

Experience Day Digital Society

The invisible eyes, ears, and noses that facilitate (or control?) your everyday life

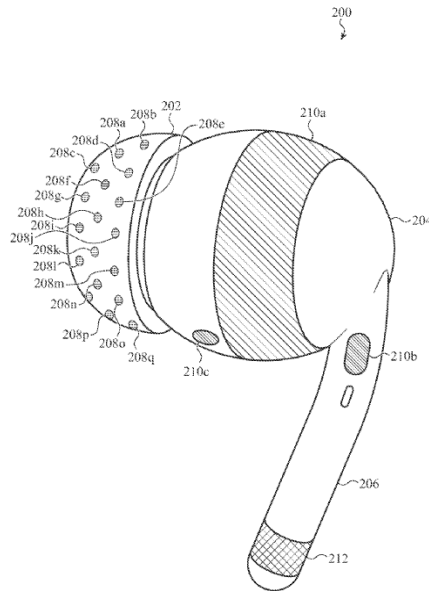


FIG. 2

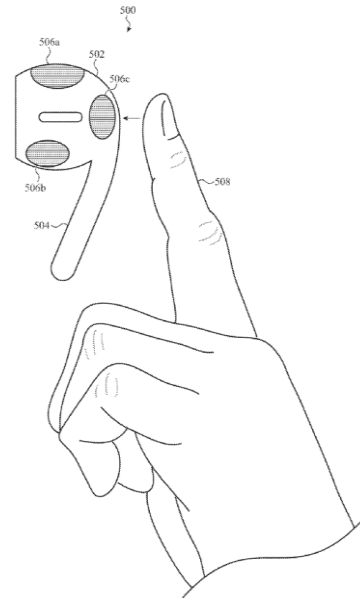


FIG. 5

Figure 1 images from the patent application by Apple (Apple Inc., 2023)

We are living in world in which almost everything we do is sensorized, automatized, digitalized. Think about it...We don't need to click the button anymore for the traffic light; it just 'feels' whether we are standing in front of it or not. Our car beeps louder and louder when we drive backwards and it 'sees' another car. When we travel by public transport, we swipe our card across contactless systems that 'sniff' our accounts and check if we have sufficient credit to make the trip. And, our smart watches and smart phones 'sense' whether we are making enough steps, if our heart rate is healthy, and whether we are in a bright or dark place. Whether we like it or not, thousands of sensors—some smaller and less visible than others—are all around us. As a concrete example, look at Apple's patent application for the AirPods (see images above). Their product is not just a music listening device. It is a miniscule but immensely powerful data extraction factory. With countless tiny sensors in the ear canal, it can perceive amongst others facial expressions, side-to-side eye movements, and even brain waves (Apple Inc., 2023).

But these sensors do not just, feel, see, sniff, or sense, so that they can make our lives easier. These ‘black boxes’ continuously extract data for other purposes, services, and stakeholders too. In fact, all the activities above consist of a complex interplay between humans, sensors, connections, networks, and data.

As digital society students, we can ask a few intriguing questions here: who has access to all these data? What happens when others, for example our bosses, other companies, insurance agencies, even governments dive into the details of our lives captured by these sensors? In some countries, insurances offer attractive discounts if you submit data from your smartwatch, proving that you hit the 10,000 steps target each day (Steinberg, 2022). Or think about your car’s onboard sensors. They do not only help you with parking, they also track how fast you drive, how hard you brake, and even where you have been. These data are also valuable for insurers, employers, or even law enforcement. Suddenly, sensors that are designed to ‘assist’ us also create detailed maps of our behavior—maps that others could potentially use to make decisions about us. And what if these systems, by design or by flaw, end up disadvantaging entire groups within society? As our lives become more sensorized, the line between helpful tech and intrusive surveillance may sometimes blur. It is interesting to look at who gets to decide where to draw this line...

The Experience day challenge:

In this task, you will take on the role of a digital architect: you will be building your own automated system. For this, you will use Arduino Student Kits to unravel what goes on inside a computer system that may sometimes feel like a black box. How does it receive input from sensors (variables, sensory data, user input, ...), process it internally and spit out some output? We will be working in small groups. Each team will build their own fully functional Arduino project, complete with wiring and a well-structured and documented programme script or ‘sketch’.

In the pre-discussion, you will explore the materials behind the automation—i.e., the sensors, Arduino boards, and circuits that form its backbone. How do these components work together to ‘see’ the world? After a brief lecture on ‘surveillance at work’, you will jump into a very basic coding exercise. We have prepared software code for you that you will have to finalize in order to bring your own computer system

to life. In the end, we take a few minutes to reflect on how automation impacts society. So while you are working on your project, consider the following questions: How is this same type of technology used elsewhere in your everyday life? What are the social implications of it? What does it mean when technology starts making decisions? Who should decide where the line between helpful tech and surveillance should be drawn?

Readings:

Holland Michel, Arthur (2021). There Are Spying Eyes Everywhere—and Now They Share a Brain. *WIRED*. Retrieved from: <https://www.wired.com/story/there-are-spying-eyes-everywhere-and-now-they-share-a-brain/>

Sources

- Steinberg, E. (2022). Run for Your Life: The Ethics of Behavioral Tracking in Insurance. *J Bus Ethics* 179, 665–682. <https://doi.org/10.1007/s10551-021-04863-8>
- Apple Inc (2023) Biosignal Sensing Device Using Dynamic Selection of Electrodes (US20230225659A). Retrieved from: <https://patents.google.com/patent/US20230225659A1/en>