

## How Much Do Our Phones Know About Us?

Alongside the exponential growth in reliance on our smartphones, the rapid innovation in compact device hardware and vast improvement in tracking algorithms over the last decade has left a gaping opportunity that yearns for firms to collect vigorous amounts of our personal data and make a profit from it. One phone manufacturer in particular, *Apple*, has dominated the smartphone market since their launch of the *iPhone* in 2007, notably because of the company's user-friendly operating system, an extensive product ecosystem which allows consumers to easily share media between other Apple devices<sup>1</sup>, and simple user interface which allows for a huge demographic to addictively become dependent on their screens. However, despite its effortless façade, Apple devices actually use a lot of processing power to collect an alarming amount of personal data in the background which they can either sell to third-parties (which they claim they never do) or utilise to improve the customer experience - at the expense of our privacy. Some users find the tailored experience advantageous, whilst others flinch at the thought of Apple knowing the sleep patterns, medical history, daily schedules and menstrual cycles of over 1/8 of the entire global population.

Apple unveiled their 'Health' app at its Worldwide Developers Conference<sup>2</sup> (WWDC) in June 2014. Initially it received criticism due to lack of features and third-party support, however over the last eight years the app has grown into a whole encyclopaedia of personal information. Users with the newer 'Apple Watches' can track their blood oxygen levels as well as detect when you may have had a stroke or seizure. Wrist temperature data collection even allows retrospective ovulation estimates for women to more accurately predict their period. Advancements in this field have largely come about due to the increased accessibility and cheaper supply of smaller sensors that can detect these metrics whilst fitting inside a mobile device, in addition to modern microchips having the processing power

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<sup>1</sup> 'Airdrop' is a feature on Apple's operating systems which allows the user to seamlessly share photos, videos and other forms of media in a swift and intuitive manner.

<sup>2</sup> The WWDC is an annual IT Conference held in Apple's California headquarters, used for the company to showcase new and upcoming software features as well as occasionally announcing hardware releases.

capable of handling these tasks efficiently without requiring supermassive cooling systems or loud distractive noises.

Arguably what sets Apple apart the most from its competition is their coherent implementation of machine learning and artificial intelligence together with the enormous amounts of personal data they collect to form an accurate profile of you in order to better serve you suggestions and personalise advertisements. This level of information gathering was simply not possible with the technology of the early 2010s, and privacy laws have been too slow to keep updated with how easily these companies can track your search history and log every keystroke. This creates a huge moral dilemma: how far should these companies be allowed to go before data collection stops being about ‘personalisation’ but about ‘deprivatisation’ instead?

One glaring feature across Apple’s operating systems that epitomises this idea is ‘Siri’, a virtual voice assistant. Siri has the ability to call contacts by accessing phone numbers; turn on the lights in your smart-home; give directions by tracking your location; and even suggest websites and applications<sup>3</sup> based on your past activity. AI algorithms pick up behavioural patterns such as learning when you wake up so it can optimise battery charging while you sleep; or suggesting the ‘Maps’ app at lunchtime because your history shows that you like to find the fastest route to a local restaurant from work. This information is also extremely valuable to advertisers – in 2021 Google reportedly had a \$15 billion deal<sup>4</sup> with Apple to remain as the default search engine for all Apple devices, to ensure that they received all users’ internet traffic and generated ludicrous amounts of ad revenue. According to *Statista* [Bianchi, T. (2022)], “In 2021, Google's ad revenue amounted to 209.49 billion U.S. dollars”. This shows that companies are willing to pay millions for their ads to be shown to the right audience on the right platform, and Apple holds the key which they can sell to Google, who can distribute our data further to their mountain of eager advertisers.

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<sup>3</sup> ‘Siri Suggestions’ is a feature on Apple operating systems which prompts the user with app recommendations on the home screen and auto-predicts website URLs based on your browser history.

<sup>4</sup> Moreno, J. (2021).

