

A day in the life of AI

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7.00am You wake up and glance at your iPhone, which unlocks itself using facial recognition Apple's Face ID converts your face to a set of numbers that act as your own unique identifier. This biometric portrait is not set in stone – it uses AI to track changes in your appearance, updating its model if you grow a beard, change your makeup style or get older, and it also detects whether your eyes are open and your attention is directed to your phone. Many of the iPhone's core functions are AI-enhanced. The photo app can blur backgrounds and artificially alter lighting to create the illusion of a studio photoshoot, and uses computer vision to recognise people and objects and categorise images into themes and locations. Siri uses natural language processing and machine learning to interpret your voice requests. Apple Maps predicts traffic patterns to give the quickest or quietest route, or the one with the least uphill. When you message a friend, an algorithm is also ingesting your words to pick up your writing style to power predictive text suggestions – including relevant emojis. 7.40am You ask Alexa to put on some music for the kids at breakfast Once Alexa is woken up, it starts recording your words, but interpreting them takes some serious computing power. For this, your recorded speech is sent to Amazon's servers, which act as Alexa's centralised brain. Speech recognition software takes audio and converts it to text, language processing algorithms extract the meaning and (some of the time) the information requested is beamed back to your own Alexa device. Like most AI systems, the more data Alexa has, the better it performs. To help this learning process, humans review a sample of the requests to steer the AI towards providing ever more helpful and sophisticated responses. 8.10am You drive to work in your electric car Cars such as the Tesla can do most of the mundane aspects of driving. The vehicle's AI system collects data from eight cameras, identifies the presence of obstacles, lanes, intersections and traffic lights and decides what action to take, whether manoeuvring into an awkward parking spot or overtaking a slow lorry. But self-driving cars know only how to deal with situations they have seen before, and an ongoing challenge is how to equip them for rare and unexpected events. The cars also work less well in foggy and rainy conditions. "The realities of the road are complex and unpredictable and when they get things wrong, they can get things very wrong," said Dr Mhairi Aitken, an ethics fellow at the Alan Turing Institute. Steering, braking and acceleration can be controlled by the car, but the human driver must continue to pay full attention at all times and be prepared to manually intervene whenever needed. 8.25am You stop off at the supermarket on the way to work Most public CCTV cameras passively record footage rather than running it through an algorithm in real time. However, a growing number of retailers, including Co-op, Budgens, Sports Direct and House of Fraser, use AI-driven facial recognition systems provided by the security company FaceWatch. A high-resolution camera, typically mounted at the entrance, captures the face of everyone who walks in. These images are beamed to a computer, which extracts biometric information and makes a comparison with that of faces on its watchlist – a virtual rogues' gallery of individuals previously caught shoplifting or deemed to be suspect by retailers. If the algorithm reports a high chance of a match,

