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# **Outcome Document on the ISAIL Policy Innovation Committee Session on the Economics & Ecosystems of AI Compute (September 15, 2024)**

The Policy Innovation Committee of ISAIL had hosted a virtual committee session on **September 15, 2024**, inviting specialists and industry stakeholders to discuss .

## **Incumbent Members of the Committee Sessions**

- **Ayush Chandra** (Chairperson of the Session, Chairperson, ISAIL Policy Innovation Committee)
- **Abhivardhan** (Chairperson, ISAIL)

## **Participating Entities and Professionals**

- **Bogdan Grigorescu**, Vice President, Advisory Council, Indian Society of Artificial Intelligence and Law
- **Dr Hoda Al Khzaimi**, Assistant Professor, NYU Abu Dhabi Campus & World Economic Forum
- **Sreedhar Kosaraju**, DeepTech Naipunya Foundation

## **Editors of the Document**

**Parvathy Arun**, Research Intern, Indian Society of Artificial Intelligence and Law

## Discussion Points for the Committee Session

The panel focused on the following points broadly:

- *The economic and legal challenges associated with the interplay of AI-computing infrastructures.*
- *The strategies therein adopted by India to position itself as a key player in the domain of AI-Development and Semiconductor sector*
- *The facilitation of a collaborative environment between the Government and corporations for furthering accessibility and affordability of AI-compute infrastructure to MSMEs and Startups*

## Abhivardhan's remarks

- The speaker essentially deals with the rising importance of the contentious question concerning, Economic legal issues around the compute infrastructure invested to enable AI solutions.
- Making reference to companies like NVIDIA, and other cloud companies, the speaker stated that the former companies are important stakeholders who offer their space to ensure computation, server capacity semi-conductors, processing capacity and accuracies of large lang models of any AI models
- In the regions of the larger Indo-Pacific and the global south, including India and West Asia, what was noticed is that while the compute infrastructure is being made available, the kind of economic and legal issues that are associated with it is not properly understood, or being properly represented in forums.
- The speaker using Nvidia for further understanding, highlighted its role as a monopolistic player in the semiconductor industry, known for significant technical achievements.
- Despite its success, the company is impeded by market concerns, such as overpricing of products related to computational infrastructure and AI components, which leads to issues of demand and scarcity and demand impacting investors' interest in AI.
- Similar concerns have been noted in the domain of OpenAI especially concerning Safe Harbor policies. Citing the launch of the Orion 1 model, the speaker stated that the former's issuance of notices to users regarding policy violations led to several concerns among investors.
- Despite its challenges, generative AI has the potential to perform narrow AI processing, resulting in productive outcomes. For example, startups in agricultural

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technology have successfully used generative AI, proving that not all solutions have to be business-to-consumer (B2C) based modus-operandi.

- The speaker was further familiar with startups in sectors like agricultural technology, demonstrating that AI can support diverse industries beyond traditional B2C applications.
- The speaker noted that this roundtable would address these key economic, legal, and policy issues from the outset, aiming to provide a broad understanding of the challenges at hand.

There were many discussion points planned for the session, but it would begin as an introductory session to cover foundational economic, legal, and policy considerations.

### **Ayush Chandra's Remarks**

- The Speaker made reference to the upcoming field of semiconductor industry in Greater Noida that have noticed a surge in partnerships with the Government of India, marking a significant step for India in the said domain.
- The speaker noted that companies like Nivida and Apple are taking an interest in the Indian market, particularly in how they can leverage Indian capabilities for semiconductor manufacturing and AI initiatives under the Government of India's AI mission.
- The speaker believes that in the forthcoming 5-10 years, India could become a key player in the said domain, with global tech companies relying heavily on Indian resources.
- **Ayush highlights some legal and ethical Issues:**
  - As a developing country, India still lacks sufficient resources in the semiconductor industry, but the current developments are promising for Indian companies working on AI models, large language models (LLMs), and partnerships with tech companies.
  - While India currently lacks a comprehensive legislative framework for semiconductors and AI, there is optimism that the present government will soon introduce relevant regulations for these sectors.

### **Dr Hoda Al Khzaimi's Remarks**

- The topic of the speaker's presentation was "The Economics of Compute Infrastructure and Its Role in Shaping AI Ecosystems".

