CASE STUDY: Responsible AI

Nest Hub Max



The Product

Nest Hub Max is a 10-inch smart display device that helps users make video calls, play music, watch video and TV, see their calendar and reminders, and more. Because it contains a camera, Nest Hub Max offers individual users (even on a shared family device) the option to customize their experiences using their face via an opt-in feature called Face Match. This feature uses machine learning (ML) to identify an individual's face visually for personalized proactive interactions on the device using the Google Assistant. We knew there would be challenges in bringing our vision of a helpful and universally accessible device with facial recognition technology to life, and we sought to design it with the <u>Al Principles</u>, as well as our <u>approach to facial recognition</u> (published in 2019), as guardrails.

The Approach

We aligned Face Match with the AI Principles in several ways. For example, for Principle #1, social benefit, the convenience of hands-free personalization makes Face Match broadly accessible. To help avoid unfair bias (Principle #2) we went through testing cycles with a diverse group of people to help prevent gender and skin tone bias. To align with Principles #3

and #4, we implemented strong privacy and security safeguards. Face Match is off by default, and the user must expressly turn it on, after receiving clear and just-in-time notices about how their data will be processed. In addition, the user remains in control at all times and can opt-out and delete their face data at any time. Finally, on-device processing provides a further layer of safeguards. The face model is encrypted and stored on the Nest Hub Max; following the setup process, all the face matching occurs locally on-device. That means that after setup, Face Match does not send video or images to Google.

The Outcome

As a result of these safeguards, multiple people in a home can use Face Match to get personalized help on a shared home device – from seeing their personalized calendars and morning commute details, checking missed messages meant just for them, or even playing their own favorite song. For each person who chooses to turn Face Match on, the Assistant guides them through the process of creating a face model, which is encrypted and stored on the device. We continue to work on extending various features and services to Nest Hub Max, which are available to use through Face Match. We're also learning from our work on Nest Hub Max as we explore new ML models and approaches for understanding the dynamic world in real time, with fairness, privacy and security top of mind.

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About Google's Al Principles

In 2018, Google published our AI Principles to help guide ethical development and use of the technology. Our objectives: 1. Be socially beneficial. 2. Avoid creating or reinforcing unfair bias. 3. Be built and tested for safety. 4. Be accountable to people. 5. Incorporate privacy design principles. 6. Uphold high standards of scientific excellence. 7.Be made available for use in accord with these principles. In addition to the above objectives, we will not design or deploy AI in the following application areas: 1. Technologies that cause or are likely to cause overall harm. Where there is a material risk of harm, we will proceed only where we believe that the benefits substantially outweigh the risks, and will incorporate appropriate safety constraints. 2. Weapons or other technologies whose principles or implementation is to cause or directly facilitate injury to people. 3. Technologies that gather or use information for surveillance violating internationally accepted norms. 4. Technologies whose purpose contravenes widely accepted principles of international law and human rights. As our experience in this space deepens, this list may evolve.