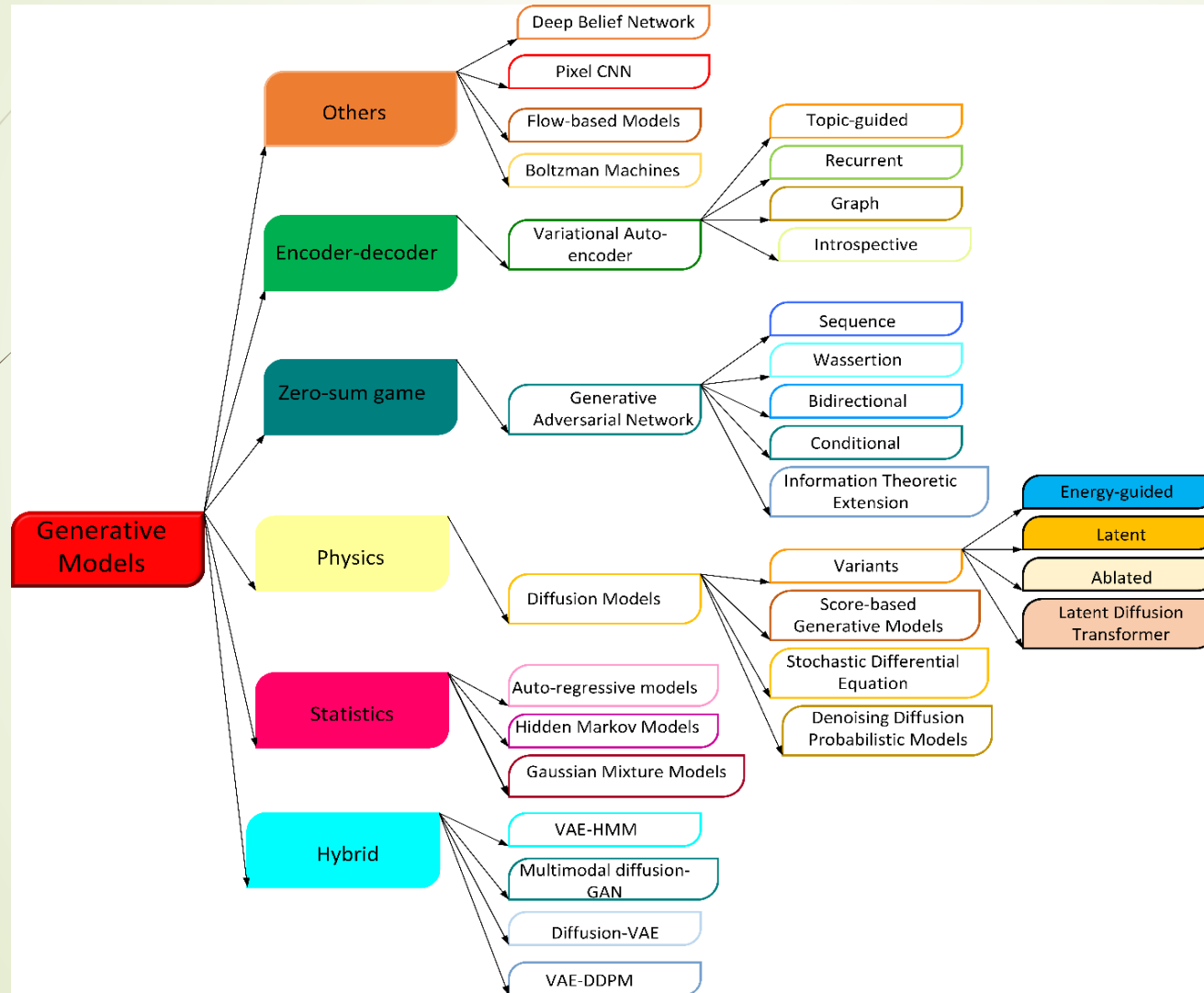
Conversion: speech2text, image2text, text2video, text2image

Translation: machine translation and image2image translation

Voice: talking face, music and lips reading

Quality improvement: Image restoration and editing

Generative AI



Summary of the suitability of different GAN versions for generative tasks

Reference	GAN model	Operation	Task Suitability
Tulyakov et al. (2018)	Motion and Content decomposed GAN	Proposes new adversarial learning that uses image and video discriminators to learn motion and content decomposition	Video
Wang, T. C. et al. (2018)	C-GANs	introduce new adversarial loss and multi-scale generator and discriminator to generate 2048x1024 high resolution visual	Urban scene
Xia et al. (2021)	Text-Guided Diverse Face Image Generation and Manipulation GAN	This comprised of instance-level optimization, StyleGAN inversion module and visual-linguistic similarity learning to generate image from text description.	Human Portrait
Guimaraes et al. (2017)	Objective-Reinforced GAN	Utilizes hybrid of adversarial training and expert-based rewards with RL	Music
Yu et al. (2017)	SeqGAN	Reinforcement learning with stochastic policy is applied for solving the differentiation problem in the generator	Speech, language, poem and music.
Wang et al. (2018)	Enhanced Super-Resolution GAN	Composed of residual-in-Residual Dense Block without batch normalization to improve the quality of visual with more realistic and natural textures	Super-resolution and Image restoration
Wu et al. (2016)	3D-GAN	We study the problem of 3D object generation. We propose a novel framework, namely 3D Uses volumetric convolutional networks and GAN to generate 3D object	3D Object
Shaham et al. (2019),	SinGAN	It incorporated pyramid of fully convolutional GANs to generate diverse images from single image while maintaining both the texture and structure	Texture
Park et al. (2019)	GauGAN	Uses input layout for the modulation of activation in the normalization layers.	Landscape

