

# Cover Sheet: Request 15709

## IDS 3XXX – AI in Social Sciences

### Info

Process	Course New Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	David Knight thomas.knight@ufl.edu
Created	1/21/2021 9:50:57 AM
Updated	2/26/2021 8:56:02 AM
Description of request	Create underrate course IDS 3XXX (AI in Social Sciences) for inclusion in nine-credit undergraduate AI certificate.

### Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CLAS - Interdisciplinary Studies 16000000	Margaret Fields	As discussed with Thomas Knight.	1/28/2021
No document changes					
College	Conditionally Approved	CLAS - College of Liberal Arts and Sciences	Joseph Spillane	The College Curriculum Committee conditionally approves this request, with the following changes needed: <ul style="list-style-type: none"> <li>Course Objectives need to be measurable and observable. Understand is not a course objective. Remove “be able to”.</li> <li>Remove week 16. Questions about objectives can be addressed by consulting our Common Problems Checklist: <a href="https://gov.clas.ufl.edu/files/Common-Problems-Checklist.pdf">https://gov.clas.ufl.edu/files/Common-Problems-Checklist.pdf</a></li> </ul>	2/25/2021
No document changes					
Department	Approved	CLAS - Interdisciplinary Studies 16000000	Margaret Fields	Requested changes completed.	2/25/2021
Artificial Intelligence in the Social Sciences.docx					2/25/2021
College	Approved	CLAS - College of Liberal Arts and Sciences	Joseph Spillane		2/26/2021
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			2/26/2021
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					

Step	Status	Group	User	Comment	Updated
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

# Course|New for request 15709

## Info

**Request:** IDS 3XXX – AI in Social Sciences

**Description of request:** Create underrate course IDS 3XXX (AI in Social Sciences) for inclusion in nine-credit undergraduate AI certificate.

**Submitter:** David Knight thomas.knight@ufl.edu

**Created:** 2/25/2021 3:33:25 PM

**Form version:** 2

## Responses

### Recommended Prefix

*Enter the three letter code indicating placement of course within the discipline (e.g., POS, ATR, ENC). Note that for new course proposals, the State Common Numbering System (SCNS) may assign a different prefix.*

Response:

IDS

### Course Level

*Select the one digit code preceding the course number that indicates the course level at which the course is taught (e.g., 1=freshman, 2=sophomore, etc.).*

Response:

3

### Course Number

*Enter the three digit code indicating the specific content of the course based on the SCNS taxonomy and course equivalency profiles. For new course requests, this may be XXX until SCNS assigns an appropriate number.*

Response:

XXX

### Category of Instruction

*Indicate whether the course is introductory, intermediate or advanced. Introductory courses are those that require no prerequisites and are general in nature. Intermediate courses require some prior preparation in a related area. Advanced courses require specific competencies or knowledge relevant to the topic prior to enrollment.*

Response:

Intermediate

- 1000 level = Introductory undergraduate
- 2000 level = Introductory undergraduate
- 3000 level = Intermediate undergraduate
- 4000 level = Advanced undergraduate
- 5000 level = Introductory graduate
- 6000 level = Intermediate graduate
- 7000 level = Advanced graduate
- 4000/5000= Joint undergraduate/graduate
- 4000/6000= Joint undergraduate/graduate

*\*Joint undergraduate/graduate courses must be approved by the UCC and the Graduate Council)*

**Lab Code**

*Enter the lab code to indicate whether the course is lecture only (None), lab only (L), or a combined lecture and lab (C).*

Response:

None

**Course Title**

*Enter the title of the course as it should appear in the Academic Catalog. There is a 100 character limit for course titles.&nbsp;*

Response:

Artificial Intelligence in the Social Sciences

**Transcript Title**

*Enter the title that will appear in the transcript and the schedule of courses. Note that this must be limited to 30 characters (including spaces and punctuation).*

Response:

AI in the Social Sciences

**Degree Type**

*Select the type of degree program for which this course is intended.*

Response:

Baccalaureate

**Delivery Method(s)**

*Indicate all platforms through which the course is currently planned to be delivered.*

Response:

