Challenges of AI Disruption

This editorial is based on **PREPARING FOR a DISRUPTION** which was published in The Indian Express on 21/08/2023. It talks about the potential challenges posed by Artificial Intelligence and how India should tackle them.

For Prelims: Generative AI, Large Language Models (LLMs), National AI Portal of India, FutureSkills PRIME programme, Global Partnership on Artificial Intelligence (GPAI), National AI Portal of India, AI for All, Responsible AI for Youth programme

For Mains: Generative AI: its applications, Challenges,and policy measures to address the challenges

The global Generative AI market is projected to experience explosive growth in the coming years, with a **45% compound annual growth rate expected from 2021 through 2028.** As the commoditization of AI services becomes more widespread, business models of industries, from software development to entertainment, will change drastically. LLMs (Large Language Models) and Generative AI are set to automate various tasks that require natural language understanding – for instance, summarisation, translation, answering questions, coding, and even conversation.

What are Generative AI and Large Language Models (LLMs)?

- **Generative AI:** Generative AI refers to the subset of **artificial intelligence** that focuses on creating systems capable of generating content that is similar to what a human might produce.
    - These systems learn from patterns in existing data and then use that knowledge to produce new, original content.
    - This content can take various forms, such as text, images, music, and more.
- **Large Language Models (LLMs):** LLMs are a **specific class of generative AI models that are trained to understand and generate human-like text.**
    - These models are built using deep learning techniques, particularly using neural networks.
    - They can generate coherent and contextually relevant text given a prompt or input.
    - One of the most well-known examples of LLMs is OpenAI's **GPT (Generative Pre-trained Transformer).**

What are the Applications of Generative AI?

- **Healthcare:**
    - **Symptom Assessment and Disease Detection:** AI-powered apps like **Ada** can provide preliminary assessments of symptoms and guide users towards appropriate medical actions.
    - **Accessibility and Patient Support**: Apps like **Be My Eyes** and conversational AI solutions like **Hyro** are improving accessibility for visually impaired individuals and

streamlining patient interactions with health systems.
- **Disease Detection:** This can help early detection of Disease. SkinVision demonstrates how generative AI can aid in the early detection of skin cancer, enhancing the speed and accuracy of diagnosis.
- **Education:**
  - **Content Creation and Personalization:** Generative AI can assist educators in creating educational content, adapting it to different styles, lengths, or languages, and tailoring it to individual student needs.
  - **Assessment and Feedback:** AI-generated content can aid in formative assessment, offering students instant feedback on their work, thereby facilitating a more dynamic learning process.
- **Entertainment:**
  - **Art and Design:** Generative AI can be used to create stunning graphics, designs, and artwork, enhancing the visual aspects of video games, fashion, and other creative industries.
    - For example, [DALL·E 2](#) **is a generative AI model** that can create images from text description.
  - **Music Composition:** AI-generated music can provide an endless stream of compositions, catering to various moods, genres, and styles.
    - For example, if any singer is not between us, any songs can be generated in his voice with the help of AI.
  - **Fashion:** The fashion industry can benefit from generative AI by generating new clothing designs, helping designers explore innovative concepts.
- **Content Design and Coding:**
  - **Product Development and Innovation:** Generative AI's ability to generate designs, codes, and schematics based on natural language inputs can accelerate the product development cycle and foster innovation.
    - According to a report by GitHub, a vast majority of developers in the US have embraced AI coding tools, integrating them into their workflows both professionally and personally.
      - Ninety-two percent of programmers based in the US are now leveraging AI to supplement their coding abilities.
  - **Content Summarization:** Generative AI can quickly summarize lengthy articles, emails, and reports, making information consumption more efficient.
  - **Enhancing Visual Content:** By adding animations, voiceovers, and other elements, generative AI can improve the quality and effectiveness of demonstration and explanation videos.

What are the Challenges related to Generative AI before India?

- **Economic Challenges Amid Media Tech Disruptions:** As these technologies upset the mode of producing and consuming media products and information, there will be significant economic challenges such as the disruption of markets, creation of inequalities, reduction of incentives for human creativity and innovation, and the displacement of workers.
- **Job Losses:** Tasks that involve routine information processing, data entry and filling out forms in sectors such as customer service, research, even blue-collar jobs and legal segments, may be affected. **Even with partial automation, almost 5-10% of roles in the sectors may cease to exist in the near future.** This will create hundreds of millions of unemployed skilled and semi-skilled workers.
  - Also, There is **no guarantee that generative AI and related technologies will create new jobs** to make up for the lost ones.
- **Not So Well Prepared**: India is not as well-prepared as China and the US to face the onslaught of Generative AI and related technologies. **The country doesn't have any major investments in AI chip hardware design.** The absence of audited data sets for training and fine-tuning models is a major shortcoming.
  - India also doesn't have its own foundational or **generative model like GPT or Wu Dao.**
  - Compared to China and the US, India has significantly fewer experts with PhDs in fields related to AI.
- **Limitations for Training Large Language Models:** There are limitations in access to **cloud**

computing in India for training large language models, and it is expensive. India does not have large corporations that invest heavily in in-house AI research.

