Editorial

Artificial Intelligence: a powerful ally for society resilience

The world faces growing challenges from climate change, population growth, resource scarcity, and industrial expansion. Hence, the need for innovative solutions has never been greater. Artificial Intelligence (AI) is emerging as one of the most transformative technologies of the 21st century. It offers unprecedented opportunities to strengthen food security, water security, industrial safety, and protection from natural disasters.

Food security has remained a pressing global concern, because the farmers often confront unpredictable weather patterns, pest infestations, and declining soil quality. Fortunately, the AI-powered systems can analyze vast amounts of agricultural data to predict crop yields, detect diseases early, optimize fertilizer use, and improve irrigation practices. By minimizing food waste and maximizing crop efficiency, AI ensures that growing populations have access to sufficient and nutritious food.

Due to urbanization, industrial demand, and climate variability, freshwater resources are under increasing pressure. AI can monitor water distribution networks, identify any leaks, forecast water shortages, and optimize reservoir management. Smart water systems can provide real-time insights that enable authorities to allocate resources more efficiently and respond quickly to emerging challenges. Such innovations are essential for ensuring sustainable access to clean water for communities, agriculture, and industry.

Safety is of paramount importance in the industrial sector. Accidents can result in loss of life, handicapped workers, environmental damage, and economic disruption. The AI models can continuously assess equipment performance, detect anomalies, and predict potential failures. Computer vision technologies can identify unsafe workplace conditions, while predictive maintenance reduces the likelihood of machinery breakdowns. By enhancing risk assessment and decision-making, AI contributes to safer working environments.

The growing frequency of natural disasters further highlights the importance of AI. Advanced algorithms can analyze meteorological, geological, and satellite data to improve early warning systems for floods, cyclones, droughts, landslides and earthquakes. Faster and accurate predictions allow governments and emergency responders to take preventive measures, coordinate evacuations, and allocate resources effectively. During disaster recovery, AI can assist in damage assessment and prioritize relief efforts, helping communities rebuild quickly.

Nevertheless, it is cautioned that AI is not a substitute for human judgment and responsibility. Ethical considerations, data privacy, transparency, and equitable access must remain central to AI deployment. To elaborate further, there are disadvantages in frequent use of AI in certain areas. AI would cause a depletion of human cognitive skills viz., memory, critical thinking, writing and analytical power required for mastery over any subject. Frequent adoption to AI may risk widening the socioeconomic gaps undermining human connections and causing unemployment. Generative AI can produce information that sounds plausible but factually incorrect, unless verified by human experts. For example, the health sector would be vulnerable because AI may even recommend medicine for certain health problems.

Interestingly, AI cannot generate a question for an answer you already know; however humans can do so. AI models are usually trained on Western culture values that can marginalize the diverse cultural traditions. Another disadvantage is when AI systems make biased, unethical or unsuitable decisions who would take the responsibility. Besides, training and maintaining large AI models require massive computational power with added economic costs. Developing, training, deploying and maintaining tailor-made AI systems also demand massive financial investments and specialized expertise that affects smaller organizations. Therefore, it is important that policymakers, scientists, industry leaders, and communities work to ensure that AI technologies are properly developed and actively used mainly for the public good.

The future will be definitely shaped by how effectively the society harnesses AI technology to address its most urgent challenges. Embracing AI in a wise manner can help to create a safer, more sustainable, and secured tomorrow.

Dr Seetha I. Wickremasinghe