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Giving Iran nuclear deal another shot

And so, the inevitable has happened. On Sunday, Iran made good on a threat it had made in May and announced that it will break a set limit on uranium enrichment in breach of the 2015 agreement clinched by the Barack Obama administration, and with the participation of key European powers. The deal had always been in danger ever since the United States, under President Donald Trump, unilaterally withdrew from it last year. After months of open and quiet diplomacy failed to convince Washington to reverse its decision, Teheran said two months ago that it would, in 60 days, step up production of enriched uranium, the key ingredient for fuelling energy reactors that is also used to build nuclear weapons.

Iran's risk-filled decision was aimed not so much at the US, but as a pressure point against the Europeans – France, Germany, Russia and Britain (China was the other nation involved) – who were signatories to the deal but who could not find ways to help Iran tide over the crippling effects of re-imposed sanctions that had been partially eased since 2015. It was made after the two-month deadline Iran gave to the other signatories. While optically alarming, it is still a calibrated game. Officials said in the past that the enrichment level would go up from 3.67 per cent to about 5 per cent. It does not yet take Iran anywhere near the 90 per cent concentration of enrichment required for making a bomb.

While Washington's decision to pull out from the deal is regrettable, Teheran must think carefully about the high stakes involved. Sunday's announcement plays to the benefit of Trump administration hawks who have long portrayed Iran as a fount of terror and key destabiliser of the strategic balance in the region – even though the International Atomic Energy Agency has asserted there is no evidence that Teheran is breaking its promise to not build a nuclear arsenal. As for strategic weapons, Iran is behind its rivals Israel, Saudi Arabia and the United Arab Emirates even in conventional weapons such as jet fighters. Hence its push to build a missile arsenal. Iran's Deputy Foreign Minister Abbas Araqchi

has said graduated steps such as the one announced on Sunday will proceed at two-month intervals. His colleague, Foreign Minister Mohammad Javad Zarif, has stressed that the steps are "reversible" if European countries delivered on their commitments. French President Emmanuel Macron has had a long conversation with his Iranian counterpart and agreed to continue consultations with international partners to try to salvage the deal. Teheran must give him the time and space to make that effort. The French have a reputation for independence in foreign policy and provide Iran with its best shot at finding a way forward in what is a high-stakes game with major repercussions for the Middle East and beyond.

How to fight fake news: Tech has the answers

Emerging technologies in blockchain, computer vision and network science can help fight fake news

Lim Sun Sun and Roland Bouffanais

For The Straits Times

The debate around the recently passed Protection from Online Falsehoods and Manipulation Act brought to light the different possibilities and difficulties in developing legislative responses to the scourge of fake news. However, legislation constitutes but one tool in a society's arsenal against this menacing threat, with technological solutions constituting another critical bulwark. After all, it is technological tools that amplify the adverse impact of the age-old problem of misinformation and disinformation, which we now expediently refer to as "fake news".

This means we must delve more deeply into technological remedies to counter this egregious problem which is corroding public discourse, both online and off. Indeed, Deputy Prime Minister Heng Swee Keat recently called for countries to actively collaborate to address social challenges, highlighting fake news as a key item on the agenda.

The issue is even more pressing now as users from the so-called bottom of the pyramid – the majority of the world's population living in poverty – are rapidly gaining online access without necessarily possessing the critical literacies to grasp the existence and pervasiveness of fake news. In the recently concluded elections in India, for example, online misinformation spread at a ferocious pace across platforms such as Facebook and WhatsApp, accelerated by rising mobile adoption and the cheapest data plans in the world.

Encouragingly, technological solutions to fake news can now be found in many fields, including in three specific areas of expertise: blockchain, computer vision and network science.

BLOCKCHAIN

Blockchain technology can be a

critical innovation for the news production industry, even if it may not present itself as a ready tool for individual media consumers to independently verify news.

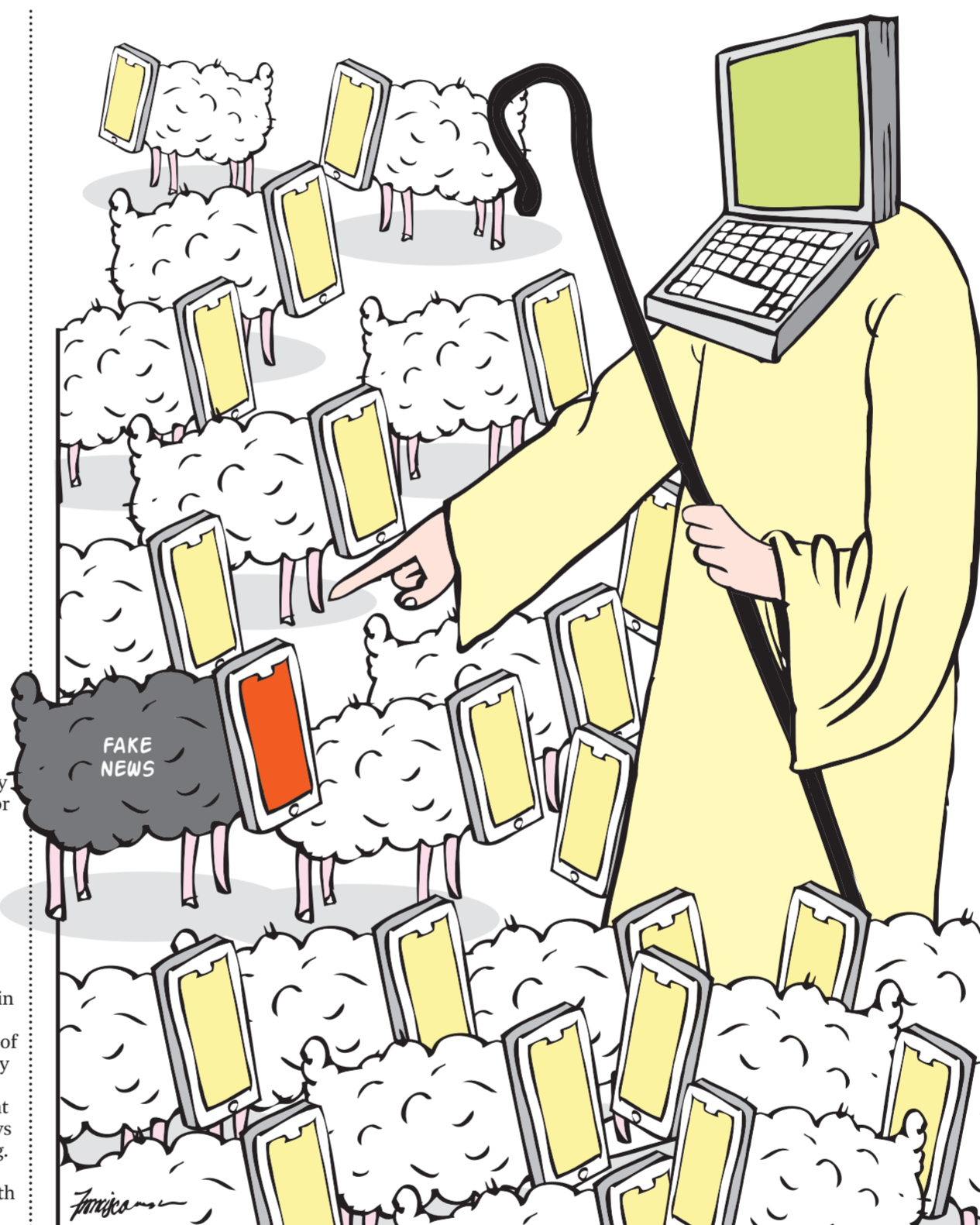
One challenge that news producers encounter today is the rapid evolution of news stories. In a media landscape where immediacy and virality are increasingly prized, the news industry is struggling to be timely in reporting breaking news stories, while maintaining high standards of accuracy. As events change quickly over time, media professionals must therefore be swift yet diligent in ensuring the veracity of the news on which they base their reporting. News reports can undergo many revisions and transformations, with each version incorporating new content, older content being excised or amended, and additional forms of content such as infographics, photographs and videos being included in the mix. This is a salutary situation because it means that media consumers can be more expeditiously and comprehensively informed, even as events unfold, if we take the recent protests in Hong Kong as a vivid example.

Until, of course, we throw in the spanner of bad actors who seek to capitalise on the traction surrounding viral news stories. These parties may then infuse legitimate news stories with falsehoods, perhaps to foment discord or to perversely profit from the captive audience. It will be hard for news producers to sieve out unwarranted changes to a story or revert to fact-checked versions.

Now, suppose the news production industry is supported by a blockchain news verification infrastructure. Each change to a story would carry a trail. Blockchain's distributed open ledger system will be able to reveal at a click, in real time and across the world, all the different iterations of a news story.

It should be able to instantly highlight where changes and embellishments have been made, by which parties and over which platforms.

This would be analogous to the "track changes" feature that



word-processing software currently offers when multiple people co-author a single document, or Wikipedia content that is collaboratively developed, with a systematic and detailed record of edits.

News stories that are produced from this blockchain news verification system can then be stamped with a quality assurance that, over time, can earn the trust of consumers and introduce greater certainty into the information ecosystem.

As blockchain technology is already well-deployed in sectors such as financial technology and agrotech, a blockchain-based news verification infrastructure customised for the media industry would not be difficult to establish. And it will certainly be a boon to media producers such as journalists, reporters, bloggers and documentarians.

The sticking point is whether there is collective will among the industry competitors to work together to first forge, and then fund such a facility. In the light of the pressing need for quality news purveyors to counter online falsehoods, and the pressure on them to remain relevant, such infrastructure will help the industry sharpen its competitive edge while mitigating the damage from fake news.

COMPUTER VISION TO DETECT DEEPPFAKES

One aspect of fake news – deepfakes – is causing ripples of alarm across society.

Deepfakes are digitally manipulated videos employing techniques such as face swapping, facial re-enactments, lip-syncing and motion transfer. These fabricated videos literally put words into the mouths of speakers, gaining quick traction because visual evidence is instinctively engaging. When used with malicious intent, such as to frame individuals in compromising circumstances, deepfakes can elicit strong user reactions that further ignite their virality. Deepfakes have thus emerged as the latest arch-villain in the ever-expanding fake news syndicate.

As powerful and disruptive as deepfake technology can be, it may successfully fool the casual viewer but may not pass the scrutiny of machines.

This is where computer vision comes in. Using artificial intelligence, experts have successfully developed deepfake detectors that carefully monitor seemingly innocuous features in videos such as the subjects' eye-blinking frequency, breathing rate, gait and so on. Of course, it is only a matter of time before software developers

offer machine-learning tools that can more accurately reproduce these human traits to create even more convincing deepfakes.

Ultimately, the race is between deepfake production and deepfake detection, and putting the latter within easy reach of consumers so that we can quickly ascertain if a video is fake. Perhaps we can all hope for a future where, after playing a video on our devices, a detector will spring into action, alerting us that we have just watched a deepfake. Given the near-complete reach of cloud computing and mobile devices becoming infinitely more powerful, such deepfake identification services can foreseeably be within the palms of our hands in the near future.

NETWORK SCIENCE TO PROMOTE PRO-SOCIAL BEHAVIOURS

The social media landscape, with its peer networks and algorithms tailored to favour virality, is now known to create severe dysfunctions in society, by creating spirals of negativity. But the same network science that makes the social media environment so toxic can also be used to halt its growth in its tracks.

Network science allows us to study the dynamics of peer-to-peer interactions within social networks. So it helps explain why

technologically mediated social networks such as Facebook, Instagram and Twitter have become such potent conduits in the spread of fake news.

These dominant platforms deploy algorithms that apparently amplify content that is extreme and negative, such as sensational disinformation and hate speech. Users in these social networks then converge around controversial content and sharply divisive debates that stimulate considerable user-to-user interaction in the form of comments, shares or new related posts.

Bad actors have also been known to wilfully fabricate fake news, precisely to elicit such user responses, as the campaigns of the Russia-based Internet Research Agency and even the "entrepreneurial" Macedonian teens have demonstrated.

These social networks are built on business models and algorithms that promote maximum user engagement, regardless of the quality or authenticity of the content. When we take into account consumers' innate attraction to and voracious appetite for outrageous content, these social networks are virtually wired to favour fake news.

And yet, this prevailing reality can and should be upended.

Emerging research advancements in network science offer penetrating insights into how information can be allowed to percolate through different layers of a social network, at what rates, and through which nodes, to promote peer-to-peer interactions, to attain a desired result. With the relevant know-how, programmers of social networks can modulate the peer dynamics within networks to discourage anti-social behaviour and boost pro-social interaction.

Some companies have already employed techniques that are clearly informed by network science. These include WhatsApp limiting the number of times a message can be forwarded to five, and YouTube disabling comments for videos featuring children to prevent exploitation by paedophilia rings. Beyond such ameliorative measures, programmers can motivate pro-social acts by making them more visible and commendable to members of the social network, thereby creating a positive role-modelling effect akin to epidemiological strategies to curb smoking.

A robust information landscape is integral to a well-informed citizenry. Societies must commit to addressing the challenge of fake news through cultivating media literacy, crafting a comprehensive regulatory framework and developing a suite of effective technological weapons. Ultimately, fake news is a complex amalgam of social machinations, psychological manipulation and technical sophistry, and must be firmly tackled on all fronts.

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