

FLORIDA ATLANTIC UNIVERSITY™

UGPC APPROVAL _____
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 CATALOG _____

Graduate Programs—NEW COURSE PROPOSAL¹

DEPARTMENT: CEECS

COLLEGE: ENGINEERING AND COMPUTER SCIENCE

RECOMMENDED COURSE IDENTIFICATION:

PREFIX COT COURSE NUMBER 6603 LAB CODE (L or C) _____

(TO OBTAIN A COURSE NUMBER, CONTACT [MJENNIN@FAU.EDU](mailto:mjennin@fau.edu))

COMPLETE COURSE TITLE: VISUAL INFORMATION RETRIEVAL



CREDITS²: 3

TEXTBOOK INFORMATION:

Lux and Marques [2013], *Visual Information Retrieval Using Java and LIRE*, Morgan & Claypool.
 ISBN: 978-1608459186

GRADING (SELECT ONLY ONE GRADING OPTION): REGULAR SATISFACTORY/UNSATISFACTORY _____

COURSE DESCRIPTION, NO MORE THAN THREE LINES: 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.

COREQUISITES*: N/A

REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL)*:

* PREREQUISITES, COREQUISITES AND REGISTRATION CONTROLS WILL BE ENFORCED FOR ALL COURSE SECTIONS.

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE: PhD

Faculty contact, email and complete phone number:
 Oge Marques - omarques@fau.edu - 561.297.3857

Please consult and list departments that might be affected by the new course and attach comments.³

Approved by:

Department Chair: Morgan Erol

College Curriculum Chair: Will T. Lee

College Dean: [Signature]

UGPC Chair: [Signature]

Graduate College Dean: [Signature]

UFS President: _____

Provost: _____

Date:

11/27/13

4/27/13

11/2/13

1/22/14

1-29-14

1. Syllabus must be attached; see guidelines for requirements: www.fau.edu/provost/files/course_syllabus.2011.pdf
2. Review Provost Memorandum: Definition of a Credit Hour www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf
3. Consent from affected departments (attach if necessary)

Email this form and syllabus to UGPC@fau.edu one week before the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website prior to the meeting.

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COT 6603 – Visual Information Retrieval

Syllabus

Instructor:	Dr. Oge Marques	Dept:	CEECs
Office:	EE 441	Phone:	(561) 297-3857
Email:	omarques@fau.edu	Web:	http://faculty.eng.fau.edu/omarques/
Office Hours:	TBA		

Course 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. Background in multimedia, Java programming language, image and video processing, and human and/or computer vision a plus (but not required).

Course objectives:

- 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.

Textbook (required):

Lux and Marques [2013], *Visual Information Retrieval Using Java and LIRE*, Morgan & Claypool.
ISBN: 978-1608459186

Syllabus

Course outline (number of 1.5 hr lectures per topic in parentheses)

1. Motivation (2)
 - a. The need for visual information retrieval
 - b. Design challenges
2. Getting started with LIRE (1)
3. Information Retrieval: Selected Concepts and Techniques (7)
 - a. Document representation and the vector retrieval model
 - b. Retrieval evaluation
 - c. Text information retrieval with Lucene
4. Visual Features (9)
 - a. Digital imaging in a nutshell
 - b. Global features (color, texture)
 - c. Local features (SIFT, SURF)
 - d. Metrics, normalization, and distance functions
 - e. Evaluation of visual features (figures of merit, datasets)
 - f. Feature extraction using LIRE
5. Indexing Visual Features (6)
 - a. Basic indexing and linear search using LIRE
 - b. Nearest-neighbor search
 - c. Hashing
 - d. Bag of Visual Words
6. Case studies and applications (5)

Assessment summary:

- | | |
|---|------|
| • Participation (reading assignments, class discussions): | 10 % |
| • Research paper and presentation: | 15 % |
| • Homework assignments (3 × 10%): | 30 % |
| • Final project and presentation: | 45 % |
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Important notes:

- The research paper will be assigned shortly after finishing Topic 2 in the syllabus. It will consist of a narrowly focused study on a particular aspect of VIR. It will be based on (typically 3-5) recent research papers in the field. I will provide a list of candidate topics and a list of relevant journals and conference proceedings to search for papers. Research papers will be presented to the rest of the class in a seminar format.
- The homework assignments will be hands-on (using Java and LIRE) and will help prepare students for the final project.
- The final project will be implementation-oriented and will consist of building a complete, functional, VIR solution.

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- This is a graduate-level course and will be taught as such. Students are expected to be familiar with the basics of literature search (e.g., using IEEExplore, Google Scholar, Citeseer, etc.), the process of reading and summarizing scholarly articles (journal and conference papers). Students should also possess the ability to document their findings (in a scientific paper format) and present them to others.
- Students are expected to attend all classes. As you expect the professors to attend on time, we also expect you to attend on time.
- Additional materials and resources will be posted on the Web throughout the course.

Policy for Late Assignments

Late assignments will be graded with a penalty of 10% of the grade for each day after the assignment's due date, up to a maximum of 3 days late (i.e., 30% penalty), beyond which the assignment will receive a grade 0 (zero).