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- The speaker stated that for understanding the economic value of AI, it is essential to look beyond the regular compute stack. Building AI infrastructure is not only an investment in technology but also in achieving sovereign independence.
- Over the long run, this investment is about creating market monopolies, futuristic foundational technologies, and positioning countries as pioneering global entities.
- Accolading Australia's strategic policies, the speaker noted that the former conducted an impressive analysis of monopolizing of critical technologies, including AI, advanced materials, and computing, by varied countries. The USA and China emerged as top contenders, with India also being featured on the map.
- Regardless of a country's spending on technology stacks, access to markets and pricing infrastructure is crucial. Without it, countries cannot dominate or protect their market share in the future.
- India's semiconductor development efforts are underway, but export restrictions may prevent India from receiving cutting-edge technology to support its AI infrastructure.
- The speaker noted that investment in AI is not just about GDP growth, but also inculcates the total factor productivity (TFP), which opens new markets and economies, surpasses geo-political tensions and fosters a culture of innovation.
- Relying on the UNCTAD report, the speaker noted that investment in 4th Industrial Revolution technologies could grow tenfold, with AI being one of them. A graph presented by the speaker indicated that compute infrastructure costs could reach 2.2% of annual GDP by mid-2026, raising concerns that these costs could eventually exceed the total US GDP.
- Dr Hoda accoladed India for making strides in pushing for semiconductor manufacturing, supported by various government initiatives. However, the speaker emphasized that compute costs are projected to exceed US GDP by 2037.
- The speaker refrained from addressing the high licensing and R&D costs, which range from USD 500,000 to USD 10 million annually for mid-size companies. Instead, she focused on the global inefficiencies caused by monopolies and geopolitical competition.
- The global AI compute landscape is still dominated by North America, followed by China and Europe. However, data from certain regions remains ambiguous, making it difficult to fully assess the global AI distribution.
- The speaker also noted China's "Eastern Data, Western Computing" policy, which relocates data processing to regions rich in renewable energy to develop greener computing infrastructures. Similar initiatives could lower future compute costs.
- The speaker emphasized the importance of building AI infrastructure in a way that avoids uneven access and concentration of resources. Currently, 80% of global

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compute resources are concentrated in developed regions, leaving countries like those in Africa and Southeast Asia behind.

- It's crucial to develop regulatory frameworks that are value-based and principle-based, ensuring that AI prioritizes people, not just technology.
- The Speaker thus necessitated the importance of promoting transparency, and Global cooperation when it comes to AI development because, one of the major recommendations that could be put forth, while dealing with shaping Global AI ecosystem is, the need for a global infrastructure fund.
- The speaker concluded with a call to enhance cybersecurity, foster public-private partnerships, and activate clean energy investments in AI infrastructure.

### **Sreedhar Kosaraju's Remarks**

- The speaker essentially focused on the domain of startups and SMEs, especially MSMEs, by detailing on the various policies instituted by the Indian government.
- However, compute infrastructure continues to remain un-affordable for most startups. The speaker raised question on the ambiguous role of the government to help reduce these costs and the necessitated collaborations that would facilitate the same to be more accessible.
- The speaker stated the need to shed light on the government's present role in funding only the top institutes like IITs, and a further question is raised on the role of corporates in making compute infrastructure available for startups.

### **Bogdan Grigorescu's Remarks**

- Running operations on a public cloud can never fully be contained to the user's corporation or a particular organization because the information that goes into such infrastructure is not entirely in the possession of the organization that operates it. In fact, the entity that controls the cloud infrastructure is the one that holds the power.
- Startups most likely believe that public cloud would be more beneficial for them than any other alternative, however, such a position is no longer justified. Cost of public cloud services now exceeds the cost of on-premise solutions.
- Software defined networks (SDN) and similar services where the customer owns the infrastructure, but not the space itself, are now much less expensive than the public cloud. Moreover, these services enable better management of the resources such as data or bare metal.
- Most public clouds are quite liberal when it comes to providing credits to new and small enterprises, which was a helpful approach in the past. Nevertheless, the

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speaker noted that such credits might generate a problem when the start-ups are already basing their products on the cloud infrastructure and it becomes costly to remove it from the system before the created Minimum Viable product is completed.

