



المجلس الرقمي
Digital Majlis

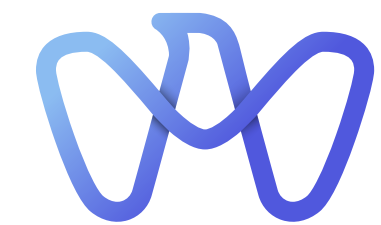
AI and the Future of Government



جامعة خليفة
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Contents

1. Introduction	02
2. AI in Government: Opportunities and Challenges	03
Guiding Questions	05
3. AI and the Future of Education	06
Education in AI	07
AI in Education	08
Guiding Questions	10
4. Governance of AI and the Role of Governments	11
Guiding Questions	12

1. Introduction

Artificial Intelligence (AI) has taken the center stage in the past few years as new algorithms have emerged, and computing capabilities have taken an exponential leap. AI is not a new concept; it has been around since 380 BC when the mathematicians of the era propounded the use of machines to assist humans in their work.

The term *Artificial Intelligence* itself was coined by John McCarthy in 1956 when he organized the now famous Dartmouth Workshop, which laid the foundation for automatic symbolic inference. From *fantasy to reality* - we have come a long way since, even witnessing the adoption of sub symbolic AI techniques like Machine Learning. Today, **Artificial Intelligence is a reality!**

As with most technologies, the development and implementation of AI were initially driven by the private sector, with the government sector following suit.

Once AI is mature enough for widespread adoption, government has a responsibility to leverage it for the greater social good. Gartner

predicts that by 2020, over 75% of government agencies will be pursuing mission-critical AI initiatives.

Many are concerned about the effects of new technology and automation on the labor market. New and more flexible ways of working could infringe upon social and economic rights. While new jobs, such as in computer and data science, are being created, this may require considerable re-skilling of large parts of the population. Private sector also has a role to play in improving skill sets and preparing the workforce for new technological breakthroughs.



2. AI in Government: Opportunities and Challenges

Deloitte's latest report, 'AI-Augmented government', conservatively estimates that a simple process of automating already computer-assisted, routine tasks could free up 96.7 million federal government working hours annually, potentially saving \$3.3 billion. At the high end, Deloitte estimates that AI technology could free up as many as 1.2 billion working hours every year, saving \$41.1 billion. This raises a challenge to governments: re-defining the action domains for the human workforce.

The Digital Workforce (Artificial Intelligence) will be a standard feature in government and in the private sector. According to a study by Gartner, "One in five workers will have AI as their co-worker in 2022. More job roles will change as they become totally automated, so HR needs to prepare today."

As per McKinsey Global, "Fewer than 5 percent of occupations can be entirely automated using current technology. However, 60 percent of occupations could have 30 percent or more of their activities automated." governments thus will have to focus their attention on



building the required skill sets for such a hybrid environment where the Digital Workforce will team up with Human Intelligence. "By 2023, government CIOs will manage a workforce consisting of over 50% of positions that don't exist today." (Gartner)

As per Forbes, "the end result will be more time for employees to do what makes them uniquely human such as: 'complex problem solving, critical thinking, and creativity', the top three skills deemed essential by the World Economic Forum". This sets the priorities for governments - Awareness, Education, Capacity Building and Capability Development.

Government ecosystems employing large workforces around the world create a unique paradox- technology created by humans leads the way, while human kind comes second. Focused, upskilling training of the human workforce is the need of the hour for bringing it at the right competence level to fully harness gains from AI Technology, especially as over 75% of government agencies will be pursuing mission-critical AI initiatives by 2020, according to Gartner. AI adoption in key sectors of government has shown tremendous promise. Healthcare, education and transportation are three key vertical sectors that benefit from AI adoption to serve citizens better.

Collaborative Intelligence



AI in Government: Guiding Questions

01

What does the future look like for the government with Artificial Intelligence driving services?

What are the opportunities and challenges of Artificial Intelligence for Government?

02

How can governments initiate programs for upskilling the workforce, harness the human efforts for more analytical thinking and let the machines perform routine tasks with tireless perfection?