GAI changes user's interaction with the computing devices

Generate video from text description



Generate source code, debugging and improve code documentation

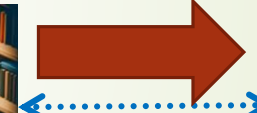


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```

Translate video into different languages



Write email, summary, articles, proofreading, etc



Creating image from text



Manage social media accounts automatically



Infrastructure for pre-training generative model

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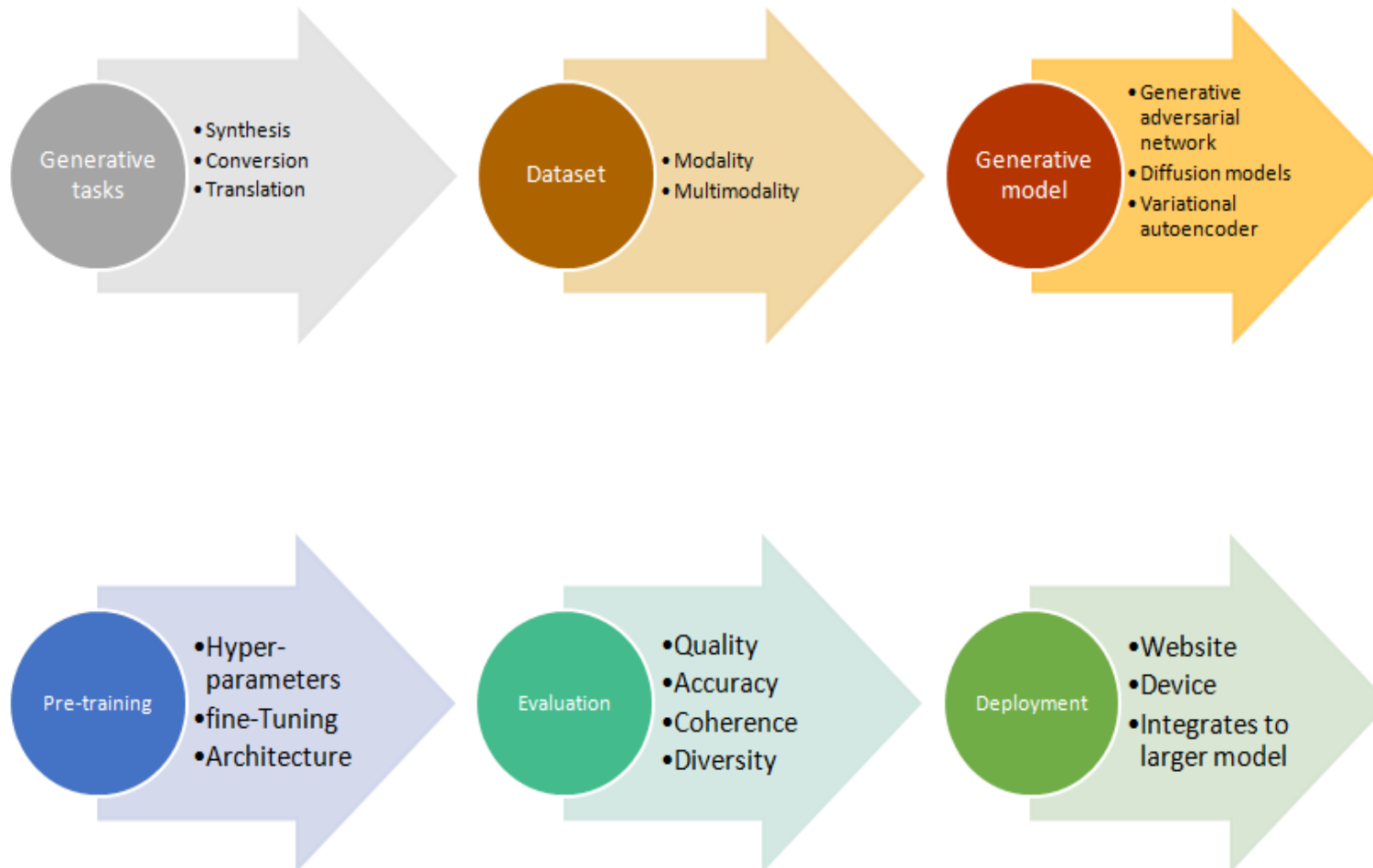
[Product Lines](#) [Resources](#) [Available Models](#) [List View](#)



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The founder of DeepMind, Microsoft and Nvidia are currently building supercomputer with 22,000 GPUs – over \$1 billion