On-Campus, Online

**Co-Listing**

*Will this course be jointly taught to undergraduate, graduate, and/or professional students?*

Response:

No

**Effective Term**

*Select the requested term that the course will first be offered. Selecting "Earliest" will allow the course to be active in the earliest term after SCNS approval. If a specific term and year are selected, this should reflect the department's best projection. Courses cannot be implemented retroactively, and therefore the actual effective term cannot be prior to SCNS approval, which must be obtained prior to the first day of classes for the effective term. SCNS approval typically requires 2 to 6 weeks after approval of the course at UF.*

Response:  
Fall

**Effective Year**

*Select the requested year that the course will first be offered. See preceding item for further information.*

Response:  
2021

**Rotating Topic?**

*Select "Yes" if the course can have rotating (varying) topics. These course titles can vary by topic in the Schedule of Courses.*

Response:  
No

**Repeatable Credit?**

*Select "Yes" if the course may be repeated for credit. If the course will also have rotating topics, be sure to indicate this in the question above.*

Response:  
No

**Amount of Credit**

*Select the number of credits awarded to the student upon successful completion, or select "Variable" if the course will be offered with variable credit and then indicate the minimum and maximum credits per section. Note that credit hours are regulated by Rule 6A-10.033, FAC. If you select "Variable" for the amount of credit, additional fields will appear in which to indicate the minimum and maximum number of total credits.*

Response:  
3

**S/U Only?**

*Select "Yes" if all students should be graded as S/U in the course. Note that each course must be entered into the UF curriculum inventory as either letter-graded or S/U. A course may not have both options. However, letter-graded courses allow students to take the course S/U with instructor permission.*

Response:  
No

**Contact Type**

*Select the best option to describe course contact type. This selection determines whether base hours or headcount hours will be used to determine the total contact hours per credit hour. Note that the headcount hour options are for courses that involve contact between the student and the professor on an individual basis.*

Response:

## Regularly Scheduled

- Regularly Scheduled [base hr]
- Thesis/Dissertation Supervision [1.0 headcount hr]
- Directed Individual Studies [0.5 headcount hr]
- Supervision of Student Interns [0.8 headcount hr]
- Supervision of Teaching/Research [0.5 headcount hr]
- Supervision of Cooperative Education [0.8 headcount hr]

Contact the Office of Institutional Planning and Research (352-392-0456) with questions regarding contact type.

## Weekly Contact Hours

Indicate the number of hours instructors will have contact with students each week on average throughout the duration of the course.

Response:

3

## Course Description

Provide a brief narrative description of the course content. This description will be published in the Academic Catalog and is limited to 500 characters or less. See course description guidelines.

Response:

Defines artificial intelligence, big data, and machine learning and discusses the distinctions between these fields. Describes the use of machine learning, search algorithms, text and image analysis, and other AI methodologies to address important social science research questions. Presents artificial intelligence applications to various social sciences disciplines and provides hands-on data analysis experience of the use of AI within the social sciences.

## Prerequisites

Indicate all requirements that must be satisfied prior to enrollment in the course. Prerequisites will be automatically checked for each student attempting to register for the course. The prerequisite will be published in the Academic Catalog and must be formulated so that it can be enforced in the registration system. Please note that upper division courses (i.e., intermediate or advanced level of instruction) must have proper prerequisites to target the appropriate audience for the course.

Courses level 3000 and above must have a prerequisite.

Please verify that any prerequisite courses listed are active courses.

Response:

ENG XXXX (AI Fundamentals) or permission of the instructor

Completing Prerequisites on UCC forms:

- Use "&" and "or" to conjoin multiple requirements; do not use commas, semicolons, etc.
- Use parentheses to specify groupings in multiple requirements.
- Specifying a course prerequisite (without specifying a grade) assumes the required passing grade is D-. In order to specify a different grade, include the grade in parentheses immediately after the course number. For example, "MAC 2311(B)" indicates that students are required to obtain a grade of B in Calculus I. MAC2311 by itself would only require a grade of D-.
- Specify all majors or minors included (if all majors in a college are acceptable the college code is sufficient).
- "Permission of department" is always an option so it should not be included in any prerequisite or co-requisite.
- If the course prerequisite should list a specific major and/or minor, please provide the plan code for that major/minor (e.g., undergraduate Chemistry major = CHY\_BS, undergraduate Disabilities in Society minor = DIS\_UMN)