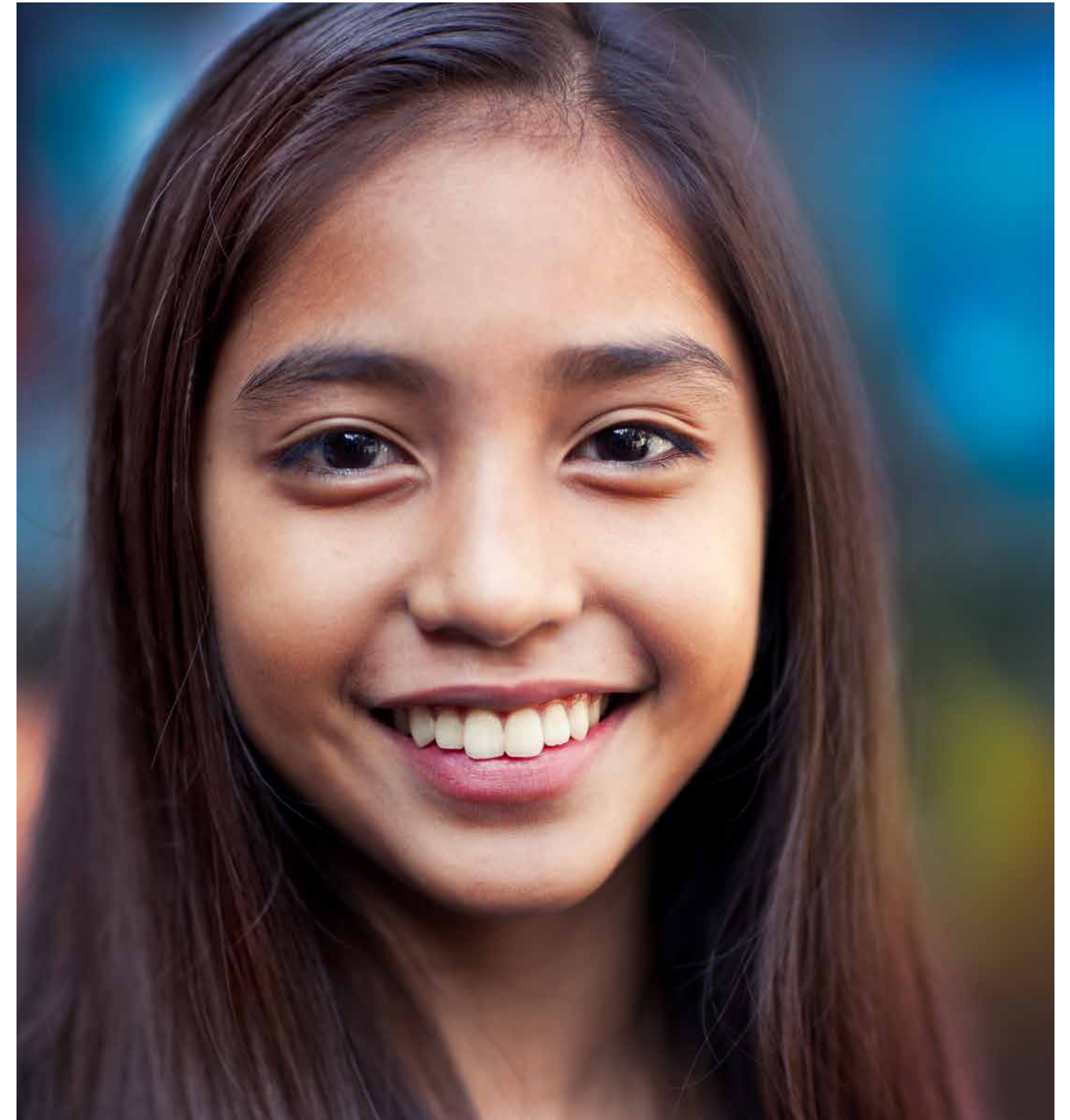
3. AI and the Future of Education

Governments need to focus their attention on building a talent pool capable to adapt to and adopt AI in their workstreams. This can only be brought together by an innovative effort to enhance education.

