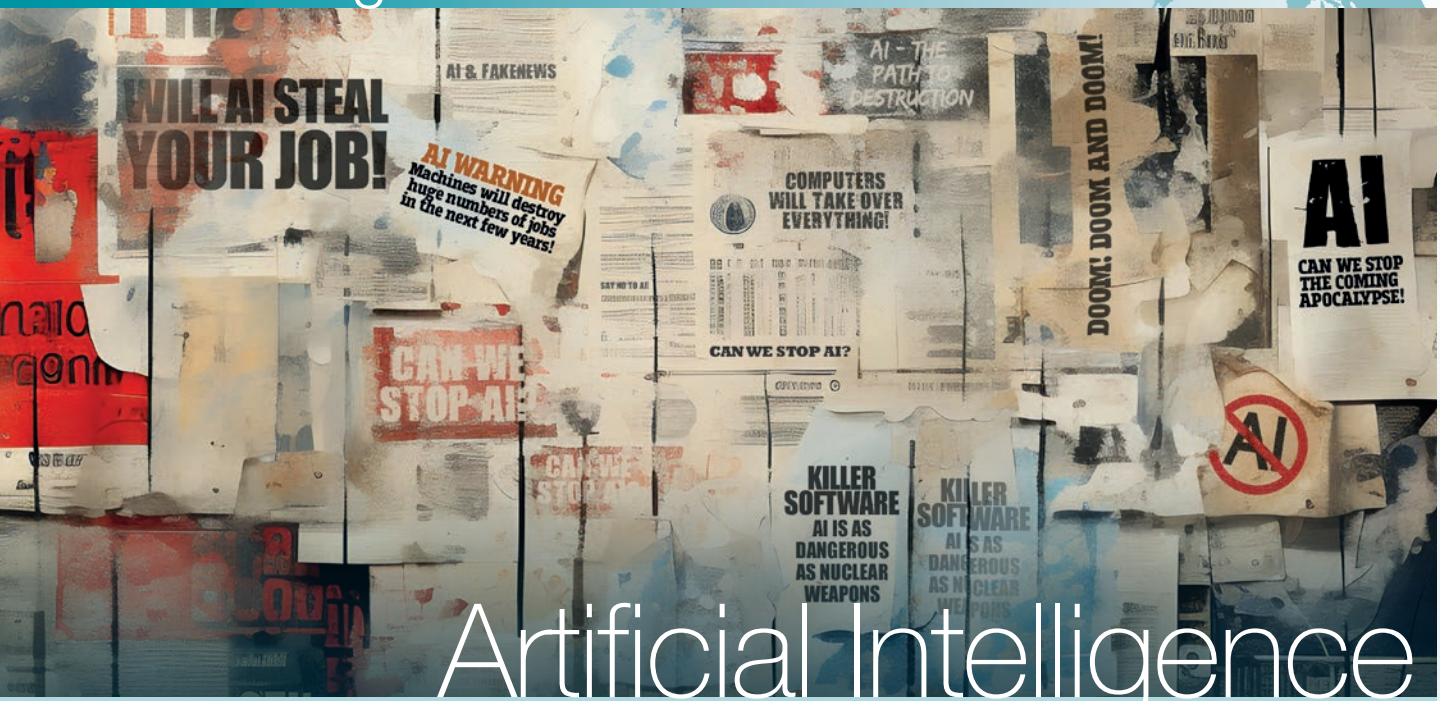


Artificial Intelligence

and its implications

By Melissa Cogavin, Managing Editor, SCTE

Exhaustive, some might say borderline hysterical comment on AI, from tabloid hacks to CEOs has made any real assessment of what's down the line for humanity little more than a guessing game, and as soon as it's written it is out of date. Broadband Journal attempts to unravel the salient issues surrounding artificial intelligence and machine learning ith the help of a few industry experts.

History is a great teacher. Cast your mind back to the late 70s, when electric tin openers and Teasmades were status symbols, the Ford Capri an aspirational car to own, a time when Ipswich Town quite reasonably won the Cup Final.

