

Artificial Intelligence for Development: The Missing Link

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Introduction

- The sudden raise of Artificial Intelligence (AI) and its alleged virtues for Development...
- AI for Good, AI for the Poor, AI for Africa, Responsible/Ethical AI, AI4D...
- **Is AI the ideal technology for Development?** The answer is not obvious, but for sure, there has been no formal validation of AI4D so far!
- Based on our current research investigations, we believe that the use of AI Technology, in development context, is misleading and, to some extent, against the fundamentals of the Technology for Development....
- We base our investigation on the ICT4D theory, which is the formal academic field of knowledge where the interactions between Technology and Development are addressed...
- We are now elaborating Smart-ICT4D which allows to fully take benefit of AI, within the vision and mission of ICT4D...

Introduction

Our goal is to help academics and decision makers, **especially in developing countries**, to ponder all factors related to the use of AI, and to embrace a wider perspective in elaborating and sustaining the national digital transformation strategies of their respective countries.

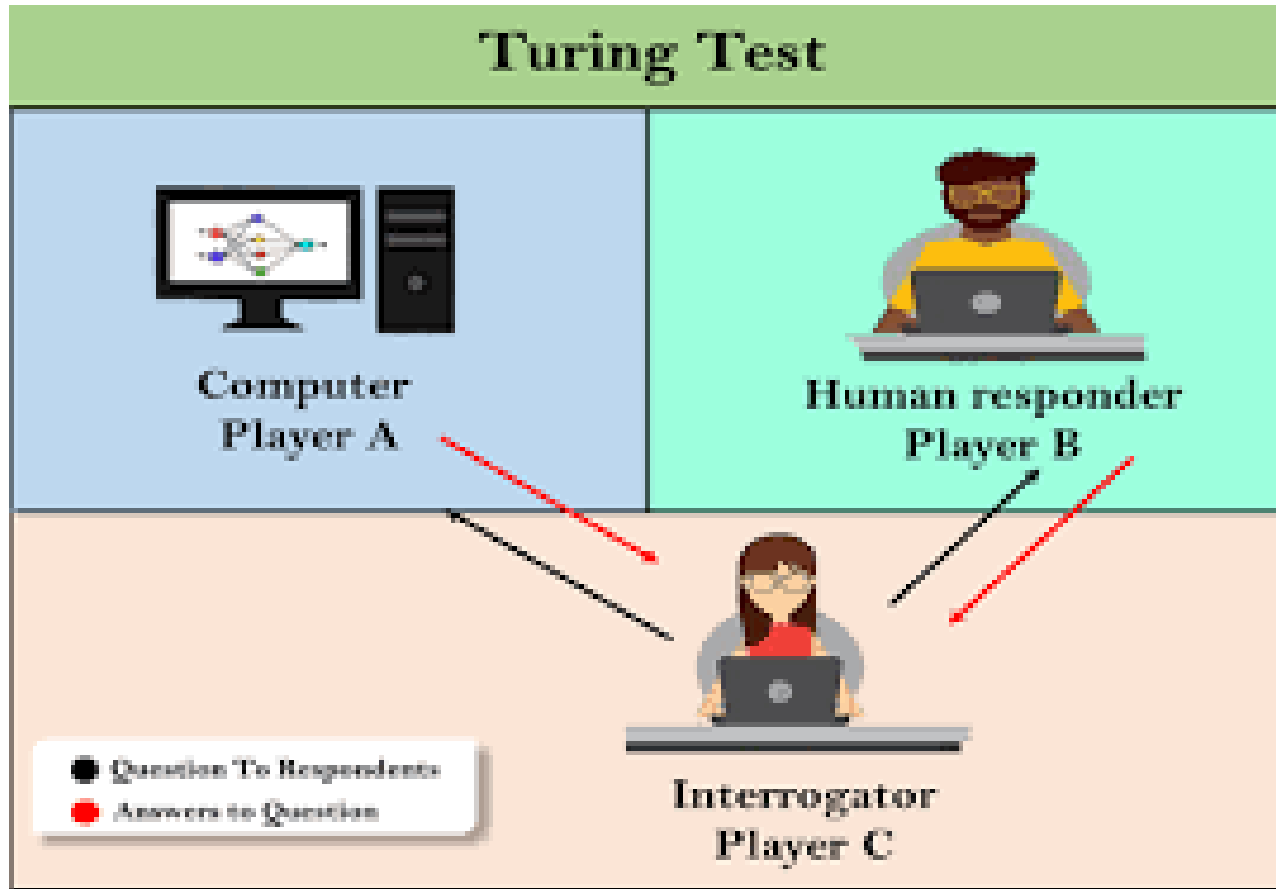
What is AI ?