Grading Scale:

92-100 = A
88-91 = A-
84-87 = B+
80-83 = B
77-79 = B-
73-76 = C+
70-72 = C
66-69 = C-
61-65 = D+
56-60 = D
50-55 = D-
0-49 = F

Syllabus

Technical Problem Resolution Procedure *(for remote students)*

In the online environment, there is always a possibility of technical issues (e.g., lost connection, hardware or software failure). Many of these can be resolved relatively quickly, but if you wait to the last minute before due dates, the chances of these glitches affecting your success are greatly increased. Please plan appropriately. If a problem occurs, it is essential you take immediate action to document the issue so your instructor can verify and take appropriate action to resolve the problem. Please take the following steps when a problem occurs:

1. If you can, make a Print Screen of the monitor when the problem occurs. Save the Print Screen as a .png file.
2. Complete a Help Desk ticket at <http://www.fau.edu/helpdesk>. Make sure you complete the form entirely and give a full description of your problem so the Help Desk staff will have the pertinent information in order to assist you properly. This includes:
 - a. Select "Blackboard (Faculty)" for the Ticket Type.
 - b. Enter the Course ID.
 - c. In the Summary/Additional Details section, include your operating system, browser, and Internet service provider (ISP).
 - d. Attach the Print Screen file, if available.
3. Send an email to your instructor to notify him of the problem. Include all pertinent information of the incident (2b-d above).
4. If you do not have access to a computer, call your instructor with all pertinent information of the incident. If he is not available, make sure you leave a detailed message.
5. If you do not hear back from the Help Desk or your instructor within a timely manner (48 hours), it is your responsibility to follow up with the appropriate person until a resolution is obtained.

Disability Policy Statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodation due to a disability to properly execute coursework must register with the *Office for Students with Disabilities* (<http://osd.fau.edu/>):

in Boca Raton, SU 133, (561) 297-3880;
in Davie, MOD 1, (954) 236-1222;
in Jupiter, SR 117, (561) 799-8585;
at the Treasure Coast, CO 128, (772) 873-3305;

and follow all OSD procedures.

URL to be added.

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see the Code of Academic Integrity in the University Regulations at

[http://www.fau.edu/regulations/chapter4/4.001 Code of Academic Integrity.pdf](http://www.fau.edu/regulations/chapter4/4.001%20Code%20of%20Academic%20Integrity.pdf).

Syllabus

Instructor's policies on academic integrity and plagiarism

- Students are expected to sign an *electronic form* (available through Blackboard) indicating that they have read and understood Florida Atlantic University's *Code of Academic Integrity*.
- The instructor reserves the right to use any necessary tools -- e.g., SafeAssign (<http://www.safeassign.com/>) and MOSS (<http://theory.stanford.edu/~aiken/moss/>) -- to enforce these policies.
- Any evidence of cheating, plagiarism, or other forms of academic dishonesty will be prosecuted to the fullest extent.

Religious Accommodation

In accordance with rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs with regard to admissions, registration, class attendance and the scheduling of examinations and work assignments. Students who wish to be excused from coursework, class activities or examinations must notify the instructor in advance of their intention to participate in religious observation and request an excused absence. The instructor will provide a reasonable opportunity to make up such excused absences. Any student who feels aggrieved regarding religious accommodations may present a grievance to the director of Equal Opportunity Programs. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination. For further information, please see FAU's *Academic Policies and Regulations* (<http://www.fau.edu/academic/registrar/catalog/academics.php>).

University Approved Absence and Make-up Policy

Students are responsible for arranging to make up work missed because of legitimate reasons, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons to request make up work include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any such event, whenever possible. The instructor will then provide opportunities to prepare and submit make up work, without any reduction in the student's final course grade as a direct result of such events.

Incomplete Grade Policy Statement

A student *who is passing a course*, but has not completed all work due to exceptional circumstances, may, with consent of the instructor, temporarily receive a grade of incomplete ("I"). The assignment of the "I" grade is at the discretion of the instructor, but is allowed *only if the student is passing the course*. The specific time required to make up an incomplete grade is at the discretion of the instructor. However, FAU policies stipulate that all work required to satisfy an incomplete ("I") grade must be completed within a period of time not exceeding one calendar year from the assignment of the incomplete grade.

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Grade Appeal Process

A student may request a review of the final course grade when s/he believes that one of the following conditions apply: (i) There was a computational or recording error in the grading; (ii) Non-academic criteria were applied in the grading process; (iii) There was a gross violation of the instructor's own grading system. See [http://www.fau.edu/regulations/chapter4/4.002 Student Academic Grievance Procedures for Grade Reviews.pdf](http://www.fau.edu/regulations/chapter4/4.002%20Student%20Academic%20Grievance%20Procedures%20for%20Grade%20Reviews.pdf) for additional information.

Important final remarks:

- Reading assignments will be posted on the Web on a regular basis. Students are expected to keep up with the required reading pace.
 - Submission of assignments, problem sets and projects will be done electronically via Blackboard. **Do not submit anything by fax or email or any other means.**
 - All work in this course must be **INDIVIDUAL** effort unless otherwise specified.
 - Changes in class logistics and/or office hours may be necessary during the semester and if so the changes will be announced in the course home page. It is the student's responsibility to be aware of any such changes.
 - Please check the announcements page on Blackboard at least twice a week.
 - Email is the best way to contact the instructor.
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Course Home Page: A home page containing relevant information, materials, downloadable files, and useful links for the course will be available on Blackboard: <http://bb.fau.edu/>