Innovation in Education has two dimensions:

EDUCATION IN AI

AI IN EDUCATION



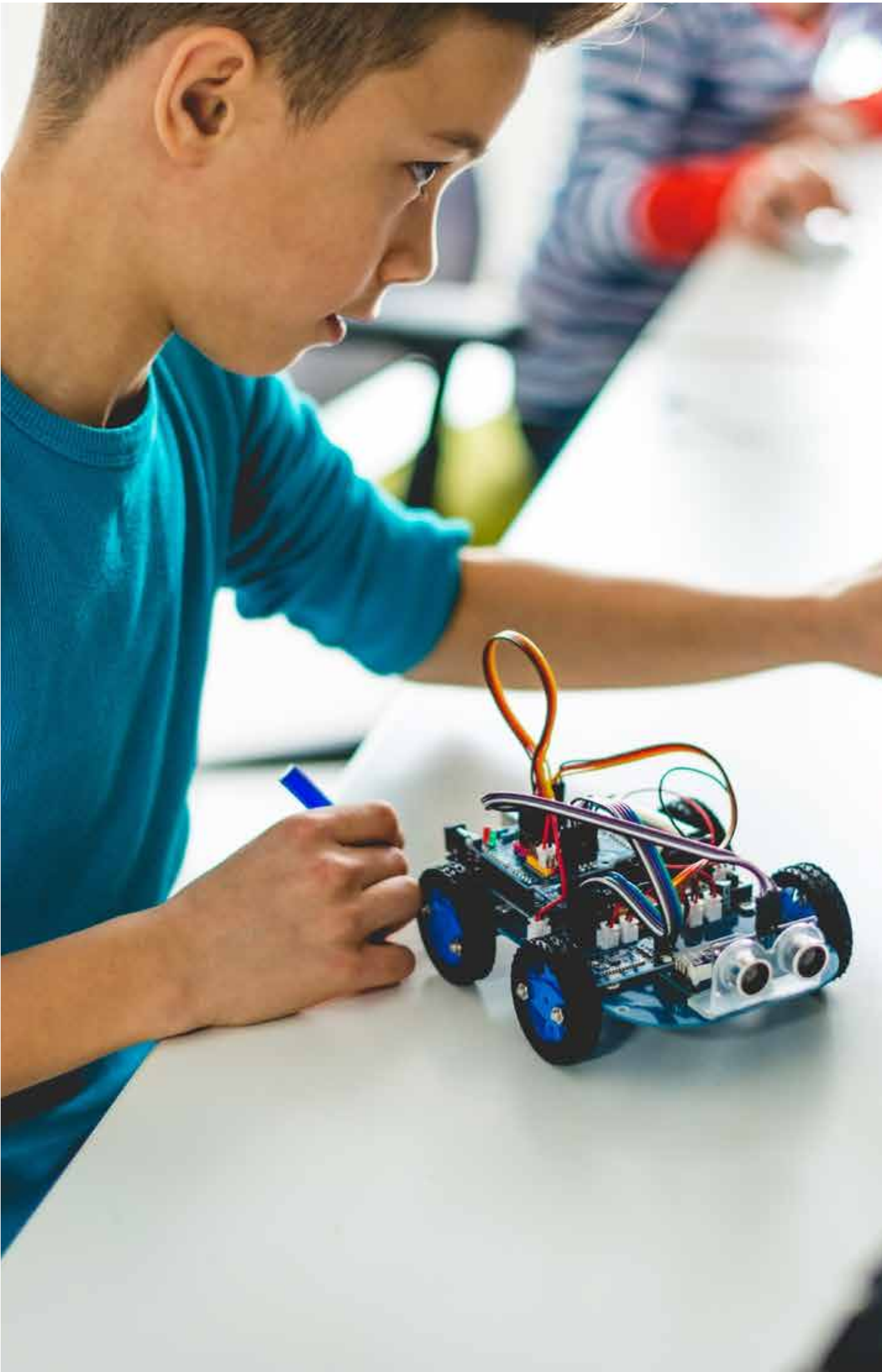


Education in AI

Formal Education, at all three stages - Primary, Secondary and Tertiary, is indeed undergoing a huge change thanks to technology. We see technology, such as smart screens, laptops, tablets and hybrid teaching methods in use, yet we find that our curriculum still follows outdated syllabi.