Empowering Nigeria resources



Fashion Industry



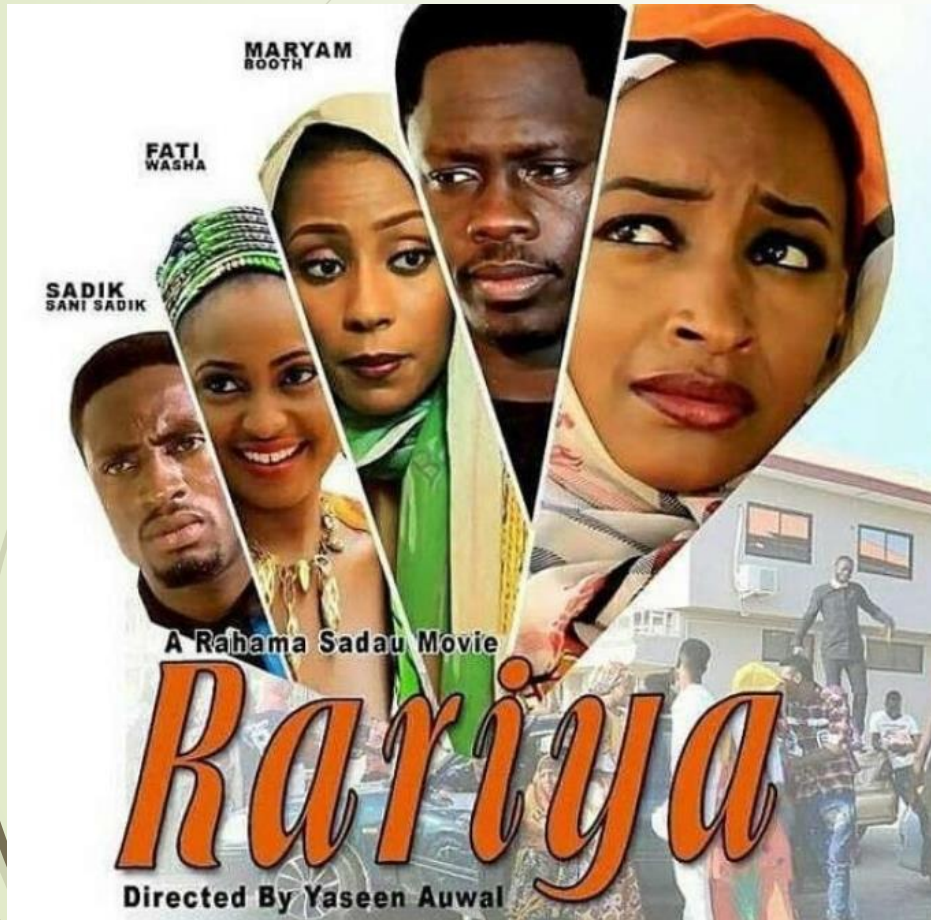
Furniture Industry



Building Industry



Movie Industry



GPT-4V



Challenges

Major Issues

- ❑ **Requires very large scale data, high computing resources and expensive to build**
- ❑ Bias towards the pre-training data



Hallucination



Create fake reference



Distort content



Cant read human mind



Requires effective prompt



Can easily involve in plagiarism



The Intellectual Debates



Emerging concepts

Portable, non-invasive, mind-reading AI turns thoughts into text

12 DECEMBER 2023

Researchers from the GrapheneX-UTS Human-centric Artificial Intelligence Centre have developed a portable, non-invasive system that can decode silent thoughts and turn them into text.



UTS researcher tests new mind-reading technology. Image: UTS

RELATED NEWS



[Mind-control robots a reality](#)

Emerging concepts

Japanese Scientists Develop System That Can Visualize Dreams Based on Brain Activity



Emerging concepts

Device that enable human to search internet via brain without keyboard or talking



[MIT student creates device that is able to search the entire internet using just his mind \(unilad.com\)](http://unilad.com)

Emerging concepts

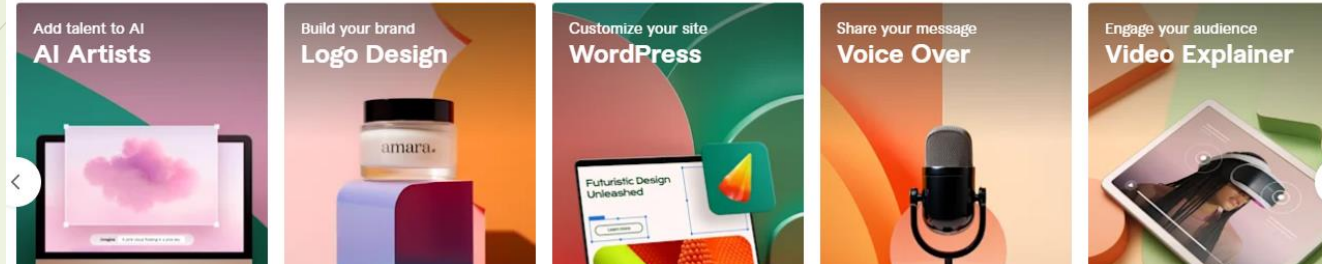
uploading knowledge to human brain and download knowledge from a dead person



[Scientists Can Now Upload Knowledge Directly Into Your Brain \(uproxx.com\)](http://uproxx.com)

