Course Syllabus: Mobile Biometrics
CAP6101.001F20, 3 Credit Hours
College of Engineering
Department of Computer Science and Engineering

Instructor: Dr. Tempestt Neal
Semester: Fall 2020
Meeting Days/Time: MW 3:30pm-4:45pm via Microsoft Teams (*Lectures will be recorded)*
Office Location: ENB310, Microsoft Teams
Office Hours: TW 1:00pm-2:30pm via Microsoft Teams (Canvas appointments)
Phone Number: Call me on Microsoft Teams
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1. University Course Description
CAP 6101 Mobile Biometrics (3). Topics include foundations of biometric systems, mobile biometric modalities and features, and adversary attacks.

2. Course Prerequisites
None.

3. Course Objectives
The objectives of this course are to develop students':
  (1) knowledge of biometric foundations.
  (2) understanding of behavioral and physical biometric modalities.
  (3) knowledge of data acquisition techniques on mobile platforms.
  (4) abilities to build and evaluate a biometric system.
  (5) abilities to relate classwork to published literature.
  (6) awareness of spoofing and common anti-spoofing techniques.
  (7) awareness of challenges in commercial systems.
  (8) abilities to prepare and develop a literature review.
  (9) abilities to identify research gaps.

4. Student Learning Outcomes
Students will demonstrate the ability to:
  (1) define the modules and properties of biometric systems.
  (2) compare biometric modalities.
  (3) collect and preprocess biometric data.
  (4) implement a biometric system.
  (5) identify prominent themes in published literature.
  (6) identify various vulnerabilities in biometric systems.
  (7) communicate practical challenges.
  (8) summarize published literature.
  (9) propose future work for addressing open challenges.

5. Required Texts and/or Readings and Course Materials
Available via USF Library.
  ● Guo G, Wechsler H. Mobile Biometrics. London: Institution of Engineering and Technology, 2017. ISBN 9781785610967.

- Jain AK, Ross AA, Nandakumar K. Introduction to Biometrics. New York: Springer, c2011.; 2011. ISBN 978-0-387-77326-1.

6. Grading Scale (%) and Categories

94-100	A		
90 – 93.9	A-		
87 – 89.9	B+	**Mastery Modules (6)**	**100%**
84 – 86.9	B	Course Foundations	10%
80 – 83.9	B-	Evaluating Biometric Systems	15%
77 – 79.9	C+	Physical Biometrics	20%
74 – 76.9	C	System Attacks	20%
70 – 73.9	C-	Behavioral Biometrics	15%
67 – 69.9	D+	Designing a Literature Review	20%
64 – 66.9	D		
60 – 63.9	D-		
0 – 59.9	F	**Total**	**100%**

7. Course Schedule (*Subject to Change*)

Week	Mastery Module 1	Topic	Designing a Literature Review (Highlight → Submission)
1	**Course Foundations** *Quiz 1: Wednesday, September 9*	Course Introduction and Foundations of Biometrics	Read entire overview Part 1
2		Python and Machine Learning	Part 1
3		Python and Machine Learning	Review Section 5.2 #2 – Confirm co-authors with me, if applicable
4	**Evaluating Biometric Systems** *Quiz 2: Wednesday, September 30*	ROC/DET Curves and Score Distribution, Error Rates	Part 2
5		Assessing Performance in Python	Part 2
6		Assessing Performance in Python	Part 2 – Library Due
7	**Physical Biometrics** *Quiz 3: Wednesday, October 21*	Face Recognition	Part 3, Section 4.1
8		Face Recognition	Part 3, Section 4.1
9		Fingerprint Recognition	Part 3, Section 4.1 Due
10		Iris Recognition	Part 3, Section 4.2
11	**System Attacks** *Quiz 4: Monday, November 9*	Overview of Biometric Attacks	Part 3, Section 4.2 Due
12		Spoofing Attacks in Face Systems	Section 5.2 #1, if applicable or TA review
13		-	Part 3, Section 4.3
14	**Behavioral Biometrics** *Quiz 5: Wednesday, December 2*	Gait Recognition	Part 3, Section 4.3 Due
15		Keystroke and Touch Recognition	
16		Wrap-Up	

8. Course Policies: Grades (as applicable)

Late Work Policy:
Any assignments, excluding quizzes, will be due at the end of their module. Quizzes will be timed and administered via Canvas and must be completed within 24 hours of their release. Late work will not be accepted. In case of documented hardship, grades may be adjusted. Hardships must be documented to the instructor by the appropriate USF service (e.g., Counseling Center, Heath Services, etc.).

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.

Make-up Exams Policy: If a student 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.

Group Work Policy: Everyone must take part in the projects. All members of a group will receive the same score; that is, the project is assessed and everyone receives this score. However, that number is only 90% of your grade for this project. The final 10% is individual, and refers to your teamwork. Every person in the group will provide the instructor with a suggested grade for every other member of the group, and the instructor will assign a grade that is informed by those suggestions.

9. Course Policies

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.

Professionalism Policy: Per university policy and (virtual) classroom etiquette; mobile phones, iPods, etc. must be silenced during all classroom and lab lectures. Students who habitually disturb the class 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.

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. 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.

10. Standard University Policies

Policies about disability access, religious observances, academic grievances, academic integrity and misconduct, academic continuity, food insecurity, and sexual harassment are governed by a central set of policies that apply to all classes at USF. These may be accessed at: https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx.

11. COVID-19 Procedures

All students must comply with university policies and posted signs regarding COVID-19 mitigation measures, including wearing face coverings and maintaining social distancing during in-person classes. Failure to do so may result in dismissal from class, referral to the Office of Student Conduct and Ethical Development, and possible removal from campus.

Additional details are available on the University's Core Syllabus Policy Statements page: https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx