

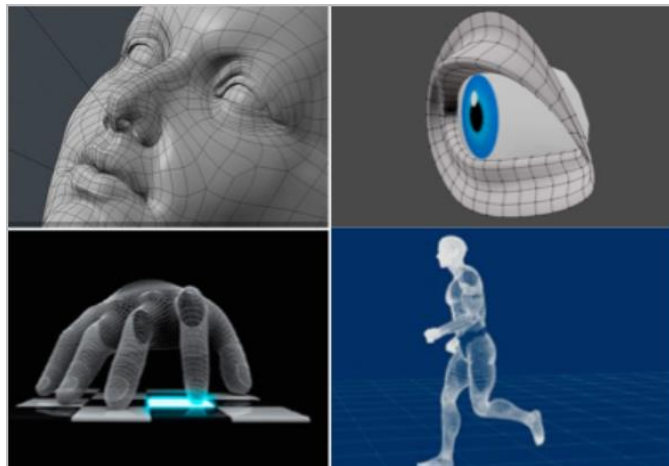
## ***CMPE 297-04, Biometric Fundamentals***

**Instructor: Dr. Nima Karimian**

**Time: TuTh 1:30PM - 2:45PM**

As security continues to be a major concern for today's society, a reliable means of personal identification is required by commercial, law enforcement, and physical access control applications. With the billions of IoT endpoints projected to exist in the near future, traditional forms of access control like passwords are outmoded. Strong passwords are already difficult to remember, let alone with so many devices. Passwords are also vulnerable to guessing and subject to circumvention through unauthorized sharing or misplacement.

Biometrics is the science of identifying or authenticating an individual's identity based on behavioral or physiological characteristics such as a fingertip, Facial, and etc. Government Ids, secure electronic banking, retail sales, autonomous vehicle, and health and social services all have benefited from the use of biometric technology and will continue to do so as biometric research advances. This also includes Amazon's Echo where the Alexa voice recognition platform allows consumers to access digital services using voice commands.



### Topics:

Face Recognition Logistics, image acquisition, modalities

Face Detection (Integral Images, Haar-like features)

Fingerprint Recognition, image acquisition, processing, minutiae, matching, and evaluation

Iris Recognition, patents; the eye and iris; iris image acquisition, enhancement, processing, feature extraction

New Biometric Based on Novel Sensing Technologies

Biometric System Security, Security of Processing Modules, Sensor Attacks

Biometric System Security, Attacks against template protection algorithms

Template Protection, Irreversibility, Unlinkability, Renewability

Spoofing and Presentation Attacks

Privacy and cancelable biometrics