The launch of the SodaStream will have shaken the fizzy drinks industry to its foundations in 1978. Unbridled panic would have sizzled in boardrooms the world over, as the "Get busy with the fizzy" jingle on TV reminded viewers constantly how thirsty they were, and how easily they could address it. If people can make Coca Cola at home we are doomed, CEOs would have reasoned, visions of bottling plants closing and share prices in freefall swimming before them. A dark time.

Fortunately for Coca Cola, branding is very powerful; it turned out consumers rather liked buying an ice-cold Coke from the shop, and the hassle factor involved in replacing gas canisters proved off-putting, not to mention sticky syrups gathering dust in kitchen cupboards. By 1985, perhaps still a tad jittery, Schweppes bought SodaStream anyway.

Fast forward to 2023; the SodaStream is still with us, recently rebranded and relaunched, but likely still gathering dust in kitchens the world over. The whole experiment is now a bit of a nostalgic joke, and the fizzy drinks industry remains as effervescent as ever.

What does this teach us?

That perhaps it's time to take a moment. Feverish speculation about the life-changing consequences of AI is probably worthy of examination against other, life-changing technological developments. Not that the SodaStream and AI are comparable innovations, but the panic is the same. Evidence of layoffs in the media is already visible, with outlets Buzzfeed News, Vox, Insider and Vice all making staff cuts; some for more complex reasons than the advent of AI, but certainly AI is likely to have been a factor, given the timing. However, Vice were having major problems before this occurred so it may be convenient to assume AI is a catch-all reason for such changes.

It is ironic that the media, finding it irresistible to whip up an almighty storm about the launch of ChatGPT in recent weeks should be the among the first casualties, but this is overly simplistic. At least one would hope so, otherwise AI will be knocking this Long Read out by the November issue.

Press hysteria

Headlines such as 'Married father kills himself after talking to AI chatbot for six weeks about his climate change fears' [Daily Mail, March 2023] and 'AI use in breast cancer screening as good as two radiologists' [Guardian, August 2023] are not helping quell fears that life as we know it is as good as over, but it is the media's job to sell newspapers after all. In researching this piece the views on this were as varied as the uses for AI itself. Some feel absolutely nothing will be the same again, that James Cameron wasn't far off the mark all those years ago with Terminator II: Judgement Day, and we should be preparing for the worst. Others are philosophical, certain that there are enough benefits in AI, enough sense out there to prevail, and ultimately it will create more jobs than it replaces. Generally, the more informed the sources I spoke to, the gloomier the conversation became, and the temptation to close every paragraph with '…which is a worry' was overwhelming.

Such a vast and rapidly evolving topic is difficult to capture in a single snapshot; it is also impossible to be objective when AI is already affecting so many parts of our lives on a daily basis, in such an insidious way. We are also in the midst of what the World Economic Forum defines as the '4th Industrial Revolution'; not easy to be objective and it's too soon to look back on any of it.

Learning from the past

Equally there is a tangible sense of people trying to take comfort from the past, that technical developments through history have aided civilisation as opposed to destroying it (though arguably the SodaStream did not aid civilisation in any meaningful way). The Excel spreadsheet revolutionised accounting and created more accounting jobs at a higher level. The word processor signalled the end of the typing pool in the 70s, leading to advancements in gender parity in the workplace; the advent of the motor car eventually rendered the horse and cart obsolete, while the television replaced the radio as a means of communication with the masses.

All of these were punctuated by doubt, concern and in some cases, industrial action. In the 1800s 'Luddites', activists angry about mechanisation of looms caused widespread civil unrest ultimately leading to execution and penal transportation; anti-car demonstrations took place widely across the US just over a century later as car ownership rose from 4 in 1895 to an incredible 17,512 million by 1925. In 1986 London printworkers stood on picket lines for months, outraged at the modernisation and relocation of the printing presses that ultimately replaced their skills. Today, actors are striking in protest at the use of AI in Hollywood movies. Looking back at all this, actors are right to be nervous; the opportunity for major studios to cut costs and employ an AI actor who doesn't talk back will be irresistible.