“Currently, any serious study of AI is only handled, at best, at the tertiary level and confined as a discipline within computer science.” Courses need to be structured to make AI part of the regular curriculum and introduce the concepts of Human Machine Interface that can make students proficient in using AI. Every search we make on Google is one form of advanced AI assisting us.

Every mobile phone we use today is AI working in our hands.



AI in Education

In the current era of pervasive Internet, information is available at the touch of a finger- anytime, anywhere. In such a scenario, the memory based approach to teaching is extremely outdated. Teaching methods need to be revisited from a perspective of enabling students' thinking, stimulating their reasoning and helping them to interpret the huge volumes of information available.

While learning is an assisted process, the K12 curriculum that exists today has been practically unchanged for the past 150 years, while pedagogy has been the same for nearly 400 years. Pedagogy needs to give way to Heutagogy, also known as self-determined learning or student-centered instructional strategy.

AI Assisted Teaching and AI Assisted Learning are expected to radically transform the current teaching processes and the way the students get prepared for the future.

AI can enable this new learning mode by helping teachers transition into mentors who guide students through personalized learning journeys tailored to their interests, capabilities and needs. AI can enable a lifelong learning experience proposed by institutions such as the World Economic Forum to prepare the skill sets required for the future.

Pedagogy needs to give way to Heutagogy.

21st-Century skills

① Foundational innovation

How students apply core skills to everyday tasks



1. Literacy



2. Numeracy



3. Scientific literacy



4. ICT literacy



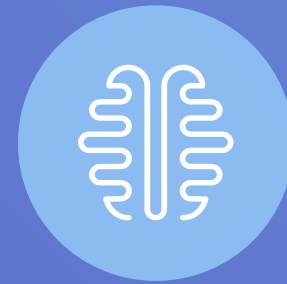
5. Financial literacy



6. Cultural and civic literacy

② Competencies

How students approach complex challenges



7. Critical thinking/
Problem-solving



8. Creativity



9. Communication



10. Collaboration

③ Character qualities

How students approach their changing environment



11. Curiosity



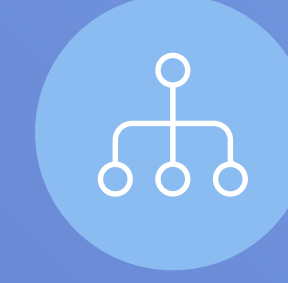
12. Initiative



13. Persistence/grit



14. Adaptability



15. Leadership



16. Social and cultural awareness

LIFELONG LEARNING

4. Governance of AI and the Role of Governments

Governments worldwide expect a huge contribution from Artificial Intelligence Technology as an enabler of Future Generations and as a provider of enhanced education techniques. However, Governments also face several challenges regarding the governance of AI.

One of the key aspects of AI governance is supporting Ethics in AI.

Artificial Intelligence models and programs mimic the human learning process, and then apply what they learnt to perform tasks tirelessly. AI decision making is only as good as the training that has been imparted to machine learning models. Any wrong or biased training can result in unacceptable outcomes from AI behavior.