This leaves us with an ominous thought that if Apple has one lapse in moral judgement, the ethical complications that would ensue are disastrous. Previously, Apple have denied the FBI access to an iPhone belonging to a shooter involved in a 2016 terrorist attack in California<sup>5</sup> which sparked “an epic fight pitting privacy against national security”<sup>6</sup>. Although this decision did cause mixed reactions, many sided with Apple for standing up to their moral beliefs. However, in the aftermath of the Supreme Court’s decision to overturn *Roe vs Wade*, “privacy experts are increasingly concerned about how data collected from period-tracking apps, among other applications, could potentially be used to penalize anyone seeking or considering an abortion.” [Torchinsky, R. (2022)]. Although Apple’s Health app isn’t the most commonly used when it comes to period tracking, it is most certainly a feature and also allows data entries from third-party applications. Experts agree that the data “could be used to suggest that someone has had or is considering an abortion”. This is obviously a huge ethical concern which does not cease at period tracking. Location history, search history and any other possibly incriminating data can all be simply purchased by anyone, as long as at least one company is collecting it.

How could this ethical dilemma escalate further? As technology continues to advance and become more and more powerful, we will keep seeing greater detail and more accuracy in the data that our devices gather from us. With *Facebook* rebranding to *Meta* and pursuing the innovation of their own virtual *Metaverse*<sup>7</sup>, the *Pew Research Centre* found that 54% of “624 technology innovators, developers, business and policy leaders, researchers and activists [...] said that they expect by 2040 the metaverse will be a much-more-refined and truly fully-immersive, well-functioning aspect of daily life for a half billion or more people globally” [Anderson, J., Rainie, L. (2022)]. If this were to become true, personal data breaches would become far more catastrophic than now – people may be uploading their whole entire lives into a remote server storing every single action they ever take. Certain individuals could more easily become profiled and targeted for

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<sup>5</sup> Feiner, L. (2020).

<sup>6</sup> “FBI-Apple encryption dispute”. *Wikipedia*. Available at: [https://en.wikipedia.org/wiki/FBI%E2%80%93Apple\\_encryption\\_dispute](https://en.wikipedia.org/wiki/FBI%E2%80%93Apple_encryption_dispute) [Accessed Jan. 2023].

<sup>7</sup> The ‘Metaverse’ is a virtual-reality space in which users can interact with a computer-generated environment and other users.

advertisements if every move they made was linked to their ‘avatar’; marginalized communities may be disproportionately affected by the data collection leading to inequality; and the transparency of what data was being shared when being tracked 24/7 could become ambiguous. The large amount of data being stored will also be more detrimental in cyber-attacks, putting consumers at risk for identity theft and other malicious activities.

What worries me most is the idea that in the near future, we will become dependent on AI, machine learning and day-to-day data collection to monitor our mental and physical health, and an algorithm error or miscalculation will cause a fatal disaster for one individual or a whole group. Not only would that be unavoidable and unpredictable, but it would also be impossible for any single person or organisation to take the entire blame for such a mistake. It is vital that we take precautionary steps to ensure that the risk of such an occurrence is minimal. In recent years, Apple has released interesting software features that seem to give the user more control over the data they collect – which is more in line with their continuous public statements saying that they are fully “committed to [...] the right to privacy”<sup>8</sup>. In particular, the *Hide My Email* feature released with iOS 15 allows users to create a web/app account under a randomly generated email address. When the account receives an email, it is immediately relayed and forwarded to your personal email account with only Apple knowing your actual email address. This way, if your random email was exposed in a data breach, and you began to receive junk or spam messages, you could easily delete any affiliation with the email in question – minimising damage. Unfortunately, going through Apple as a ‘middle-man’ is not a system that can be effectively applied to the rest of our privacy issues. Unlike pen and paper, once our data is uploaded online, there is very little we can do to scrunch it up again and throw it in the fireplace.

I still do not believe enough of the population are fully aware of how much tracking modern smartphones, watches and tablets are capable of. Until we take action to educate each other about our rights to privacy online and start calling out companies that aren’t being transparent and honest about the data they’re collecting, the dark ethical issues that surround the digital world will remain.

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<sup>8</sup> See Bibliography: *Apple* “Privacy Governance”.

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