Side “Hozzle” for students to get \$

Popular services



Popular services

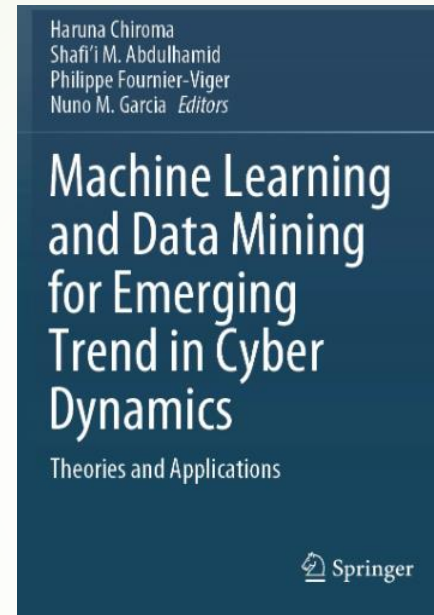
Fiverr - Freelance Services Marketplace



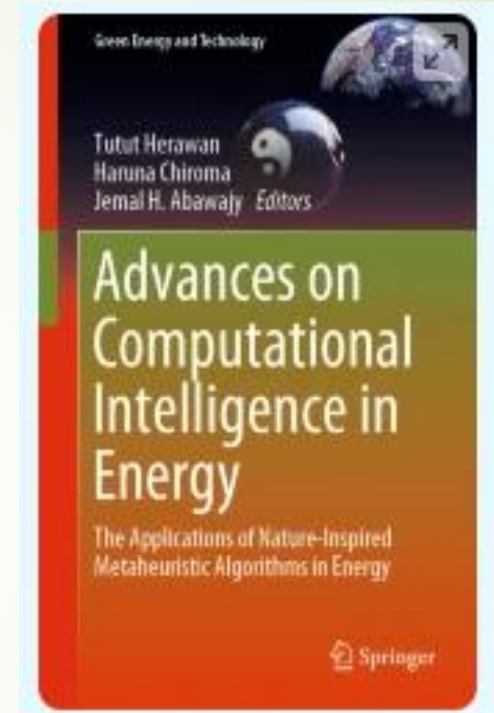
Publications with pay for Dr./Profs



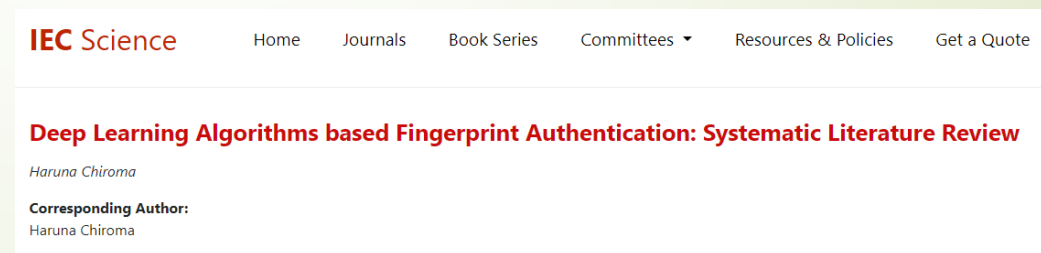
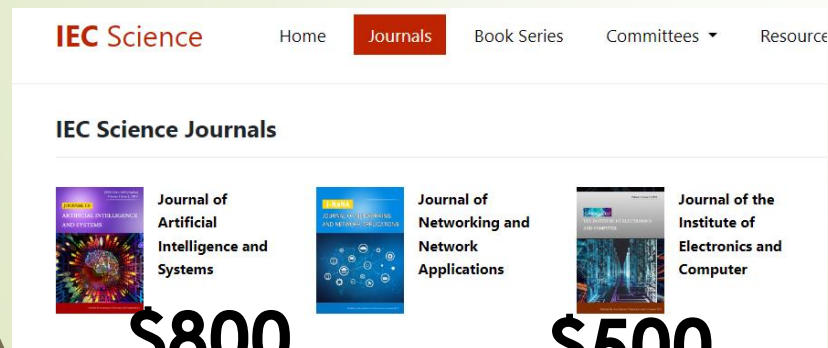
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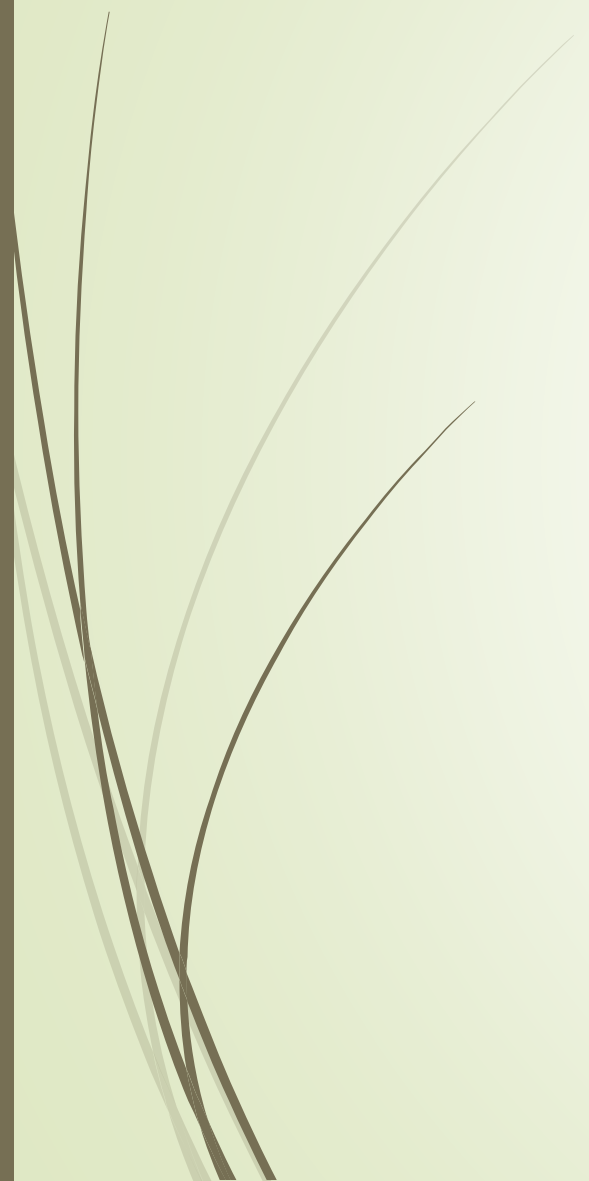


1200 Euros



1200 Euros





IOP Series in Next Generation Computing

Emerging Trends in Artificial Intelligence

Integrating theories and practice

Haruna Chiroma



Overview of the Book

- Chapter 1 Historical development
- Chapter 2 Generative AI
- Chapter 3 Artificial general intelligence
- Chapter 4 AI DevOps
- Chapter 5 Graph Neural Network
- Chapter 6 Brain machine interface and robots
- Chapter 7 Quantum AI, autonomous and high performance computing
- Chapter 8 Explainable AI
- Chapter 9 Bibliometric analysis

