

4/4 B.Tech. SECOND SEMESTER

IT8T1

BIOMETRICS

Credits: 4

Lecture: 4 periods/week

Internal assessment: 30 marks

Tutorial: 1 period /week

Semester end examination: 70 marks

Objectives:

To impart knowledge on

- Different biometric technologies like Finger scan, Facial Scan, other physiological biometrics, Hand scan, Retina scan, AFIS (Automatic Finger Print Identification Systems), Behavioral Biometrics, Signature scan, keystroke scan.
- The different biometric devices.
- The usage of biometrics for computer security.
- How to design and build a secure system.
- The Benefits of Biometric Security.
- The development of Biometrics Application, Biometric Solution Matrix.
- The various Biometric standards, Biometrics for Network Security.
- The various ways in which biometrics can be spoofed.

Outcomes:

Student will be able to

- Develop applications for physiological biometric techniques.
- Develop applications for behavioral biometric techniques.
- Compare different technologies of biometric systems.
- Develop biometric solution matrix.
- Grasp the benefits of Biometric security.
- Develop effective security systems.
- Do biometric transactions.

Syllabus:

UNIT I

Introduction: Benefits of biometric security – Verification and identification – Basic working of biometric matching – Accuracy – False match rate – False non-match rate – Failure to enroll rate – Derived metrics – Layered biometric solutions.

UNIT II

Finger Scan: Features – Components – Operation (Steps) – Competing finger Scan technologies – Strength and weakness. Types of algorithms used for interpretation.

UNIT III

Facial Scan : Features – Components – Operation (Steps) – Competing facial Scan

technologies – Strength and weakness.

UNIT IV

Iris Scan : Features – Components – Operation (Steps) – Competing iris Scan technologies – Strength and weakness.

UNIT V

Voice Scan: Features – Components – Operation (Steps) – Competing voice Scan (facial) technologies – Strength and weakness.

UNIT VI

Other physiological Biometrics: Hand scan – Retina scan – AFIS (Automatic Finger Print Identification Systems)-DNA Scan – Behavioral Biometrics – Signature scan-keystroke scan.

UNIT VII

Biometric Applications: Biometric Solution Matrix –Bio privacy Comparison of privacy factor in different biometrics technologies – Designing privacy sympathetic biometric systems. Biometric standards – (BioAPI , BAPI) – Biometric middleware.

UNIT VIII

Biometrics for Network Security: Recommended Biometrics for network security, Biometric Spoofing.

Text Books

1. Biometrics – Identity Verification in a Networked World – Samir Nanavati, Michael Thieme, Raj Nanavati, WILEY- Dream Tech.
2. Biometrics for Network Security- Paul Reid, Pearson Education.

Reference Books

1. Introduction to Biometrics, by Anil K. Jain, Arun A. Ross and KarthikNandakumar, 2011.
2. Guide to Biometrics, by Ruud Bolle, Jonathan Connell, SharanthchandraPankanti, NaliniRatha, and Andrew Senior, 2003.
3. Biometric Systems Technology, Design and Performance Evaluation, by James L. Wayman, Anil K. Jain, DavideMaltoni, and Dario Maio, 2004.
4. Handbook of Face Recognition, by Stan Z. Li and Anil K. Jain, 2005.