- What is AI ?
- This begs a trickier question: What is Intelligence?
- Hard to define!
- Some reference points:
 - Remarkable intellectual performance...
 - Commonsense / Intuition...
 - Emotional intelligence...
- Ability to adapt / adjust...
- Ability of learning, applying and discovering other learnable things...
- The pace, breath and depth of what is learnt are important to measure the intelligence!

What is AI ?

- The study of computer programs that exhibit **behavior** and/or **provide results**, which we consider intelligent in Humans:
 - Solving problems
 - Responding to novel situation
 - Using previous knowledge
 - Learning from experience
 - Processing abstract information
 - Predicting events, results of actions,
 - etc.
- Building Agents/Devices to **mimic tasks** that are, a priori, **associated with humans** such as understanding, reasoning, searching, matching, seeing, singing, thinking, talking, etc.

What is AI ?



What is AI ?

- AI is not about supporting/helping people in doing what they do...
- AI is rather about **replacing people** in what they do with intelligent devices & robots...
- AI is **subject to an ongoing global debate** with wider aspects related to the whole humankind nature and future...

→ **This presentation is not about AI as a such but rather on its usage in Development context**

What is AI ?

- How does the mental mind arise from a physical brain?
- Where does knowledge come from?
- How does knowledge lead to action?
- Can all knowledge be characterized by logical theories connected, ultimately, to observation sentences that correspond to sensory inputs ?
- The rules of logically valid reasoning (syllogisms) ?
- Rigorous thinking ?
- Can formal rules be used to draw valid conclusions ?

What is AI ?

- ❑ Due to the nature of these questions, that are mainly about how cognitive processes work, **the progress in addressing/answering them is slow...**
- ❑ But AI is a Technology and, as a such, needs to be implemented (or to be sold) in parallel to the theoretical investigations (which rely on the money generated by implemented AI technology!)...
- ❑ The idea is to develop some AI programs that “**do not care about the complicated questions**” but they provide an outcome that “**looks human**”, capitalizing on profusion of data, GPU/CPU performance, Network speed and storage, miniaturization, robotics, etc.
- ❑ Strong AI (SAI) vs Weak AI (WAI)...

What is AI ? Strong AI vs Weak AI

Search engines and assistants, Route planning, (ex. maps, traffic, etc.), Medical diagnosis, Automated help desks / Chatbots, Spam / fraud detection, Profiling and product recommendations, machines diagnosis, Security and Surveillance, etc.

What is AI ? Strong AI vs Weak AI

- WAI is not interested in the **intelligence of computer programs behaviour** but, rather, it is interested in the *intelligence of the outcome!*
- WAI applies in/for a **specific task/domain**, with the goal of providing plausible answers (or answers that sound good), using different computing technics including ML, DLL, LLM, etc.
- This is mostly what **is happening in the current AI hype...** Focusing on high performance, profusion of data, connectivity and business opportunity...

Some important features of Weak AI...

- (1) Its is essentially data driven...
- (2) It lacks explainability...
- (3) It lacks generalization/adaptability...
- (4) It is mainly cloud-based...
- (5) It is unable to handle unforeseen situations...
- (6) It is expansive...
- (7) It is built on the paradigm of Black-Box Architecture...

Is AI what we need for Development ?

- ❑ To answer this question, it is necessary to **at least “consult”** the theory of ICT4D...
- ❑ Unlike “mainstream ICTs”, where the main goal is to create software for business purposes and economic growth, ICT4D is about using digital technology specifically and explicitly to contribute to development...
- ❑ ICT4D is not about the technology itself, but it is rather concerned with how these can be used to enhance the social sectors, to ease the citizens life, to empower the poor & marginalized communities, etc.
- ❑ Reducing / Overcoming the **Digital Divide**...