- The speaker then focussed on various difficulties that arise while using publicly deployed AI models, which involve feedback loops and multiple players, making it problematic for pricing the tool.
- The speaker advised that startups should be wise about attempting cloud strategy and its management, as considerable budgets do not always translate into benefits.
- While the speaker accepts that there exists no contention regarding the importance of security considerations, but this activity is presumed to be routine for the majority of the startups. In terms of pricing – they should rather position themselves and ask if public cloud is useful at all.
- Noting examples from nations such as the UAE and Qatar, it was found that long term strategies have embedded innovation and technology that are modernizing and utilizing their resources instead of depending on strategies which are out of touch with technology evolution.

### **Concluding Aspects of the Session**

- The speaker examined AI compute in two ways: Current Status and the Breakdown of Compute. The speaker further analysed the economics of compute and its supply chain, aiming to understand where we are today and how we got here to predict future directions.
- The speaker emphasized the need for regulation, not to stifle innovation but to ensure a more equitable society. They advocated for defining roles and responsibilities of large corporations and other stakeholders in shaping AI, making it meaningful for the consumers.
- It was observed that there is a leadership vacuum that places power among the people who work in the supply chain and helps in development of AI. This encompasses engaging the techies to meet the needs of the society and equipping people with the right skills.
- It was recommended that businesses take part in more AI activities as part of their corporate social responsibility (CSR), and said that CSR needs to be re-defined in more precise terms.
- In the same vein, the speaker recommended teaching the concepts of automation and data from an early age to children, since majority of adults do not know these technological fundamentals.

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- The speaker acknowledged the ongoing developments in education in places such as the UAE and Qatar, but highlighted that this area is quite underdeveloped in the West.
- The practice of data scraping is not uncommon in India, and several such initiatives have been undertaken for the same.
- The G20's AI strategies were critiqued for focusing on regulation without fully understanding the pre-regulatory levels needed for governance.

### **Key Concluding Considerations on AI Compute**

This segment presents the analysis of the challenges that AI Compute Infrastructure presents, with specific attention to, market structure, availability, and regulation. The dominance of NVIDIA in the semiconductor market is put under scrutiny in the discussion, and the problem of exorbitant pricing and monopolistic control is pointed out as a challenge in sourcing the resources required for AI particularly in the Indo-Pacific and Global south regions.

The discussion points out that the application of AI is not limited to the conventional B2C models, but has several verticals (e.g. there is increased usage in agriculture). Therefore, the objective of the ensuing roundtable will be the economic, legal and political issues in question and potential participants will be multi sectoral.

The discussion sheds light on how intricate computation infrastructure is for most startups especially in the AI and DeepTech spaces, with many other sectors being avoided completely. In as much as the policies of the Indian government favour artificial intelligence ecosystem beneficial for the startups, the pricing of the compute resources remains a fierce challenger especially to little firms like MSMEs. While esteem organizations like IITs enjoy the government subsidies, the whole start-up ecosystem suffers from insufficient funds and technology. It begs the question on how the nation's governments and businesses will work together to afford access to computing facilities.

Moreover, the element of vendor lock-in, further complicates said processes for entrepreneurs. Further, the discussion also reminds the readers about the changing global shifts in the innovation strategy. Some of the regions like UAE and Qatar have been forward looking and set goals that include technology to avoid such obsolete models and create the future that will integrate not because technology is there but because it serves as the core component of the nation's growth.

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From an Indian perspective, the discussion details on the prevailing lacuna in leadership that essentially focusses on mobilizing the country's talent in technological innovations, and fostering the same for instituting a more developed set of AI platforms that address local requisites, such as agriculture and primary education. The speaker's observations the need to institute a pre-regulatory governance underscores the complexities of this stratagem that aims at establishing effective AI policies, globally. Without a foundational understanding of the various intricacies involved in the technological and ethical aspects of AI, regulation policies harness a risk of not having an intrinsic character of practical applicability.

**Thus, a more inclusive environment for AI, with sustainable growth as its primary tenet has been propounded. By focusing on equitable access to compute infrastructure, redefining corporate social responsibility, and advocating for early education in AI, the speaker outlines a path that could lead to more socially responsible AI development. As a conclusion, such a discussion draws rather a clear image of the compute infrastructure spectrum - the one where the magic of the public cloud for club-house entrepreneurs has started to fade and the necessity for a more permanent, clear-cut, and controllable alabaster structure solution is coming into place.** 

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### Video Links (If any)

Session: <https://www.youtube.com/watch?v=d5e3LrysBw0>