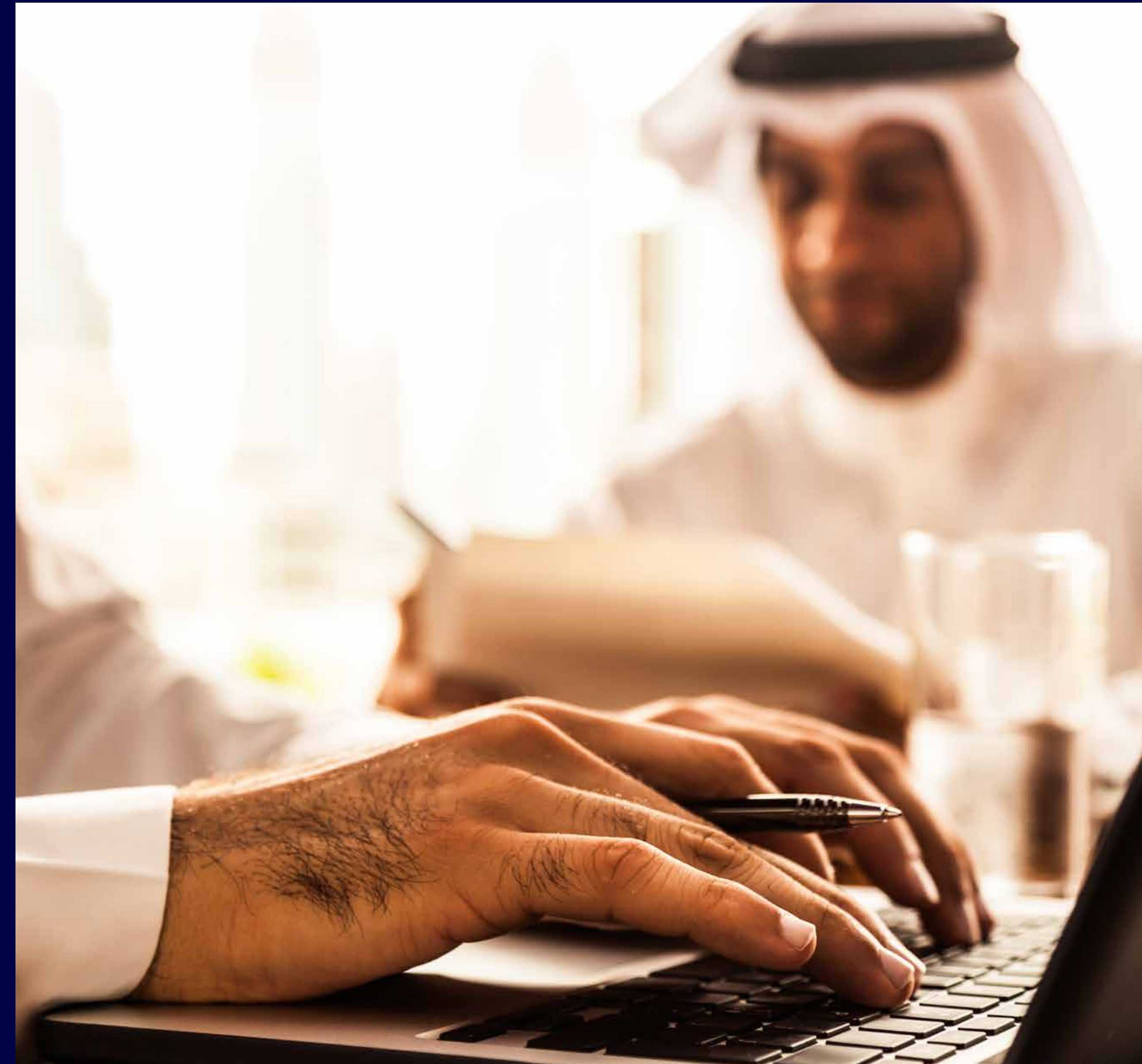
AI in Education: Guiding Questions

01

How can we embed Artificial Intelligence as a course curriculum? What needs to be done such that students are initiated to AI studies at the early stages of education?

02

How can governments rise to the challenge of enhancing the Education sector embracing AI, as a subject within the curriculum and as a wholesome learning experience for their future generations?



Governance of AI and the Role of Governments: Guiding Questions

01

How do we then tackle issues such as Training Machines without bias? How do we ensure the right ethics in the implementation of AI? How can governments ensure that AI treats all citizens equally and delivers better services that are promised by the technology? Do governments regulate AI technology, and how do they do it?

