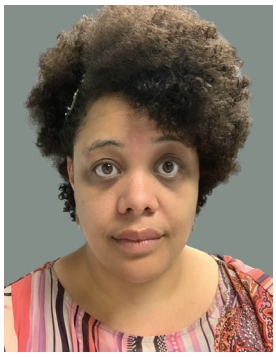
LIN 4930/6932 Modeling Linguistic Processes

Spring 2024

Matherly 0108
T 03:00-4:55 PM
R 04:05-4:55 PM
Course website: elearning.ufl.edu



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Office hours: M 1:55-2:45 PM
email for additional availability

Course description

This course teaches the principles of abstraction which unite models of linguistic information. The focus will be on formalizing questions about human language behavior using ideas from statistics, machine learning and computational linguistics. Students will be familiarized with fundamental programming skills, and then collaborate to motivate, formalize, implement and evaluate competing computational models representing explanations or descriptions of linguistic processes.

Learning Objectives

1. Describe the significance of theoretical, computational, experimental and applied models in linguistics
2. Connect explanatory and predictive modeling with empirical methods
3. Evaluate the relationship between a model's structure and the model's operational and ethical commitments
4. Identify model strengths and weaknesses in light of limiting assumptions
5. Describe the principal approaches used in computational language science, including statistical modeling, machine learning and neural networks.
6. Contextualize Natural Language Processing (NLP) techniques within discourses which assign relational significance to socio-political, linguistic and biological categories
7. Evaluate the use of models published in contemporary language science, relating methodological choices to the characteristic constructs and objectives of academic domains
8. Implement code in LaTeX and R, following best practices in formatting, versioning and publishing code

Grading

Your grades will be based on: paper presentations (20%), active in-class participation (20%), timely postings to the discussion board (10%) and the final project (50%).

This course follows UF grades and grading policy:
https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

		B+	87-89%	C+	77-79%	D+	67-69%		
A	94-100%	B	83-86%	C	73-76%	D	63-66%	F	0-59%
A-	90-93%	B-	80-82%	C-	70-72%	D-	60-62%		

Paper Presentations
Presentations will summarize the assigned reading and conclude with points for discussion. Presenters should make an effort to incorporate relevant discussion board material. Slides should be sent to atripp@ufl.edu before the start of class.

Problem Sets
Problem sets will provide opportunities to experiment with altering provided code and challenge students to engage course concepts while building practical skills. Students are encouraged to collaborate in solving problems but must submit their own written work. There will be a portion of class time devoted to working on problem sets.

Discussion Board Participation
Students are required to submit at least two posts to the Canvas discussion board each week. The first should be done by 6:00 PM each Monday. It is not necessary to begin an original thread for each post; substantive comments in reply to your fellow classmates, or posts made elaborating on ideas you previously posted also count towards this requirement. The discussion board may be used creatively, but posters must maintain a professional tone, engage with prior posts where appropriate, and clearly index relevant sources. Effective posts may express reactions to course content, ask and answer clarifying questions, pose thought experiments or propose discussion topics for class time.

Final Project
Students will collaborate to create and evaluate competing models of a linguistic process. Deliverables for the project will include a Literature Review, Problem Statement, Project Proposal, Code Repository and a Final Paper combining the above with sections describing the Methodology and discussing the Results. Additionally, groups will submit a statement indicating the specific

contributions of each individual to the project.

For an up to date schedule of assignments, consult the Canvas site.

Tentative Schedule		
Date	Reading to have done	Topic
1/9	Syllabus	Introductions
1/11	van Rooij, I. (2022)	Lab: What if?
1/16	Willems, R.M. (2011)	Marr's Levels
1/18	Guest, O., & Martin, A. E. (2021)	Lab: Formalization
1/23	van Rooij, I., & Blokpoel, M. (2020)	Formalization
1/25	Navarro, D., (2013) Ch 1-2	Lab: Intro to R
1/30	Navarro, D. (2013) Ch 2-3	Statistics
2/1	Piantadosi (2014)	Lab: LaTeX
2/8	Goodman, N.D. & Frank, M.C. (2016)	Lab: Probability
2/13*	Jara-Ettinger & Rubio-Fernandez (2022)	Pragmatics
2/15	McMurray, B. (2007)	Lab: Probability
2/20	Russell & Norvig (2010) Ch 14	Uncertainty
2/27*	Perfors, A. et al. (2011)	Bayesian Models
2/29	TBD	Paper Presentations
3/5	TBD	Paper Presentations
3/7	Frank, S.L. et al, (2013)	Surprisal

Project due dates
2/6 Group Assignments
2/13 Preliminary Literature Review
2/27 Problem Statement
3/19 Project Proposal
4/16 Preliminary Draft of Final Paper
4/27 Final Paper due w/repository

Tentative Schedule		
Date	Reading to have done	Topic
3/19*	Frank, S.L. et al., (2019)	Multilingualism
3/21	Pater, J. (2019)	Lab: Neural Nets
3/26	Vallabha et al. (2007)	Unsupervised Learning
3/29	Bolukbasi et al., (2016)	Project Clinic
4/2	Bender et al. (2021)	Deep Learning
4/4	N/A	Project Clinic
4/9	TBD	Paper Presentations
4/11	TBD	Paper Presentations
4/16		
4/18		
4/23		

The fine print

ACADEMIC INTEGRITY. On all work submitted for credit at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies behaviors that are in violation of this code. Furthermore, students are obligated to report any condition that facilitates academic misconduct. The unauthorized and unattributed use of A.I. composition software (e.g. ChatGPT) shall be considered violations of this pledge. If you have any questions or concerns, please consult me.

CLASSROOM CONDUCT. Students and faculty both have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. I pledge to treat each of you with dignity, respect, and professional courtesy; I expect you to do the same for me and for each other.

ACCOMMODATION POLICIES. If you qualify for accommodations because of a disability, please submit your accommodation letter from the Disability Resource Center (https://disability.ufl.edu/students/get-started/) to me in a timely manner so that your needs can be addressed. .

RELIGIOUS OBSERVANCES A student should inform me if the religious observances of their faith will conflict with class attendance, tests or examinations, or other class activities, prior to the class or occurrence of that test or activity. I am obligated (and happy) to accommodate that particular student's religious observances.

COURSE EVALUATIONS. Students are expected to provide professional and respectful feedback by completing course evaluations. Students will be notified when the evaluation period opens.

INCLUSIVE ENVIRONMENT. Students are encouraged to employ critical thinking and to rely on data and verifiable sources to interrogate all assigned readings and subject matter in this course as a way of determining whether they agree with their classmates and/or their instructor. No lesson is intended to espouse, promote, advance, inculcate, or compel a particular feeling, perception, viewpoint or belief. Students are encouraged to share their viewpoints, data, and sources in class and to speak with me or classmates, in class or privately, about any perceived violation of this policy.

RECORDING LECTURE CONTENT. Students are allowed to record class lectures. However, the only allowable purposes of these recordings are (1) personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. Specifically, students may not publish, share, transmit, circulate, distribute, or provide access to recorded lectures or their transcripts without the written consent of the instructor, regardless of format or medium. Access includes but is not limited to another student within the same class section. A recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil action and/or discipline under the Student Honor Code and Student Conduct Code.