Computing Research Survival Manual

A practical handbook for beginners

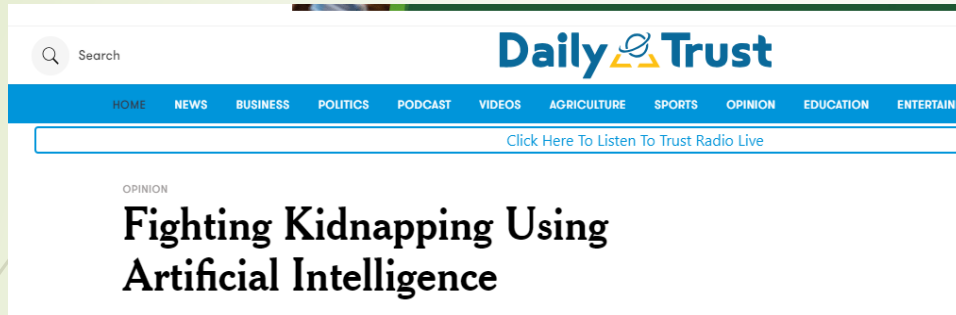
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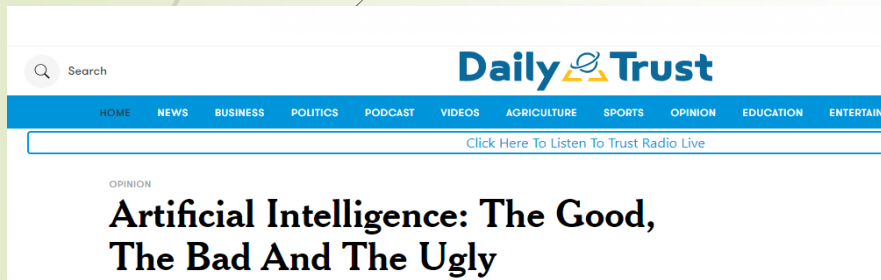
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- Chapter 6: methodology Chapter 7: scientific publications
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- Chapter 9: Trending and emerging research areas in computing

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My articles in newspaper



[Fighting kidnapping using Artificial Intelligence - Daily Trust](#)



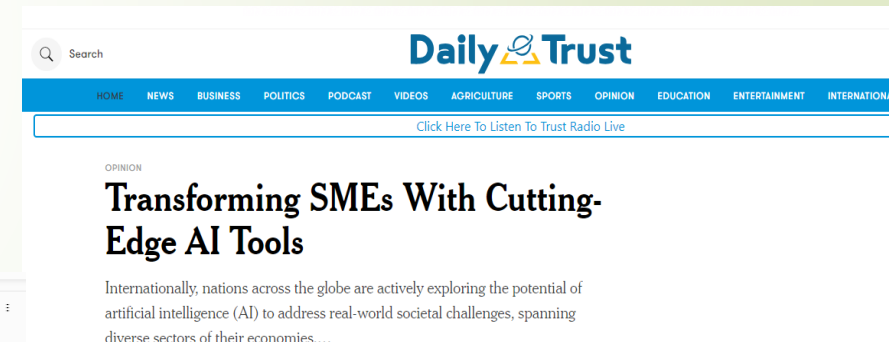
[Artificial Intelligence: The good, the bad and the ugly - Daily Trust](#)



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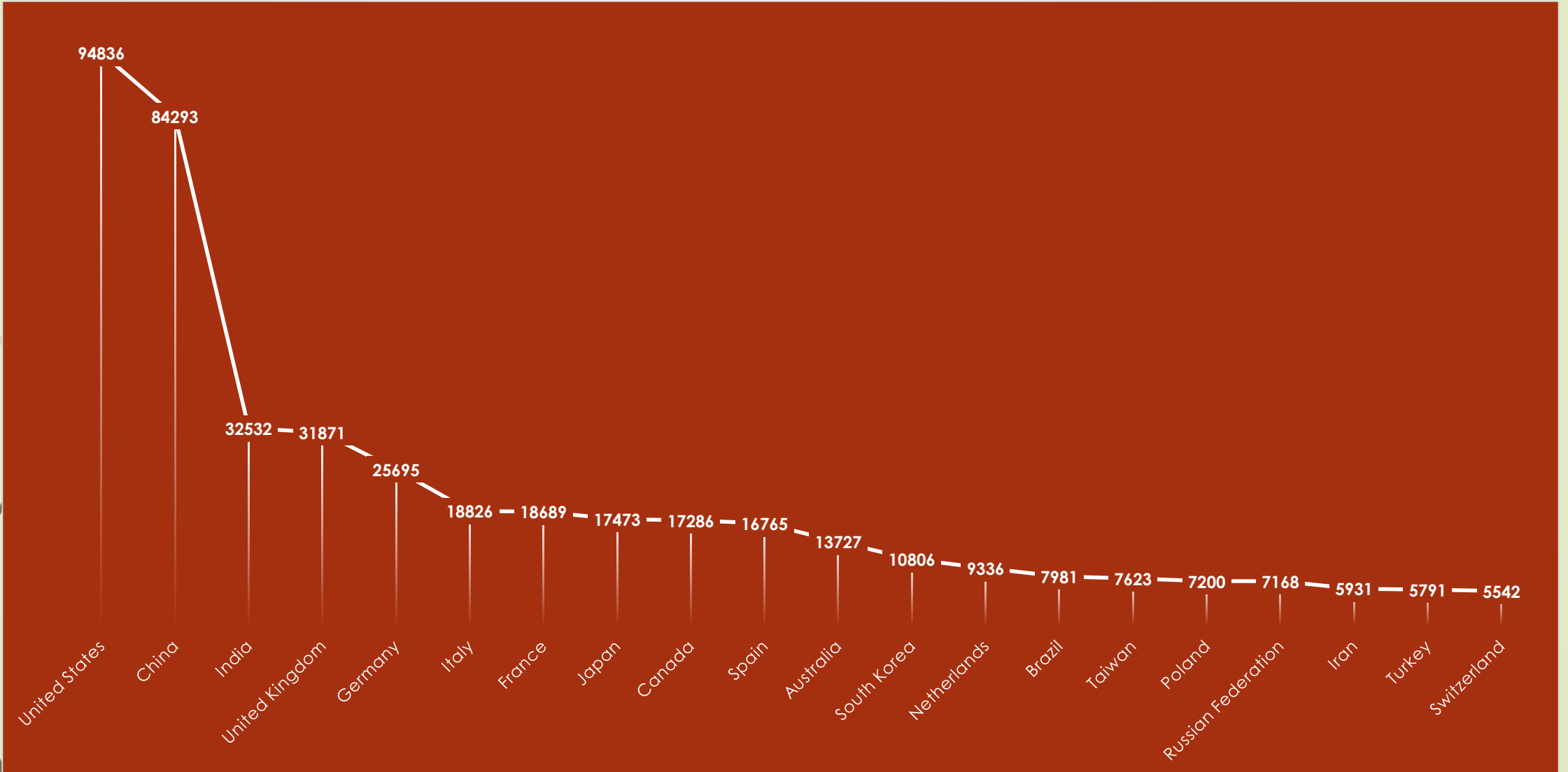


