



UNIVERSITY OF
SOUTH FLORIDA®

CIS4930/6930 Biometric Authentication on Mobile Devices

CSE, College of Engineering

University of South Florida

Tampa Campus

COURSE SYLLABUS

Instructor Name:	Dr. Tempestt Neal	Semester/Term & Year:	Fall 2018
Office Number:	ENB310	Class Meeting Days:	M, W
TA Info:	ATM Golam Bari bari@mail.usf.edu	Class Meeting Time:	3:30PM – 4:45PM
E-Mail:	tjneal@usf.edu	Class Meeting Location:	ISA 3050
Website:	Canvas		
Office Hours:	T, R 1:00PM-2:30PM		

University Course Description

In this course, we will explore various biometric implementations as a more conclusive alternative to user authentication. We will carefully consider the framework for a biometric system, and how mobile device platforms offer unique challenges regarding this framework and other biometric properties. We will discuss and implement innovative ideas which coincide with and/or extend the research literature regarding mobile device biometrics, incorporating various elements associated with machine learning, pattern recognition, and cybersecurity.

Course Topics

CIS4930:

1. Biometric Authentication
 - a. Keystroke Dynamics and Touch Gesture Recognition
 - b. Motion Recognition
 - c. User-Device Interaction Recognition
 - d. Fingerprint Recognition
 - e. Face Recognition
2. Knowledge-based Authentication
3. Spoofing
4. Machine Learning

CIS6930:

1. Biometric Authentication
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 - d. Fingerprint Recognition
 - e. Face Recognition
2. Knowledge-based Authentication
3. Spoofing
4. Anti-spoofing Measures
5. Machine Learning

Student Learning Outcomes

By the end of this course, you will be able to:

- Define the biometric system and its modules
- Dissect the academic literature regarding mobile biometric authentication
- Code elementary machine learning algorithms
- Communicate practical design challenges

Required Texts and/or Readings and Course Materials

Provided via USF Library; see Canvas for links.

Basis for Final Grade

	CIS4930	CIS6930
Homework (8)	40%	20%
Midterm	15%	15%
Reports (2)	-	20%
Project (3)	45%	45%

One homework assignment (your choice or the lowest) will be dropped from the final grade.

Grading Scale (%)	
94-100	A
90-93	A-
87-89	B+
84-86	B
80-83	B-
77-79	C+
74-76	C
70-73	C-
67-69	D+
64-66	D
60-63	D-
0 - 59	F

Grade Dissemination

Comments will be provided via Canvas on all assignments when necessary. You can access your scores at any time using "Grades" in Canvas.

Late Work Policy

There are no make-ups for the midterm except under extreme extenuating circumstances. If you cannot be present for an examination for a valid reason (validity to be determined by the instructor), a make-up exam will be given only if the student has notified the instructor in advance that s/he cannot be present for the exam. Make-up exams are given at the convenience of the instructor.

For those enrolled in CIS4930, homework turned in late will be assessed a penalty: 1 point will be deducted per day from all late homework assignments for up to three (3) days. After the third day, a late homework assignment will not be accepted, and no points will be given. For example:

Homework Initially Due: January 1st, 11:59PM	
Time of turn-in	Total Possible Points
Prior to or on January 1, 11:59PM	5.0
January 2, 12AM-11:59PM	4.0
January 3, 12AM-11:59PM	3.0
January 4, 12AM-11:59PM	2.0
January 5, 12AM-after	0.0

For those enrolled in CIS6930, late homework will not be accepted.

Grades of "Incomplete"

The current university policy concerning incomplete grades will be followed in this course.

For USF Tampa undergraduate courses and USFSM undergraduate and graduate courses: An "I" grade may be awarded to a student only when a small portion of the student's work is incomplete and only when the student is otherwise earning a passing grade. The time limit for removing the "I" is to be set by the instructor of the course. For undergraduate students, this time limit may not exceed two academic semesters, whether or not the student is in residence, and/or graduation, whichever comes first. For graduate students, this time limit may not exceed one academic semester. "I" grades not removed by the end of the time limit will be changed to "IF" or "IU," whichever is appropriate.