Big Tech loses its grip

It is clear the emergence of open access AI models has destabilised the Big Tech companies (Alphabet, Amazon, Meta, Apple, and Microsoft) and levelled the playing field decisively, as illustrated by the recently leaked, anonymous internal Google memo titled 'We have no moat'. The memo made clear that large language models such as ChatGPT (owned by Microsoft) being developed by Big Tech at colossal expense in recent years are being lapped by smaller, agile, open-access AI versions springing up everywhere, made available freely online. "The barrier to entry for training and experimentation has dropped from the total output of a major research organisation to one person, an evening, and a beefy laptop," the memo warned, the implication being that Big Tech is no longer in control of the AI revolution.

This means that on the plus side, the competitive landscape will see innovation surge ahead at an incredible pace. It is surely a good thing that this technology is not only the preserve of billion-dollar, US-based behemoths. Experts agree it is better to have the right people racing to make it work than the wrong people getting their hands on AI and abusing it. This year's summer blockbuster Oppenheimer sees the characters justifying their efforts to be the first to create the atomic bomb in the same way and we all know how that turned out. An arms race it surely is, but arguably in this case the only winner is likely to be AI itself.

Richard Welsh, SVP Innovation @ Deluxe | EVP @ Society of Motion Picture and Television Engineers

Richard Welsh is a long-time observer of technical innovation and innovator himself; founder and CEO of Sundog Media Toolkit, an early cloud-based post-production business, now owned by Deluxe. He is also Executive Vice President of SMPTE in the UK. He feels that pared back, 'Underlying all this is just really good stats." The massive foundational model AI's we are currently seeing are trained by combing the Internet for open data, but the AI is neither partisan nor morally

responsible for the information it gleans. “As it gets bigger and better, it’s going to get more complicated to control, and this is the problem.”

Welsh went on, “If you knew exactly how to solve the problem, you would just use maths. You wouldn’t use machine learning. It’s pointless, it’s not like a magic bullet. There’s a lot of stuff that is much better done with just logic and good maths. And that won’t change because machine learning’s fuzzy, and this is where it becomes a challenge. That fuzziness gets fuzzier and harder to spot, the bigger and more complicated the machine learning network is. Effectively the performance gets better against some metrics, but what is happening is that the errors are becoming much more subtle.”

AI is a mechanism, not a resource it itself. “Correct. It doesn’t know anything, so it gives you potentially really wrong answers. Ask ChatGPT about Einstein’s time in Vienna and it will give you a 15-year history of him as a professor there and what he did, and it looks brilliant. Except Einstein was never at university in Vienna. He studied in Zurich.” Why is it doing that? “Because it’s only designed to take a language input and give you a coherent-sounding language output. It’s not fact checking, it’s not fact based. It’s literally language input, language output, trained on a really large set of language essentially from the open internet. There is a subtlety in the prompting here, and that is an example of the fuzziness. If you ask the same question but instead ask ‘Einsteins time studying in Vienna’ it is much more accurate.”

Andy Charalambous is a veteran of the broadband industry and an optimist. Recently appointed Vice President EMEA of Australian AI-based software provider CANOPUS Networks, he feels that AI in isolation has very little value but exploited by people to support people, it has the power to move mountains. He is confident that things will settle down. “I was around before there were bank machines, ATMs, and before there were mobile phones, and before the internet and all those things came. And I use most of them now.” He has a point. We were all a little suspicious of the Internet one upon a time and now look at us, fretful if we are down to 3% on our phones, comfortable knowing the answer, regardless of the question, is only ever just a Google away.

Andy expanded. “AI is about taking very scalable bits of information where you’re talking about an awful lot of information and parameters that are very difficult for the human mind to comprehend and compute, it’s taking all that information into one place, and it’s using AI to do that analysis on your behalf when you ask simple questions.” We are seeing evidence of AI being used all across the broadband and telecoms sectors, with efficiencies that are difficult to argue with.