[Impending collapse of Nollywood, Kannywood by AI revolution - Daily Trust](#)

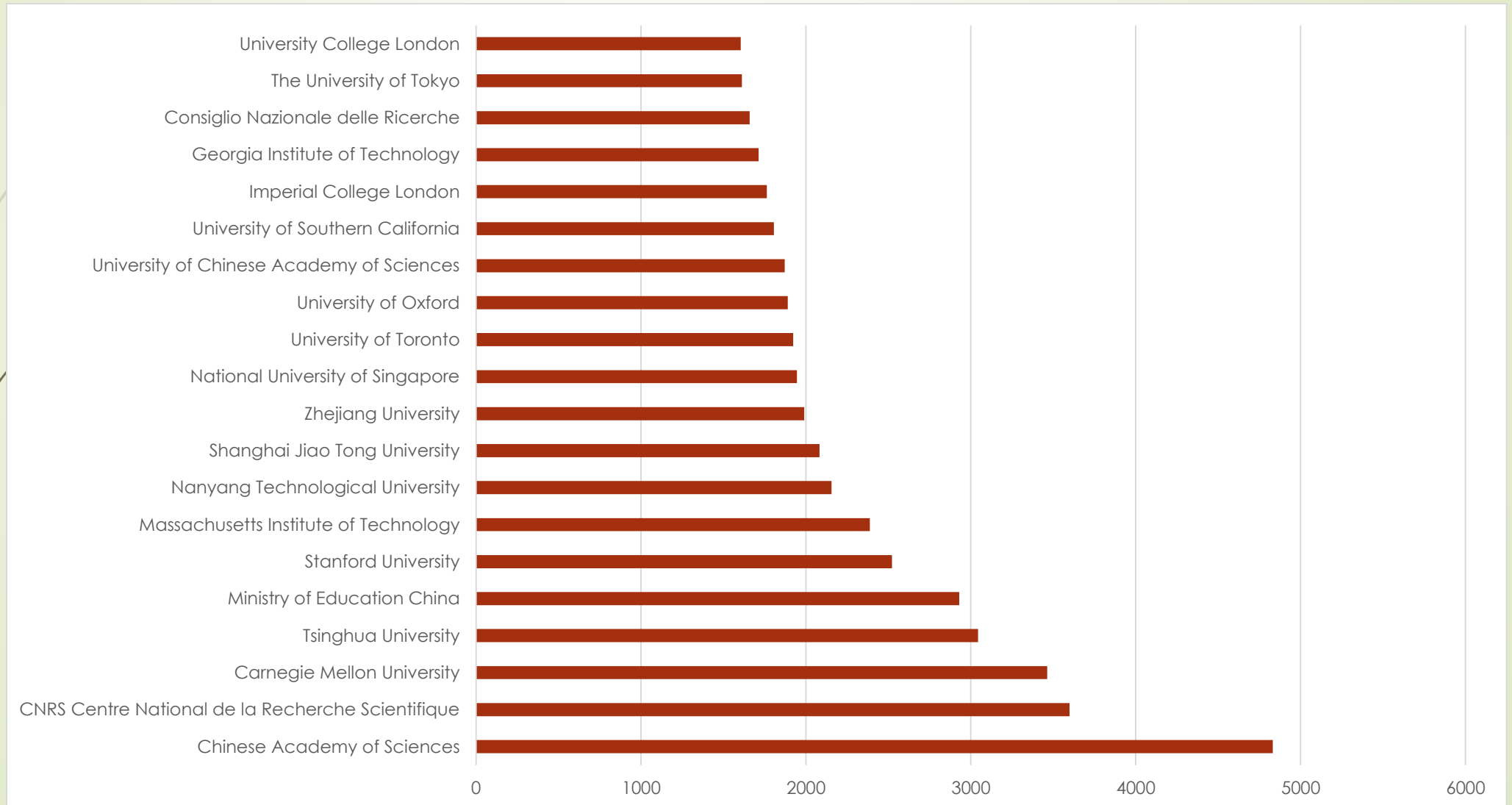


[Transforming SMEs with cutting-edge AI tools - Daily Trust](#)