FaceWatch's team of human super-recognisers confirm or discard the match before the retailer is alerted. Otherwise, the biometric data is discarded. 9.00am And then to the hospital where you work AI in medicine is being intensively researched and the first applications are assisting the analysis of scans and enabling more precise surgery. The Lung Health Check programme, screening for those at risk of lung cancer, uses AI-based computer aided detection to help detect the growth of lung nodules, with a clinician making the final call on findings. "A lone human reader would detect 80% of the things we want to call and on a bad day you can go down to 60%. With AI it boosts you to 90% of actionable findings," said Dr Arjun Nair, a consultant radiologist at University College hospital London. "It helps point you in the right direction – it's kind of a buddy." However, such software is not in widespread use for clinically indicated scans, when a patient is referred by their GP due to symptoms that could indicate cancer. 1.15pm On your lunch break, you proofread a job application cover letter for your daughter, a recent university graduate AI is shaking up the recruitment process, especially for graduates. The job adverts that people see are personalised by content recommendation algorithms on Google, Facebook and Instagram. Many applicants are turning to OpenAI's ChatGPT to help craft individualised cover letters, allowing them to apply for jobs at a superhuman rate. And in what sometimes feels like a recruitment arms race, about one in 10 student employers are using AI to filter applicants, with single advertised positions sometimes attracting thousands of applicants. Firms such as Goldman Sachs and Unilever now routinely use HireVue video interviews, in which a candidate answers pre-determined questions and the platform's AI algorithm generates an "employability" score based on a candidate's word choice. 3.30pm Your phone pings with a message from your Amazon Ring doorbell – a package has been delivered to your doorstep Last year, about one in five households in the UK reported having an AI-based home security system. Amazon Ring uses a motion-activated camera, heat sensor and radar and uses computer vision software to alert users when a person, or package, is outside their property. "A human can look very different depending on where they're standing," said Dave Ward, the international managing director for Ring devices. "Humans have a heavy heat signature and with the radar we can detect the object moving in 3D space. The last thing we want is for a user to get a notification that someone is outside their door and it's a fox." 4.00pm You have a headache and log the symptom to your fertility-tracking app Period and fertility-tracking apps such as Flo use neural networks to analyse your data to give health insights, such as when your next period is due and your ovulation dates. However, some of these apps have also run into trouble for data-sharing practices that have allowed third-party companies such as Google and Facebook to use highly sensitive health information for other purposes including advertising. 4.30pm You scroll through TikTok on your coffee break TikTok has more than 1 billion monthly active users and as they watch and share clips the platform is observing and learning about them in return. The basic concept involves users creating and sharing short videos, which other users watch. You don't need to tell TikTok your tastes or interests: it rapidly gauges this from your reactions – whether you watch a video partly or to the end, share it or skip past it, uninterested. As you scroll and click, TikTok refines its profile of your core personality traits and interests, and uses this to predict which content will keep you most engaged. It then uses this profile to match it with relevant content, using natural language processing to make sense of captions and computer vision to identify what a video contains. Increasingly, AI is also being used to create or enhance content, from AI Taylor Swift giving you a pep talk to more concerning examples of misinformation. The platform has introduced a new labelling policy to help users keep their bearings in a place where it can be hard to distinguish the real from the fake. 6.15pm At home you send some personal emails from your Gmail account Email may feel almost retro these days, but Google and others have been steadily adding AI-based features that analyse content, organise your inbox and even draft your messages for you. The Smart Reply feature uses machine learning to gauge, based on past examples, what an appropriate reply might be. If you're invited to an event, options might include "Yes", "No" or, for a more personal touch, "Sounds amazing, I'll be there!". Gmail can automatically categorise emails and nudges users to follow up when someone has not replied and also prompts you to respond. 6.30pm You're planning a weekend break with the family to Dublin. So you ask ChatGPT to recommend an itinerary OpenAI's ChatGPT uses a type of AI called a large language model to convert text into mathematical data that encodes not just individual words, but also the layers of meaning contained in a phrase or sentence. The model was trained on a vast corpus of text – essentially the entire open internet – to learn the statistical patterns of language, and it uses this knowledge to respond to prompts by the user. In development, ChatGPT was also trained by human users who rated its responses to steer it towards being helpful and inoffensive. A downside is that ChatGPT can be unreliable, sometimes providing "facts" that sound plausible, but are untrue or outdated. In the chatbot's own words: "It's important to understand that ChatGPT doesn't have the ability to verify the accuracy of the information it provides." 8.45pm Your online Tesco delivery arrives The retailer has been quick to adopt AI to optimise delivery routes taken by drivers and has been trialling the use of heavily automated urban fulfilment centres, in which robots on conveyor belts are used to retrieve and drop off pallets of goods. Tesco has also pioneered the use of analytics to predict consumer behaviour, correlating demand for specific products with weather conditions, changes in the economy and regional demographics. Tesco's ordering system is automatically updated in real-time based on what customers are buying. 9.50pm You scroll through a Guardian article that contains a personalised ad As you read news articles, scroll through social media, make Google searches and buy things online, you leave behind a trail of clues about who you are and what you might want to spend your money on that is incredibly valuable for digital advertisers. AI sifts through this data for insights into your age, gender, lifestyle, disposable income and whether you're into cooking, water skiing, makeup tutorials or sci-fi. This allows companies such as Google to serve up specific, targeted adverts that pop up as you scroll through a news article.