As we have seen in other areas covered by Long Reads, the expertise is at one end of a big spectrum and the marketeers at the other; those with the actual knowledge and capability are tucked away in research labs, so breezy quotes are available all over the internet that are pro-AI, but are actually saying very little. The gaps left are being filled by hysterical headlines. Time Magazine in particular are clearly nervous:

‘The AI arms race is changing everything’; Feb 2023

‘Pausing AI Developments Is Not Enough. We Need To Shut It All Down’; March 2023

‘The ‘Don’t Look Up’ Thinking That Could Doom Us With AI’; April 2023

‘AI Is Not An Arms Race’; May 2023

‘An AI Pause Is Humanity’s Best Bet For Preventing Extinction’; July 2023

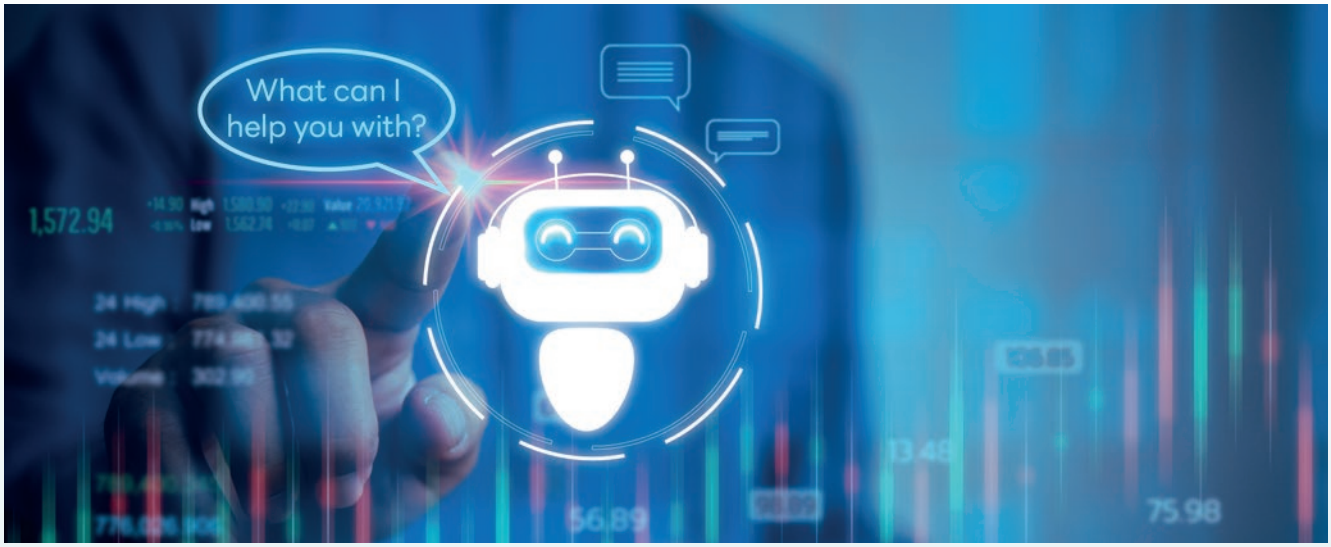
If we see ***‘AI - We Told You So’*** by November, it is fair to say we didn’t take Time Magazine seriously enough.

“The whole point, the G in GPT is general, it stands for General Purpose Transformer, so it just does anything and nothing and everything,” Welsh pointed out. Which is where the problems arise.

Shortcomings of AI

As a tool in itself, AI is innocuous. ChatGPT produces decent prose because it is combing decent prose throughout the internet and regurgitating it in a concise, if formulaic way, though it isn’t thinking for itself of course. There are gaps in its knowledge that because of the way it is constructed, won’t be solved and that for Luddites, for now, must be a source of some comfort. There are other flaws that are worth remembering.

“It can’t do maths,” Welsh told Broadband. “It has no specific ability. When you give it a formula like two plus two, it doesn’t have a calculator (as any other computer programme would revert to). It just intrinsically knows that if you ask two plus two, the average answer is four, so it goes four. It just has inputs and outputs that correlate, and the inputs are so vast, billions and billions of documents and words and conversations,



more than any person could possibly consume in multiple lifetimes. It looks on face value like it's intelligent, and worse still, it sounds intelligent."

