

20CS015 BIOMETRICS

Hours Per Week :

L	T	P	C
3	-	-	3

Total Hours :

L	T	P	WA/RA	SSH/HSB	CS	SA	S	BS
45	-	-	15	30	-	5	5	-

Course Description and Objectives:

To provide authentication, identification and security through biometrics .

Course Outcomes:

Upon the Completion of the course, students will be able to:

- ✓ Understanding functionalities, traits and metrics used in biometric system.
- ✓ Analyze the steps in design of various biometric system and their performance
- ✓ Design of biometric systems depending on the choice of using the trait like fingerprint, face, iris etc.
- ✓ Applying the multimodal biometric traits and fusion levels in various applications.
- ✓ Analyze the attacks on Biometrics and database templates and they are overcome.

SKILLS:

- ✓ Usage of Fingerprint recognition
- ✓ Usage of Iris recognition
- ✓ Usage of multi-biometrics to enhance security

Unit – I

Introduction

Biometric Systems, Biometric Functionalities, Biometric System Errors, The Design Cycle of Biometric Systems, Applications of Biometric Systems.

UNIT – II

Finger Print Recognition

Introduction, Friction Ridge Pattern, Fingerprint Acquisition, Feature Extraction, Matching, Fingerprint Indexing, Fingerprint Synthesis, Palmprint.

UNIT – III

Face Recognition and Iris Recognition

Introduction, Image Acquisition, Face Detection, Feature Extraction and Matching, Design of Iris Recognition System, Iris Segmentation, Iris Normalization, Iris Encoding and Matching, Iris Quality

UNIT – IV

Multi-Biometrics

Introduction, Sources of Multiple Evidence, Acquisition and Processing Architecture, Fusion Levels.

UNIT – V

Security of Biometric systems

Adversary Attacks- Attacks at the user Interface-Attacks on Biometric Processing and Template Database.

TEXTBOOKS:

1. Anil K. Jain, Arun A. Ross, Karthik Nandakumar, Introduction to Biometrics, Springer

REFERENCEBOOKS:

1. Samir Nanavati, Michael Thieme, Raj Nanavati, Biometrics – Identity Verification in a Networked World –WILEY
2. Paul Reid , Biometrics for Network Security-, 1/e, Pearson Education.
3. John D. Woodward, Biometrics- The Ultimate Reference- Wiley