

Biometric Authentication via Iris Recognition

Sabbir Liakat, Scientist at Princeton Identity, Inc. and Princeton *15 alum

Current address: Princeton Identity, Inc., 300 Horizon Dr. Ste 304, Trenton, NJ 08691

Presentation Background:

Having a reliable means of access control is crucial for any type of organization, regardless of size and function. Whether one is managing a personal website, a bank, or a nuclear weapons research facility, it is imperative that unauthorized individuals are not allowed access to sensitive information. Biometric authentication, defined as the use of human metrics for access control, is a rapidly growing field due to the inherent security advantage it offers over traditional means of access control such as passwords and ID cards – biometrics are physically associated with an individual and cannot be easily stolen or replicated.

Among the three major biometric authentication solutions being pushed in the industry now – face, fingerprint, and iris (the Samsung Galaxy S8 features all three techniques), iris recognition is the most promising for widespread biometric access control. A human's irises are mostly formed during gestation, and everyone has unique iris texture on their left and right eyes. Research has shown that a person's left eye iris texture will not match to that of their own right eyes, and furthermore, identical twins do not have matching iris textures! Iris recognition has been shown to have better false accept rates than fingerprint scanning while authenticating at similar speeds. Additionally, iris recognition can be done in the dark and requires less computationally intense algorithms than face matching.

During my presentation, I will provide a general overview of the technical aspects of iris recognition, starting with a background of eye structure, continuing with an example of how the phase map of iris textures are extracted, and culminating with a discussion of the statistics of iris recognition and how to determine a proper "match" threshold.