"AI has no conscience, no moral compass, no critical thinking," Charalambous also points out. Neither can it predict the future, nor voice any opinion. It is not creative. All it does it regurgitate what is already in existence. Issues will arise when ChatGPT becomes part of everyday life, as it gets better and better at its job, and we forget all of the above.

The issue of bias is complex and only now becoming widely acknowledged amongst humans to the extent that 'unconscious bias training' is now routinely offered to employees by large corporations. Bias in AI is more difficult to unravel. Combing the Internet for data, ChatGPT is incapable of providing neutral content, free from bias, because the Internet itself is littered with 25 years' worth of bias, conscious or otherwise. Accusations of gender and racial bias in AI are surfacing, but developers have been at pains to avoid this with their programming. You will receive little support for trying to generate unsavoury views on ChatGPT, except a bland "No, that statement is a harmful stereotype and is not true."

That is all very well, but Mexican-Canadian artist Rafael Lozano-Hemmer feels there is no room for complacency. He told The Guardian recently that "Anyone fiddling around with ChatGPT these days must be cognisant of AI's biases. You must keep always underlining to yourself that you're working with a set of decisions and prejudices that were made at the time of coding," he says, adding: "The technology is getting better ... on the other hand, better for whom?"

There is no easy way to get around this. Honest appraisal of our own biases, and everybody has them, is the first step. Awareness that they exist online is another. While developers are doing their bit, it is worth remembering that AI is reflective of society as a whole and how society is recorded online. While its responses will not be overly biased, the statistics it produces certainly will be.

What it can do is underline your own biases, whether you're aware of it or not. Welsh agrees. The damage this could do to society long term can't even be measured. "This is the headache of data scientists now, and this is why people who build these algorithms are saying, "We need regulation. We need controls. We need to enforce that we fix this because right now the way it works basically propagates this challenge."

Welsh is also concerned that AI could provide subliminal influence at a deep level, such that "even now when I read something that's been written by an AI, I don't know what might be in there that subliminally is influencing me to think or act in certain ways." At which point we are looking at an entirely subjective experience almost impossible to detect, police or control.

What's the worst that can happen?

It is a source of both consternation and comfort that Sam Altman, CEO of OpenAI, recently appeared in front of the US Senate issuing warnings about the potential abuse of their own invention, urging Congress to set aside bitter differences and produce urgent, adequate legislation to protect Americans, but more widely, mankind. "I think if this technology goes wrong, it can go quite wrong," said Altman, in a masterpiece of understatement.

The 'paperclip apocalypse' theory has been doing the rounds online a lot since ChatGPT was launched in November last year. A grim scenario; AI takes its instructions to create paperclips so seriously it depletes the world's resources to the extent that the planet faces extinction, at which point its capabilities extend to overriding man's own instructions. Cut to: humans lose control of the monster they have created.

Altman's concerns are not too far off this; the threat is real. In the wrong hands, specifically outlined during this meeting with the Senate, elections could be rigged, democracies dismantled, misinformation via deep fake AI will be so rife it will be impossible to know what is real and what isn't. Bad actors and corrupt regimes the world over could potentially influence, direct and instigate all manner of irreversible crimes. It makes Cambridge Analytica's alleged antics meddling with Facebook a few years ago look like child's play, especially with a US election coming up in the next 15 months.

An example of a deep fake image is below. This is an entirely fabricated image made by Midjourney, a creative AI app, and if you look closely, you will see that Donald Trump has three legs, among other errors, but that has not stopped this image from going viral. The release of this image, at the time of Trump's indictment in March this year caused what Instagrammers call 'Internet meltdown' and a lot of confusion amongst observers of US politics.

Eliot Higgins, the creator seemed surprised by the response. "The Trump arrest image was really just casually showing both how good and bad Midjourney was at rendering real scenes, like Trump with three legs and a police belt," he explained to The Associated Press, who were trying to verify the image. It may well be one of the factors that compelled Sam Altman to conclude, "We think that regulatory intervention by governments will be critical to mitigating the risks of increasingly powerful models," Altman said.