ICT4D in a nutshell...

Vision:

- (a) Technology is being used everywhere to boost human activities in all sectors
- (b) Technology is a must, and no one can avoid it
- (c) Technology creates a digital divide
- (d) Technology alone cannot change people's lives

→ Subordinating technology to development, to use (and appropriate), as a means to streamline & boost development, while having a vigilant eye on the digital divide

ICT4D in a nutshell...

Mission:

- (a) Empowering the poor and marginalized
- (b) Empowering communities in general
- (c) Enhancing social sectors
- (d) Attaining the SDGs

→ Impacting Development through the use of appropriate digital technology

ICT4D in a nutshell...

Values:

- (a) Prioritizing social sectors and applications
- (b) Promoting, using and learning from aboriginal knowledge and local context (localization)
- (c) Involving beneficiaries
- (d) Capacity building

→ A Wise and customized digital transformation strategy, in/for different development contexts of developing countries

ICT4D in a nutshell...

- In the ICT4D Theory, **technology appropriateness means:**
 - “
 - ❑ Recognizing, appreciating and making use of local skills, knowledge and aspirations rather than the ‘outside expert’...
 - ❑ Making use of local resources, as far as possible – material and skills...
 - ❑ Being sensitive to community benefits from the scheme and ensuring they are distributed as widely as possible and have minimal negative consequences...
 - ❑ Being sustainable – both to the environment and in having long-term operation without the need for constant inputs of investment or maintenance...”

”

Again, is AI what we need for Development ?

- Simply put, a development-prone technology shall fulfill most of the ICT4D technology appropriateness features, including:
 - Accessibility...
 - Affordability...
 - Openness...
 - Understandability...
 - Customizability...
 - Masterable...
 - Ownership,
 - Involvement...
 - ?? Any others ??

Again, is AI what we need for Development?

- **Black-Box Architecture** → Ownership & Appropriation & Capacity building...
- Generative → No “Knowledge Creation” nor Creativity...
- Misleading (fabulation and hallucination!) → Unreliability, liability and ethics...
- Inaccurate → Unreliability...
- **Domain/Task specific** → Change of focus...
- **Lack of explainability** → Empowering autocratic and authoritarian governance systems...
- **Data driven** → ??? ...
- **Adaptability** → Dependency...

Again, is AI what we need for Development?

- **Cloud Based** → Sovereignty and self subsistence...
- **Expensive and exclusively B2B setting** → Affordability...
- Technology stack is very limited → Open technology...
- Newness → ???
- Controversial → Acceptance and readiness...

Conclusion

- AI, as a field of knowledge, is undoubtedly interesting and exciting! It has great potential, but **it does not fit the context of Development and is not inherently *ICT4D Compatible*...**
- We contend that AI technologies should be considered as enablers, just like any other technology, that is contributing to ICT4D, **but not replacing or reducing ICT4D....**
- At best, if we would like to single out the particular contribution of AI to ICT4D, we suggest to use the acronym ‘Smart ICT4D’, which means “ICT4D wisely enhanced with relevant AI applications as well as any other enabling technology”...

Conclusion

- Instead of being tossed back and forth by the current AI hype, we believe that decision and policy makers (in developing countries, particularly) would have advantage to:

Concentrate on the actual needs of their country and population, and define these (needs) independently of any specific technology, platform or tool + Consider the technological/workforce requirements for the development, deployment and maintenance of ICT and AI infrastructures + Develop plans that prioritize ICT4D (Model, Techniques and Tools), as the main enabler for the digital transformation process, considering AI as an approach providing new techniques/tools that complement existing ICT4D technologies + Assess the social and economic outcomes of each technology component of the proposed solution as well as of their outcomes + Revise plans, allocate budgets and set schedules that provide the best benefits for Development in their country.

- We are currently working on a methodological framework to accompany policy and decision makers who would like to adopt the Smart ICT4D vision.



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Gracias

Grazie

شكرًا

Thanks

Brigado



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