COP 6728 Visual Information Retrieval

Credits: 3 credits

Text book, title, author, and year: M. Lux and O. Marques, "Visual Information Retrieval Using Java and LIRE", *Morgan & Claypool*, 2013.
* PDF available via FAU Libraries:
http://www.morganclaypool.com.ezproxy.fau.edu/doi/abs/10.2200/S00468ED1V01Y201301ICR025

Reference materials: Several books, book chapters, journal and conference papers whose details will be provided during the semester.

Specific course information:

Catalog description: Study of the interdisciplinary research area of visual information retrieval. Research paper and project topics will be chosen from a list of latest developments and open challenges and opportunities in the field.

Prerequisites: Graduate-level status or permission from instructor. Background in multimedia, image and video processing, and human and/or computer vision a plus (but not required).

Specific goals for the course*:*

- To provide a deep and solid conceptual understanding of the fundamentals of visual information retrieval systems and their visual, textual, and computational aspects.
- To understand and appreciate the challenge involved in designing visual information retrieval systems.
- To enable students to carry out research on selected topics of interest in this field.

Brief list of topics to be covered:

1. Motivation: "What is it that we're trying to do and why is it so difficult?"
2. Getting started with LIRE
3. Selected concepts and principles from Information Retrieval (IR)
4. Visual features
    a. Global features
    b. Local features
    c. Metrics, normalization, and distance functions
    d. Evaluation of visual features
    e. Feature extraction using LIRE
5. Indexing visual features
    a. Basic (naïve) indexing approach
    b. Nearest-neighbor search
    c. Hashing
    d. Bag of visual words
6. Research directions, challenges, and opportunities
    a. Datasets, challenges, and benchmarks for VIR
    b. Medical image retrieval
    c. Large-scale VIR
    d. Mobile visual search
    e. Image sharing, tagging, and annotation

f. User intentions in multimedia search

The course uses Blackboard for notes, assignments, announcements, and all course information (restricted to enrolled students).