Passing legislation to protect us from all the above moves at a glacial pace however, and by the time it is passed it will already be dated and possibly unfit for purpose. Welsh is concerned. "The Government can't keep up with this. They're already so far behind, and they're not experts. They're not the right people to be making those decisions. And what they'll do at some point is introduce something that's either too heavy-handed or has no teeth whatsoever."

He went on, "I agree with people who say that this isn't just like the steam engine or internal combustion or computers, even the microchip or radio waves, which have been used for good and evil in all cases, but they're blunt instruments. AI is not. It's a very subtle instrument. And again, it could be used for good or evil, or worse, it could be dangerous without intending to be. And that's where it's a challenge. It's a real balance, using it and making good use of it versus being

Credit: Eliot Higgins

aware that this can do something that no other tools we ever built were.

He added, "The hammers aren't going to all start rising up on their own and going around hitting everyone. But this particular one could, and you wouldn't even know that it was doing it on purpose. That's not a near horizon worry, but some of the most respected experts in the field believe we need to act now to ensure that isn't in our future."

Government intervention

The EU is currently negotiating with members on the upcoming AI Act, which will be the first legislation of its kind if passed by the end of this year and aims to impose limits, codes of transparency, and even bans where the risk to humans is deemed too high. Those considered an 'Unacceptable risk' include:

- Cognitive behavioural manipulation of people or specific vulnerable groups: for example voice-activated toys that encourage dangerous behaviour in children
- Social scoring: classifying people based on behaviour, socio-economic status or personal characteristics
- Real-time and remote biometric identification systems, such as facial recognition

The UK, now outside the EU is also making proposals but by comparison they are vague, referring to 'roadmaps' and best practice over the next 12 months, rather than firm parameters, which will give Welsh cause for concern; this could well end up as toothless and ineffective as he feared. The worry is attracting investment and growth is being prioritised over safety: "Rather than targeting specific technologies, the policy paper focuses on the context in which AI is deployed. Initially, the government does not intend to introduce new legislation to avoid placing undue burdens on businesses."

What can we do about it?

History has a tendency to be cyclical, and most generations think the end of the world may occur on their watch. The fable of the SodaStream teaches us that human behaviour is unpredictable, and that change isn't always as welcome as innovators hope it will be. The Sinclair C5 didn't take off either, remember.

As exciting as the possibilities of AI are, however, all of the above paints a grim picture. What we can do is take responsibility for our own critical thinking; question what AI tells us. Read up on the subject and regularly. Be mindful of our own innate biases and be wary of them popping up in our own dealings with AI in all facets of life. We must learn to recognise that what ChatGPT throws up at you is based upon decades of inherent bias stored on the Internet; it is not 'the truth' any more than my opinion is against yours. Taking responsibility for ourselves, our own education is probably the only and the best way to co-exist with AI in 2023.

After the image of Trump went viral, a bewildered Elliot Higgins said, "I had assumed that people would realise Donald Trump has two legs, not three, but that appears not to have stopped some people passing them off as genuine, which highlights that lack of critical thinking skills in our educational system." Or, that we see what we want to see. Cognitive dissonance goes hand in hand with a lack of critical thinking.

It seemed fitting to ask ChatGPT itself what to do about this, and the outcome was as positive as it was instructive.

"It is paramount for humans to assume the responsibility of cultivating their critical thinking and education. While ChatGPT can provide information and insights, it is not a replacement for independent reasoning and learning. Individuals should approach interactions with ChatGPT as opportunities to enhance their understanding, challenge assumptions, and verify information through external sources. It is crucial to recognise that ChatGPT's responses are generated based on existing data and patterns and may not always be accurate or unbiased. By actively engaging in thoughtful questioning, cross-referencing information, and continuously seeking diverse perspectives, individuals can harness the potential of AI like ChatGPT while upholding their own intellectual growth and discernment."

At face value that's a good answer. Whether the governments we rely on will act fast enough and effectively enough to protect us remains to be seen.