SYLLABUS

Course title and number	CS 689: Human Behavior Analytics
Term (e.g., Fall 200X)	Fall 2018
Meeting times and location	TR 9:35am-10:50am, HRBB 126

Course Description and Prerequisites

This course covers hands-on applications of methods, algorithms, and systems that are able to model, quantify, and interpret human behavior. We will examine the integrated computational study of physical well-being, mental health, and human behavior through the use of both overt behavioral signal information (e.g. speech, language, gestures, facial expressions) and covert biomarkers (e.g. physiological signals). We will further see how integrated data scientific and context-rich bio-behavioral approaches can yield personalized measures of human behavior used for health, education, security, and other applications.

Prerequisites: No pre-requisites are stated. An understanding of machine learning (CSCE 633 or equivalent) and speech processing (CSCE 630) is recommended for project purposes.

Learning Outcomes or Course Objectives

- Students will be able to process human-derived signals (e.g. physiology, speech).
- Students will be able to associate bio-behavioral markers to clinical and non-clinical outcomes.
- Students will be able to identify and quantify predictive features for an application of interest relevant to affective computing.
- Students will be able to design projects that generate new findings and algorithmic contributions to the fields of behavioral signal processing and behavioral analytics.
- Students will be able to critically analyze state-of-the-art research papers including the experimental design, methodology, technical approach, and system.

Instructor Information

Name	Theodora Chaspari
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Email address	chaspari@tamu.edu
Office hours	Tuesday, 11am-1pm
Office location	315D HRBB

Textbook and/or Resource Material

There is no textbook for this course. Research papers will be made available to students throughout the semester.

Grading Policies, Evaluation Weight, and Grading Scale

Presentations (15%): The instructor and students will make presentations on academic papers during the course of semester. The presentations will be evaluated for presentation of the paper methods, strengths, weakness, as well as highlight discussion points. All students will be expected to have read the papers prior to the presentation and participate in the discussions lead by the presenter and/or instructor.

Attendance and Participation (15%): Students are expected to participate in class discussions, discussions on Piazza, and guest lectures, as such, attendance is mandatory. Part of this grade will comprise questions and discussions regarding the guest lectures. Absences will be handled according to student rule 7. For more information: http://student-rules.tamu.edu/rule07

Homeworks (40%, 10% each): Students will work on 4 homework assignments throughout the course of the semester. Each homework is worth 10% of the final grade.

Project (30%, 5% proposal,10% presentation,15% report): Students will work individually or in teams on projects that will be presented near the end of the semester. A final technical paper (15% of final grade) on the project will be due at the beginning of the final class meeting. Students will submit a project proposal for instructor review (5% of final grade), present their proposed project to the class (10% of final grade), and be assigned periodic project update presentations throughout the semester. Students may develop their own project or choose from a list of projects proposed by the instructor. Projects should focus on sensor and sensing design for personal clinical applications or clinical data modeling.

A = 90-100 B = 80-89 C = 70-79 D = 60-69 F = <60 %

Course Topics, Calendar of Activities, Major Assignment Dates

Week	Topic	Reading	Assignments
1-2	Introduction and Overview; Signal Processing and Machine Learning	Picard 1995; Vinciarelli et al., 2009; Narayanan & Georgiou, 2013	Hw 1 Out
3	Physiological Signals		Hw 1 Due
4-5	Speech Signals		Hw 2 Out
6-7	Data Analysis and Machine Learning		Hw 2 Due Hw 3 Out
8-10	Behavioral analytics applications: education, entertainment	Whitehill et al., 2014; Poulsen et al., 2016; Hernandez et al., 2013; Yannakakis et al., 2015	Hw 3 Due Hw 3 Out
11	Data design & collection presentations		Hw 4 Due
12	Behavioral analytics applications: well-being, health	Sano et al., 2013; Koldjik et al., 2016; Gideon et al., 2016; Mundt et al., 2007; Freckman et al., 2007; Zeevi et al., 2015;	Project Proposal Due
13	Advanced Topics on latest research (e.g. Personalized models, Transfer Learning)	Gideon et al., 2017; Lane et al., 2014; Sadoughi et al., 2017	
14	Project Final Presentations and Reports	N/A	Project Due

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu

This course is interactive and collaborative by design. Students are encouraged to collaborate, share ideas, and use external resources when available. Credit MUST be given for external resources and help from others. Sharing or adopting the work of others (including, but not limited to, presentation slides, code, written reports, and ideas) without proper citation and credit can be interpreted as plagiarism or cheating. Students will be responsible for their own code and write up for assignments and projects, as well as slides for presentation. Use your best judgment in using outside resources and be mindful of the university integrity policies.

"An Aggie does not lie, cheat, or steal, or tolerate those who do."