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Face Dissection

What is Face ID? How does it work?
What does it do for society?

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Face ID is a facial recognition technology made for Apple products. Originally created to replace Touch ID, Face ID has extended to be more than just a way to log into your phone and is also a way you can communicate, pay and protect.

Apple's Face ID has one of the strongest facial recognition software in the market today. The TrueDepth camera captures accurate face data by projecting and analyzing thousands of invisible dots to create a depth map of your face. Then it goes on to capture an infrared image of your face using lighting and cameras. (Apple.com). Heat and light helps form a shape from looking 2D to 3D. "An infrared camera detects the thermal energy or heat emitted by the scene being observed and converts it into an electronic signal." (Lynred, 2019) The neural engine of the A11, A12 Bionic, A12X Bionic, A13 Bionic, A14 Bionic, and A15 Bionic chip protected within the Secure Enclave does the processing of this data.

These transform the depth map and infrared image into a mathematical representation and compare that representation to the enrolled facial data.

Face ID will change with you so if you are wearing makeup, glasses, just got your hair cut or wearing something different from what you're used to (ie a scarf) it is designed to pick up on that and give you a seamless experience logging into your phone.

Questions around privacy always come up when it comes up to taking our identity. Apple states that "Face ID data doesn't leave your device and is never backed up to iCloud or anywhere else."(Apple.com) Meaning that it doesn't go to advertisers or sold to other organizations.

On top of that, the data is encrypted and protected by the Secure Enclave which is a dedicated secure subsystem. So it is now much harder for anyone to get your data to get into it without breaching apple as a company.

Argüello 2021, Tests the claims of safety around this subject by conducting an

experiment placing different plasters and facial blockers to see what would work. Their foundings show that most of the time when covering an eye it doesn't work. On the contrary covering forehead and nose caused no issue opening the phone.

Using Face ID isn't limited to logging into your phone or using in place as a password. You can also communicate with it. Memojis are customizable avatars that will move with your own face. If you're talking your avatar will also start moving their mouth. This adds a more interactive "real" feeling to the text walls that usually come with texting. This also adds tone to something you would usually only be able to read with words. Face filters for social media apps such as Instagram, Snapchat and TikTok have been using daily by users for years. The added facial recognition software helps these face filters become more realistic. Adding realistic makeup to your face, warping your face, and adding funny comedic filters to your face. This further advances the technology of communication and communication to a wide audience across social media.

In the classroom facial recognition is being used more. According to Lovell 2019, right using face technology to do roll call is being trialed in select schools in NSW and up to 100 campuses across Australia. Not only roll call but Face ID can be used in classrooms for learning. This has been shown to help autistic children learn the emotions of the face through learning apps that encourage them to learn along with it. Copying facial cues and understanding what different facial expressions mean.

In the study by, Argüello 2021, they look at out face ID can help with LGBTQ+ peoples identities. Through apps they can present themselves to look however they want making them feel more comfortable. This can help people such as trans women see what facial feminisation surgery would look like on them before under going the procedure. The study concluded that face id was positive for the community and communication to outside the community.

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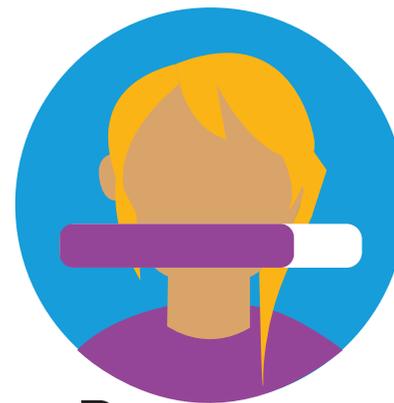Zhang, S. (2018, July 1). High-speed 3D shape measurement with structured light methods: A review. ScienceDirect. Retrieved October 15, 2021, from https://www.sciencedirect.com/science/article/abs/pii/S0143816617313246

How Face ID Works

Capture   **Map Face**   **Infrared**   **Process**   **Done**