Countries productivity on AI research



Performance of institutions on AI research



Prolific organization in funding AI projects

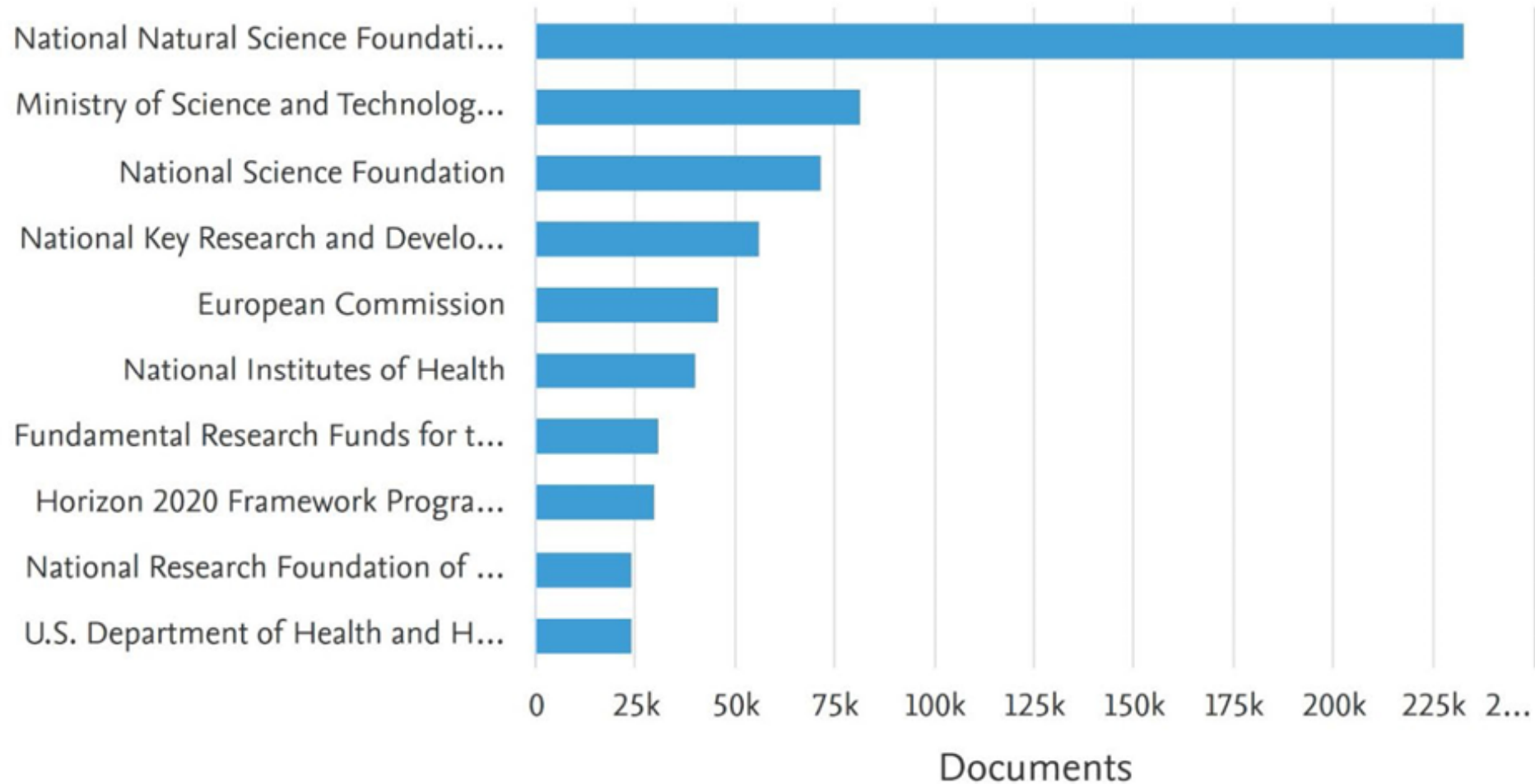
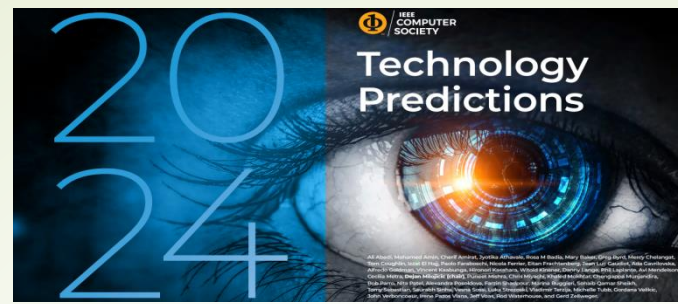


Figure 9.12. Prolific organizations in funding AI research.



Technology Predictions for 2024

Sorted by Tech. Development

1. **Generative AI Applications (A/B):** Generative AI use will increase with rapidly expanding efficiency and new applications and services both beneficial and detrimental. Ethical and societal issues will continue to rise. Expect strong short-term impacts on business, education and society.
2. **Next Generation AI (B+):** The evolving advancements and developments in the field of artificial intelligence that push the boundaries beyond current capabilities. It is the next generation of Artificial Intelligence (AI) that is expected to be more advanced and sophisticated than the current AI systems.
3. **Advances in Cybersecurity (B)** will enhance public confidence and will enable reliance on the cyber infrastructure for large scale applications including energy production and distribution.

audio, visual) will become regular tools that will require careful management.