Example: A grade of C in HSC 3502, passing grades in HSC 3057 or HSC 4558, and undergraduate PBH student

should be written as follows: HSC 3502(C) & (HSC 3057 or HSC 4558) & UGPBH  
&nbsp;

### **Co-requisites**

*Indicate all requirements that must be taken concurrently with the course. Co-requisites are not checked by the registration system. If there are none please enter N/A.*

Response:

N/A

### **Rationale and Placement in Curriculum**

*Explain the rationale for offering the course and its place in the curriculum.*

Response:

This course is intended for inclusion in the nine-credit undergraduate Artificial Intelligence certificate. Students in that program will complete an Ethics, Data and Technology (PHI 3681); AI Fundamentals (ENG 3XXX); and a third applications-based course. This proposed course is intended to satisfy the third requirement. It provides exposure to applications of AI, Machine Learning, and big data analysis to current social sciences problems and research questions. Students who are completing undergraduate majors and/or minors in the social sciences disciplines, as well as those with a general interest, can complete this course as a bridge between the AI certificate program and their primary course(s) of study. Additionally, students in this course will gain hands-on experience with AI techniques through seven out-of-class exercises.

There are no similar courses currently in the Undergraduate Catalog.

### **Course Objectives**

*Describe the core knowledge and skills that student should derive from the course. The objectives should be both observable and measurable.*

Response:

A successful student will:

- (i) Describe the distinction between artificial intelligence and machine learning;
- (ii) Communicate how machine learning, search algorithms, text and image analysis can be applied in social science research;
- (iii) Identify innovative uses of AI to answer currently unresolved societal problems;
- (iv) Explain how AI is currently being applied in various social sciences disciplines; and
- (v) Analyze real-world data using AI techniques to address societal problems within the social sciences.

### **Course Textbook(s) and/or Other Assigned Reading**

*Enter the title, author(s) and publication date of textbooks and/or readings that will be assigned. &nbsp;Please provide specific examples&nbsp;to evaluate the course and identify required textbooks.&nbsp;*

Response:

Readings will be assigned from different sources and developed by the instructors. All reading materials, data sets and required software will be provided or made available in the Canvas course shell.

### **Weekly Schedule of Topics**

*Provide a projected weekly schedule of topics. This should have sufficient detail to evaluate how the course would meet current curricular needs and the extent to which it overlaps with existing courses at UF.*

Response:

---Copied from Attached Syllabus Document---

## COURSE SCHEDULE

### Week 1-2: AI in Anthropology

#### Readings:

1. Gitelman, Lisa and Virginia Jackson. 2013. "Introduction" in *Raw Data is an Oxymoron*, p. 1-14. Cambridge, MA: The MIT Press.
2. Benjamin, Ruha. 2019. "Engineered Inequity" in *Race After Technology*, p. 49-76. London: Polity.
3. Applin, Sally. 2017. "Artificial Intelligence: Making AI in Our Images" <https://savageminds.org/2017/09/07/artificial-intelligence-making-ai-in-our-images/>
4. Royer, Alexandrine. "The Short Anthropological Guide to the Study of Ethical AI" <https://montrealethics.ai/the-short-anthropological-guide-to-the-study-of-ethical-ai/>

#### Videos & Presentations:

1. "The Coded Gaze: Unmaking Algorithmic Bias" <https://www.youtube.com/watch?v=162VzSzzoPs>
2. "Wrongfully Accused by an Algorithm." *The Daily*, August 3, 2020. New York Times. <https://www.nytimes.com/2020/06/24/technology/facial-recognition-arrest.html>
3. Joy Buolamwini, "How I'm Fighting Bias in Algorithms" [https://www.ted.com/talks/joy\\_buolamwini\\_how\\_i\\_m\\_fighting\\_bias\\_in\\_algorithms?language=en](https://www.ted.com/talks/joy_buolamwini_how_i_m_fighting_bias_in_algorithms?language=en)

