CS630   Speech Technology

Credits: 3-0-2-4   Approval: Approved in 3rd Senate

Students intended for: B.Tech

Elective or Core: Elective   Semester: Even or Odd

Course content:

- **Overview of Speech Technology**; What is Speech Technology? Why is it important? Its applications and issues.

- **Speech Production**; Mechanism of speech production; Categories of sounds; Sound units in indian languages.

- **Nature of Speech Signal**; Source-system characteristics; Segmental and suprasegmental features; Temporal and spectral parameters for sound units in indian languages.

- **Basics of Digital Signal Processing**; Signals and systems; Discrete fourier transform; Digital filtering; Stochastic processes.

- **Speech Signal Processing Methods**: Short-time spectrum analysis; Spectrograms; Linear prediction analysis; Cepstrum analysis.

- **Speech Recognition**; Isolated word recognition; Connected word recognition Continuous Speech Recognition; Speech recognition problem; Hidden markov models.

- **Other Applications**: Word spotting; Speaker recognition; Speech enhancement; Speech synthesis; Practical issues in speech technology.

Text Book:

L R Rabiner and R W Schafer, "Theory and Application of Digital Speech Processing," PH, Pearson, 2011.

L R Rabiner, B-H Juang and B Yegnanarayana, "Fundamentals of Speech Recognition," Pearson, 2009 (Indian subcontinent adaptation).

Xuedong Huang, Alex Acero, Hsiao-wuen Hon, "Spoken Language Processing:A guide to Theory, Algorithm, and System Development," Prentice Hall PTR, 2001.

References:

Oppenheim and Schafer, "Discrete-Time Signal Processing," PHI, 2001

T W Parsons, "Voice and Speech Processing," McGraw Hill, 1986.

Thomas Quatieri, "Discrete-time Speech Processing: Principles and Practice," PH, 2001.

Rabiner and Schafer, "Digital Processing of Speech Signals," Pearson Education, 1993.

Douglas O' Shaughnessy, "Speech Communications," University Press, 2001.