5. **Remote Healthcare (B),** monitoring sensors and system-level data integration will enable patients to obtain remote medical assistance, physicians to improve diagnosis and treatment, optimal utilization of individuals' medical history, and efficient health care delivery protocols.
6. **Digital Twins for Vertical Applications (B)** will advance state of the art of predictions, what-if-analysis and oversight in a number of industries, such as data centers, medicine, geo-physical hazards, manufacturing, agriculture, transportation, and many others.
7. **New 3D Printing Applications (B)** will evolve towards customized and automated solutions in many domains.
8. **New Programming Models (B-).** Advances in AI, broader adoption of script-based languages, and further digital transformation into non-programmers' world will further increase ease of development and require new programming models and DevOps, such as serverless, from the Edge to Cloud.
9. **Reliability (B-)** will emerge as a major concern in a widespread set of application areas.
10. **Autonomic Autonomous and Hybrid Systems (B-)** will see increased development and adoption in areas, such as driving, laboratory work, agriculture, and many others.
11. **Distributed Energy Resources for Powering Data Centers (B-)** Engaging renewable energy based on distributed energy resources for powering data centers will have a high impact on clean energy requirements for data centers.
12. **Sustainable ICT (B-):** will evolve by designing, manufacturing, using, and disposing of electronic systems.
13. **AI for Agriculture (B-)** will become a regular tool that will require careful management.
14. **Non-Terrestrial-Networks (B/C)** involving satellites and high-altitude platforms (HAPs) expand and augment the capabilities of terrestrial networks (TN) involving wireless and cabled communications in the quest to connect everything to everything (E2E) in real time (RT).
15. **New Battery Chemistry and Architecture (B/C)** will replace Lithium and will make it possible to make batteries that are cheaper and more sustainable.
16. **Low Power AI Accelerators (B/C)** will be key-components for practical, compact, cost-effective, long-term reliable computation units for Self-driving vehicles and AI robots, data-centers, LLM, systems, smart phones, games.
17. **Alternate Materials for Electro Machines (EV motors) (C+):** Inadequate raw materials for conventional high-performance electro machines motivates discovery and engineering.
18. **Cost Effective Recycling of Batteries (e.g. Lithium) (C+)** to recover materials for reuse will reduce the need for mining and increase the general sustainability of battery technology.
19. **Metaverse (C+)** will bridge the gap between the real and the digital worlds, by solving real world industrial problems digitally.
20. **Accessible Quantum Computing (C-)** will improve public understanding and access to the power of quantum computing, increasing 'conventional' computing efficacy exponentially.
21. **Satellite (Constellation) Recycling (C/D)** will enable circular economy in space ensuring long term sustainability. We expect an initial success in 2024 with increasing awareness of the tremendous impact on Humanity.

approach to farming that strives to improve the health of agroecosystems and the natural ecosystems that support them.

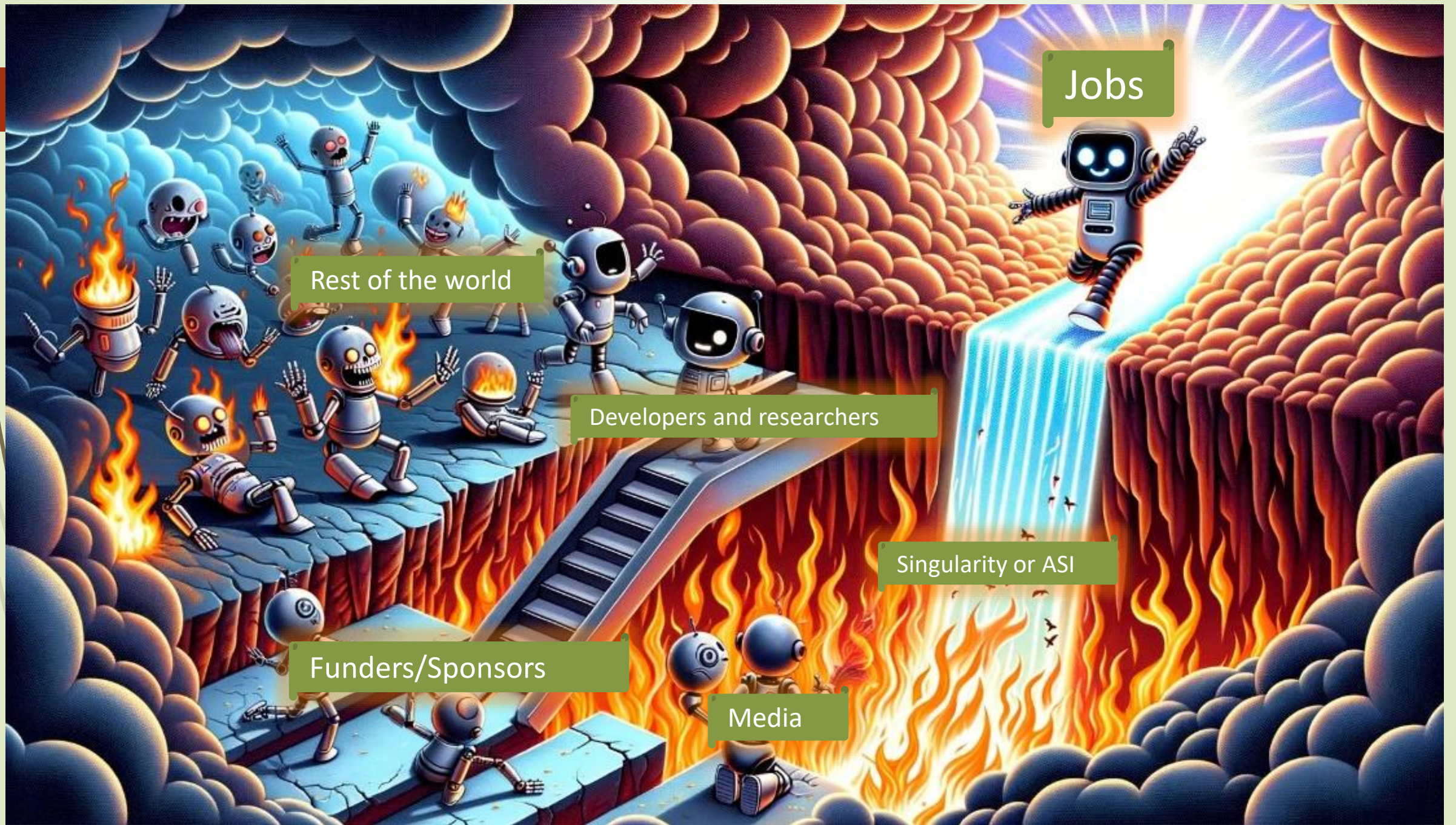
Trending Research Fields

- 01 — Agentic AI
- 02 — Autonomous systems
- 03 — Carbon aware computing
- 04 — AI based supercomputers
- 05 — Brain Machine Interface
- 06 — Sustainable AI





[Why Data Is The New Oil? Part 1 - Breezy Briefings \(substack.com\)](http://substack.com)



Jobs

Rest of the world

Developers and researchers

Singularity or ASI

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Thank you for listening

Questions & Answers