# Understanding Facial Detection, Characterization and Recognition Technologies

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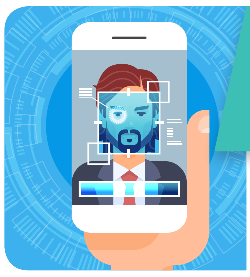
|  | **DETECTION**<br>Is there a face in this picture? | **CHARACTERIZATION**<br>What assumptions can I make about this face? | **UNIQUE PERSISTENT IDENTIFIER***<br>What is this person doing, in a limited context, not tied to other PII? | **VERIFICATION 1:1**<br>Is this person who they are claiming to be? | **IDENTIFICATION 1:MANY**<br>Can software determine who this unknown person is? |
|---|---|---|---|---|---|
| **COMMERCIAL USE CASES** | » Camera autofocus<br>» Organizing personal on-line albums (landscape v. people)<br>» Counting customers (in line, in store, in amusement park, etc.)<br>» Virtual eyeglasses<br>» Virtual makeup | » In-store digital sign serving gender-specific ads (ex. men's clothing to a man)<br>» Non-personalized textual descriptions of photos (ex. man and smiling woman on the beach)<br>» Tracking in-store customer behavior patterns | » Track customer in-store behavior and shopping patterns | » Secure facility access<br>» 2d factor ATM verification<br>» 2d factor on-line account login<br>» On-device verification/ access<br>» Medicine disbursement | » Photo tagging suggestions[1]<br>» Consumer Loyalty Programs<br>» Targeted Advertising<br>» FR-capable eyewear for the visually impaired<br>[1] |
| **BENEFITS** | » Improved digital photos<br>» Easier organization of photos<br>» Faster in-store response times to customers waiting on assistance or check-out | » More relevant ads; better marketing<br>» Increased engagement for visually impaired users on social media[2]<br>» More efficient in-store design and service<br>[2] | » Personalize consumer in-store experience<br>» More efficient in-store design and service, tailored to customer demographics | » Efficient and reliable access to facilities, sites and services<br>» Frequent shopper and loyalty programs<br>» Event registration<br>» Hospitality tracking | » Highest level of personalization of products and services<br>» ID of premium customers<br>» ID of known shoplifters<br>» Better photo organization tools<br>» Best experience for visually impaired users |
| **IDENTIFIABILITY** | » Not identifiable | » Not identifiable[3]<br>[3] | » Potentially identifiable if linked to other data | » Identifiable | » Identifiable |
| **PRIVACY CONCERNS** | » None[3]<br>[3] | » Possibility of discrimination based on gender, race, and/or other characteristics<br>» Perception of poor accuracy, with associated mislabeling or categorization<br>» Perception of possible identification without consent[4]<br>[4] | » Possible identification without consent<br>» Surreptitious tracking<br>» Detailed profiling could allow for exploitation<br>» Misalignment with consumer expectations through use of databases never expected/intended to be used for facial identification purposes | » Security breach leading to loss of PII or account access information<br>» Possibility of false positive and false negative rates; either unduly burdening authorized users, or insufficiently preventing unauthorized access<br>» Out of context use | » "FindFace" – apps that claim to identify unknown persons in public without additional info from the app user<br>» Possibility of user tracking or profiling across contexts<br>» Possibility of false matches, resulting in false suspicions or accusations<br>» Unexpected use/ sharing |
| **NOTICE AND CONSENT** | » None | » Notice only | » Notice and opt-out consent upon enrollment, if combined with other safeguards[5]<br>[5] | » Notice and express, affirmative consent upon enrollment | » Notice and express, affirmative consent upon enrollment[6]<br>[6] |
| **OPERATOR OR PLATFORM RESPONSIBILITIES (MEETING "EXPECTATION RISK" CONCERNS)** | » Minimal process requirements | » Ensure usage does not exceed reasonable practices consistent with the notice provided | » Maintain information in silo'd database; no cross-matching or identification<br>» Increase privacy and security protections based on the extent to which data is maintained over time or across locations<br>» Ensure uses are consistent with initial notice (no identification); establish retention limits | » Highest levels of care in use or sharing; extensive training; and strong security<br>» Granular, nuanced approaches and education of users as to their controls and settings<br>» Establish retention limits | » Granular, nuanced approaches and education of users as to their controls and settings<br>» Provide highest protection to highest risk users<br>» Avoid usage-creep, or sharing and applications for purposes beyond the reasonable consumer expectations at collection |

[1] There are two contexts for photo tagging – one unique to the specific user, organizing their own photos with IDs they assign; and the other as "suggestions" by the platform provider, across users based on various criteria as defined in the TOS. The first category does not typically generate privacy concerns.

[2] Read aloud text programs for visually impaired users may define "a smiling woman and young child, on a beach" – using facial characterization to describe the people found in the photo, without any personal identification.

[3] Identified as a concern by some media/reporting, such descriptions typically misunderstand the applicable technologies. Minimal information is collected by detection and characterization technologies, usually insufficient for personal ID.

[4] While there are not privacy risks associated with current implementations of Facial Characterization, the FTC has still identified requirements for notice based on Consumer Expectations: www.ftc.gov/sites/default/files/documents/reports/facing-facts-best-practices-common-uses-facial-recognition-technologies/121022facialtechrpt.pdf

[5] Opting-out of tracking via unique personalized ID is often implemented by maintaining a database of "opted out," hashed templates for which no tracking data will be created.

[6] Exceptions for physical security and vendor management, as well as limited use cases where opt-out consent is sufficient

**includes use across one visit, across multiple visits, or locations*