#### Data Analysis Exercise:

This week's material has explored some of the ways that social and cultural values get encoded into technical systems, including those presumed to be neutral or apolitical. Pick a machine learning / AI problem that interests you, and identify how socio-cultural norms, assumptions, and/or biases might factor in at the point of:

1. Project design
2. Data collection / preparation
3. Model selection / deployment
4. Implementation

### Week 3-4: AI in Economics

#### Readings

1. Artificial Intelligence, Economics, and Industrial Organization: [https://www.nber.org/system/files/working\\_papers/w24839/w24839.pdf](https://www.nber.org/system/files/working_papers/w24839/w24839.pdf)
2. What Can Machine Learning Do? Workforce Implications: [https://science.sciencemag.org/content/sci/358/6370/1530.full.pdf?casa\\_token=tES6mkiPQRcAAAAA:azzudanzPAk9GNN64Ej9U04svD6b35znv3CKOYHKW5cxwtMe3\\_5YfO0](https://science.sciencemag.org/content/sci/358/6370/1530.full.pdf?casa_token=tES6mkiPQRcAAAAA:azzudanzPAk9GNN64Ej9U04svD6b35znv3CKOYHKW5cxwtMe3_5YfO0)
3. Combining Satellite Imagery and Machine Learning to Predict Poverty: <https://science.sciencemag.org/content/353/6301/790>
4. Artificial Intelligence, Algorithmic Pricing, and Collusion: <https://www.aeaweb.org/articles?id=10.1257/aer.20190623>

#### Videos & Presentations

1. The Costs of Prediction: <https://www.youtube.com/watch?v=ByvPp5xGL1I>
2. How Will AI Affect Income Inequality? <https://www.youtube.com/watch?v=-eDCDLdt30k>
3. How We'll Earn Money in a Future Without Jobs: [https://www.ted.com/talks/martin\\_ford\\_how\\_we\\_ll\\_earn\\_money\\_in\\_a\\_future\\_without\\_jobs](https://www.ted.com/talks/martin_ford_how_we_ll_earn_money_in_a_future_without_jobs)

#### Data Analysis Exercise

Use machine learning and simulations to predict prices in an experimental marketplace. Detailed



assignment description posted in Canvas.

## Data Analysis Exercise and write-up 1 (Anthropology) Due

### Week 5-6: AI in Gender, Sexualities, and Women's Studies

#### Readings

1. D'Ignazio, C., & Klein, L. F. (2020). *Data Feminism*. Cambridge: MIT Press. From the introduction: Intersectional feminism isn't just about women nor even just about gender. Feminism is about power – who has it and who doesn't. And in a world in which data is power, and that power is wielded unequally, data feminism can help us understand how it can be challenged and changed.
2. Buolamwini, J., & Gebru, T. (2018). Gender shades: intersectional accuracy disparities in commercial gender classification. *Proceedings of Machine Learning Research*, 81, 1–15.
3. Noble, S. (2018). Searching for Black Girls. In *Algorithms of Oppression: How Search Engines Reinforce Racism* (pp. 64-109). New York: NYU Press. doi:10.2307/j.ctt1pwt9w5.6

#### Videos & Presentations

4. Gender Shades: <https://www.youtube.com/watch?v=TWWSW1w-BVo>
5. Coded Bias documentary: <https://www.ajl.org/spotlight-documentary-coded-bias>
6. Cathy O'Neil – The era of blind faith in big data must end: [https://www.ted.com/talks/cathy\\_o\\_neil\\_the\\_era\\_of\\_blind\\_faith\\_in\\_big\\_data\\_must\\_end](https://www.ted.com/talks/cathy_o_neil_the_era_of_blind_faith_in_big_data_must_end)
7. Kriti Sharma - How to keep human bias out of AI: [https://www.ted.com/talks/kriti\\_sharma\\_how\\_to\\_keep\\_human\\_bias\\_out\\_of\\_ai?language=en](https://www.ted.com/talks/kriti_sharma_how_to_keep_human_bias_out_of_ai?language=en)
8. Josie Young - Why we need to design feminist AI: <https://www.youtube.com/watch?v=E-O3LaSEcVw>