For USF Tampa graduate courses and USFSP undergraduate and graduate courses: An Incomplete grade ("I") is exceptional and granted at the instructor's discretion only when students are unable to complete course requirements due to illness or other circumstances beyond their control. The course instructor and student must complete and sign the "I" Grade Contract Form that describes the work to be completed, the date it is due, and the grade the student would earn factoring in a zero for all incomplete assignments. The due date can be negotiated and extended by student/instructor as long as it does not exceed two semesters for undergraduate courses and one semester for graduate courses from the original date grades were due for that course. An "I" grade not cleared within the two semesters for undergraduate courses and one semester for graduate courses (including summer semester) will revert to the grade noted on the contract.

Group Work Policy

Everyone must take part in a group project. Groups cannot be altered or switched, except under valid circumstances (validity to be determined by the instructor).

Course Policies: Technology and Media

- *Canvas:* This course will use USF's learning management system (LMS), Canvas. If you need help learning how to perform various tasks related to this course or other courses being offered in Canvas, please view the following videos or consult the Canvas help guides. You may also contact USF's IT department at (813) 974-1222 or help@usf.edu.
- *Panopto:* If this course uses lecture-capturing, note that your voices may be heard in the captured content.
- *Classroom Devices/Student Recording:* Calculators, tape recorders, and other student-owned audio & technology devices are not allowed during the midterm.
- *Phone Usage:* Please refrain from excessive use of phones during lecture. Do not enter and exit the classroom to receive or make unnecessary phone calls.

Academic Integrity of Students

Academic integrity is the foundation of the University of South Florida System's commitment to the academic honesty and personal integrity of its university community. Academic integrity is grounded in certain fundamental values, which include honesty, respect, and fairness. Broadly defined, academic honesty is the completion of all academic endeavors and claims of scholarly knowledge as representative of one's own efforts. The process for faculty reporting of academic misconduct, as well as the student's options for appeal, are outlined in detail in USF System Regulation 3.027: <http://www.usf.edu/undergrad/documents/academic-policies/1academic-integrity-of-students.pdf>. The final decision on an academic integrity violation and related academic sanction at any USF System institution shall affect and be applied to the academic status of the student throughout the USF System, unless otherwise determined by the independently accredited institution.

Disruption to Academic Process

Disruptive students in the academic setting hinder the educational process. Disruption of the academic process is defined as the act, words, or general conduct of a student in a classroom or other academic environment which in the reasonable estimation of the instructor: (a) directs attention away from the academic matters at hand, such as noisy distractions, persistent, disrespectful or abusive interruption of lecture, exam, academic discussion, or general University operations, or (b) presents a danger to the health, safety, or well-being of self or other persons.

Student Academic Grievance Procedures

The purpose of these procedures is to provide all undergraduate and graduate students taking courses within the University of South Florida System an opportunity for objective review of facts and events pertinent to the cause of the academic grievance. An “academic grievance” is a claim that a specific academic decision or action that affects that student’s academic record or status has violated published policies and procedures, or has been applied to the grievant in a manner different from that used for other students.

Disability Access:

Students with disabilities are responsible for registering with Students with Disabilities Services (SDS) (SVC 1133) in order to receive academic accommodations. SDS encourages students to notify instructors of accommodation needs at least 5 business days prior to needing the accommodation. A letter from SDS must accompany this request.

Sexual Misconduct/Sexual Harassment Reporting

USF is committed to providing an environment free from sex discrimination, including sexual harassment and sexual violence ([USF System Policy 0-004](#)). The USF Center for Victim is a confidential resource where you can talk about incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. This confidential resource can help you without having to report your situation to either the Office of Student Rights and Responsibilities (OSSR) or the Office of Diversity, Inclusion, and Equal Opportunity (DIEO), unless you request that they make a report. Please be aware that in compliance with Title IX and under the USF System Policy, educators must report incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. If you disclose any of these situations in class, in papers, or to me personally, I am required to report it to OSSR or DIEO for investigation. Contact the USF Center for Victim Advocacy and Violence Prevention: (813) 974-5757.

Attendance Policy

You are expected to attend class. Excessive absences will affect your grade.

Professionalism Policy

Per university policy and classroom etiquette; mobile phones, iPods, etc. must be silenced during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.

End of Semester Student Evaluations

All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued.