- **Brain Drain:** The number of AI policy think tanks and research institutes is also much higher in the US and China. Any good quality talent in these fields in India will quickly migrate to these destinations.
- **Lack of a Comprehensive and Composite AI Strategy:** There is a serious lack of a comprehensive and composite AI strategy that connects government, industry, academia, and society. As the race for large language models heats up, data security and privacy concerns in India will reduce our chances of getting valuable data that can train robust models.

What Policy Measures can be taken?

- **Develop a Comprehensive National AI Strategy:** Creating a well-defined national AI strategy is crucial. This involves bringing together various stakeholders including government agencies, industry representatives, researchers, and ethicists.
    - **The strategy should outline the country's goals for AI development, ethical guidelines, regulatory frameworks, and plans for responsible deployment.** It should also consider potential risks, such as bias and privacy concerns, and how to address them.
- **Establish AI Policy Think Tanks and Research Institutes:** Think tanks and research institutes can play a vital role in fostering innovation and nurturing AI talent. These institutions can conduct in-depth research on AI trends, ethics, and policy implications. They can also provide guidance to policymakers and industry leaders, helping them make informed decisions. Collaborations between these entities and universities can further enhance the ecosystem of AI research and development.
- **Foster Collaborations and Responsible AI Applications:** Collaboration between academia, industry, and international partners is essential for sharing knowledge, expertise, and best practices. By fostering these collaborations, countries can develop responsible AI applications that adhere to ethical standards, privacy regulations, and safety protocols.
- **Policy and Legal Measures for Worker Transition:** To ensure a smooth transition for workers, it's essential to implement policy and legal measures that protect their rights and livelihoods. These measures may include **severance payments, advance notice of automation, and regulations that prohibit discriminatory AI systems in the workplace.** Creating an environment where workers are informed about impending changes and have support can alleviate the anxieties associated with job displacement.
- **Tax Breaks and Incentives for Business Retraining:** Incentivizing businesses to retrain their workers can be achieved through tax breaks, grants, or other financial incentives. This encourages companies to invest in their workforce's skill development, ensuring that their employees are equipped to handle the evolving job landscape. Such programs could provide tax benefits to companies that offer comprehensive training and re-skilling opportunities.
- **Enhancement of Social Safety Nets:** Enhancing social safety nets is vital to provide a safety net for workers facing job displacement. **This may involve reforms to pensions, insurance, and employment regulations to accommodate the changing nature of work.**
    - **Recalibrating unemployment benefits, considering unemployment insurance schemes, and creating temporary income supplements** can help affected workers manage their financial situations during transitions.
- **Job Placement Services and Support:** Creating job placement services as part of the strategy can assist displaced workers in finding new roles that align with their skills and aspirations. These services could **involve career counseling, job matching, and facilitating connections with employers in emerging industries.** Support in navigating the job market can help workers transition more effectively.

What are the Steps taken by the Government in the field of AI?

- The **National AI Portal of India**, launched in 2020, is a one-stop digital platform for artificial intelligence-related developments in the country. It showcases AI initiatives, resources, events, research, and innovation by various stakeholders from academia, industry, and government.
- The **Responsible AI for Youth programme,** launched along with the portal, aims to empower young students with the skills and knowledge to create meaningful social impact solutions using AI.

- It involves online training modules, project-based learning, mentorship, and national-level project competition.
  - The **Global Partnership on Artificial Intelligence (GPAI)**, of which India is a founding member, is an international and multi-stakeholder initiative to guide the responsible development and use of AI, grounded in human rights, inclusion, diversity, innovation, and economic growth.
  - India's AI strategy is known as **"AI for All",** which focuses on leveraging AI for inclusive development, representing the country's 'AI for Social Good' vision.
    - It was formulated by **NITI Aayog** in 2018 and covers five core areas for application of AI: agriculture, education, health, smart cities/infrastructure, and transport.
  - The **FutureSkills PRIME programme,** **launched by MeitY** in partnership with NASSCOM, is a business-to-consumer (B2C) framework for re-skilling/up-skilling IT professionals in emerging technologies including AI.
    - It offers online courses, assessments, certifications, and recognition badges to learners.

Drishti Mains Question:

Discuss the impact of Generative AI on the Indian Economy, outlining its applications. Suggest policy approaches for maximizing benefits while addressing negative consequences.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims:

Q. With the present state of development, Artificial Intelligence can effectively do which of the following? (2020)

1. Bring down electricity consumption in industrial units
2. Create meaningful short stories and songs
3. Disease diagnosis
4. Text-to-Speech Conversion
5. Wireless transmission of electrical energy

Select the correct answer using the code given below:

(a) 1, 2, 3 and 5 only
(b) 1, 3 and 4 only
(c) 2, 4 and 5 only
(d) 1, 2, 3, 4 and 5

Ans: (b)

Q. Consider the following pairs: (2018)

	Terms sometimes seen in news	Context/Topic
1.	Belle II experiment	Artificial Intelligence
2.	Blockchain technology	Digital/ Cryptocurrency
3.	CRISPR – Cas9	Particle Physics

Which of the pairs given above is/are correctly matched?

(a) 1 and 3 only
(b) 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Ans: (b)

Q. What are the main socio-economic implications arising out of the development of IT industries in major cities of India? **(2021)**

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