Food and Drink Policy

Please adhere to the firm policy of no beverages (other than bottled/capped water/coffee/tea), food, tobacco products, or like items in the classroom. Your understanding of the necessity for this policy and cooperation will be greatly appreciated. This policy will be strictly enforced.

Turnitin.com

In this course, turnitin.com will be utilized. Turnitin is an automated system which instructors may use to quickly and easily compare each student's assignment with billions of web sites, as well as an enormous database of student papers that grows with each submission. Accordingly, you will be expected to submit all assignments in electronic format. After the assignment is processed, as instructor I receive a report from turnitin.com that states if and how another author's work was used in the assignment. For a more detailed look at this process visit <http://www.turnitin.com>.

The Writing Studio

The Writing Studio is a free resource for USF undergraduate and graduate students. At the Writing Studio, a trained writing consultant will work individually with you, at any point in the writing process from brainstorming to editing. Appointments are recommended, but not required. For more information or to make an appointment, visit <http://www.lib.usf.edu/writing/>, stop by LIB 2nd Floor, or call 813-974-8293.

Campus Emergencies

In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to: Canvas, Elluminate, Skype, and email messaging and/or an alternate schedule. It's the responsibility of the student to monitor the Canvas site for each class for course specific communication, and the main USF, college, and department websites, emails, and MoBull messages for important general information.

Important Dates to Remember

All dates are tentative and can be changed at the discretion of the professor/university policy.

First day of Fall 2018 classes; drop/add week begins	Mon, Aug 20, 2018
Benchmark - Drop/Add ends, fee liability/tuition payment deadline	Fri, Aug 24, 2018
Labor Day Holiday; No classes & USF offices closed	Mon, Sept 3, 2018
Deadline to apply for Fall 2018 graduation	Sept. 21, 2018
Midterm	Oct 10, 2018
Last day to drop with "W"; no refund & no academic penalty for Fall 2018	Sat, Oct 27, 2018
Veteran's Day Holiday; No classes & USF offices closed	Mon, Nov 12, 2018
Thanksgiving Holiday; No classes & USF offices closed	Thurs/Fri, Nov 22-23, 2018
Reading Days	Thurs/Fri, Nov 29-30, 2018

Religious Observances

All students have a right to expect that the University will reasonably accommodate their religious observances, practices, and beliefs. If you observe religious holidays, you should plan your allowed absences to include those dates.

Auditors

Per USF Policy 10-006: Registration Changes Including Course Change, Cancellations, Withdrawals, and Auditing, an auditing student "attends the class as a listener." Please identify yourself as an auditor in the course within the first two weeks, and let me know if you wish to discuss your role in the classroom.

Schedule

Date	Lecture #	Topics to be Discussed in Class	Assignment Released (12:00AM)	Assignment Due (11:59PM)
8/20	1	Course Introduction / Syllabus Review	HW1	
8/22	2	Biometric Recognition	HW2	
8/27	3	Multimodal Biometrics and Biometric Performance	HW3	
8/29	4	Motion and Gait		HW1
9/3		Labor Day Holiday; No classes		
9/5	4	Motion and Gait	HW4	HW2
9/10	5	Keystroke Dynamics and Touch Gestures	Report 1	
9/12	5	Keystroke Dynamics and Touch Gestures		HW3
9/17	6	User-Device Interactions	HW5	
9/19	6	User-Device Interactions		HW4
9/24	7	Fingerprint		
9/26	7	Fingerprint	HW6	HW5
10/1	8	Face		Project 1
10/3	8	Face		Report 1
10/8		Midterm review		HW6
10/10		Midterm		
10/15	9	Machine Learning	HW7	
10/17	9	Machine Learning		Project 2 (10/19)
10/22		Online Video (TBA)	HW8	HW7
10/24		Online Video (TBA)		
10/29	9	Machine Learning		
10/31	9	Machine Learning		HW8
11/5		In-class Project Help		
11/7		In-class Project Help	Report 2	
11/12		Veteran's Day – No class		
11/14	10	Spoofing		
11/19	10	Spoofing		
11/21	11	Practical Considerations		Project 3 (11/25)
11/26		Presentations		
11/28		Presentations		Report 2
12/3		Presentations		

* Note: The Schedule is subject to revision