#### Data Analysis Exercise

Much of the conversation about bias in AI is about “fixing” existing biases. Explore the following efforts to intervene in the development of data, design of algorithms, and the application of AI: <https://aplusalliance.org/en/resources>, <https://www.feminist.ai/>, <https://carolinesinders.com/feminist-data-set/>, <https://www.ajl.org/>. Consider what you've learned in this section about a vision for feminist intersectional AI that goes beyond avoiding bias and actually envisions AI as a tool that can help promote social justice. Choose an AI problem or project and describe how you would develop the data, design the algorithm, and apply the tool to create feminist intersectional AI.

## Data Analysis Exercise and write-up 2 (Economics) Due

### Week 7-8: AI in Geography

#### Readings

1. GeoAI Online Series: "The birth and evolution of GeoAI" found at <https://resources.esri.ca/education-and-research/geoai-series-2-the-birth-and-evolution-of-geoai>
2. "GeoAI: spatially explicit artificial intelligence techniques for geographic knowledge discovery and beyond" Janowicz et al., 2020. *International Journal of Geographical Information Science*, Vol. 34, No. 4, 625-636
3. Hu, Yingjie & Li, Wenwen & Wright, Dawn & Aydin, Orhun & Wilson, Daniel & Maher, Omar & Raad, Mansour. (2019). *Artificial Intelligence Approaches*. *Geographic Information Science & Technology Body of Knowledge*. 2019. 10.22224/gistbok/2019.3.4.

#### Videos & Presentations

1. Microsoft AI: [https://www.youtube.com/watch?v=\\_iq-\\_K1OsMA](https://www.youtube.com/watch?v=_iq-_K1OsMA)
2. GeoAI: Machine Learning meets ArcGIS <https://www.youtube.com/watch?v=aKq50YM8a8w>
3. GeoAI: GeoAI & COVID response <https://www.geospatialworld.net/videos/what-is-geoai-and-how-it-is-being-used-for-covid-response/>

#### Data Analysis Exercise Materials for Review

1. Review examples of projects and types of analysis GeoAI is involved in
  - a. <https://medium.com/geoai>
2. Machine Learning in ARGIS:

- a. Read: <https://www.esri.com/arcgis-blog/products/analytics/analytics/machine-learning-in-arcgis/>
3. Microsoft and Esri launch Geospatial AI on Azure
- a. Read <https://azure.microsoft.com/en-us/blog/microsoft-and-esri-launch-geospatial-ai-on-azure/>
4. The Science of Where SeaGrass Grows: Example analysis  
<https://www.esri.com/arcgis-blog/products/arcgis-enterprise/analytics/the-science-of-where-seagrasses-grow-arcgis-and-machine-learning/?rmedium=redirect&rsource=blogs.esri.com/esri/arcgis/2017/09/18/the-science-of-where-seagrasses-grow-arcgis-and-machine-learning>

Exercise: Predict seagrass habitats with machine learning  
<https://learn.arcgis.com/en/projects/predict-seagrass-habitats-with-machine-learning/>

#### Lesson Plan

Create a training dataset

Create a layer with predictor attributes.

40 minutes

Perform random forest classification

Use Python to run a machine learning classification.

30 minutes

Evaluate the prediction result

Analyze the prediction results with spatial analysis in ArcGIS Pro.

20 minutes

Data Analysis Exercise and write-up 3 (Gender, Sexualities, and Women's Studies) Due

Week 9-10: AI in Linguistics

#### Readings:

Introduction to Computational Linguistics:

- Daniel Jurafsky and James H. Martin (2008). Chapter 1, Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition, Second Edition. <http://www.cs.colorado.edu/~martin/SLP/Updates/1.pdf>

Revolution of Linguistics:

- Chomsky, N. (1956). Three models for the description of language. IRE Transactions on information theory, 2(3), 113-124.
- Johnson, M. (2009, March). How the statistical revolution changes (computational) linguistics. In Proceedings of the EACL 2009 Workshop on the Interaction between Linguistics and Computational Linguistics: Virtuous, Vicious or Vacuous? (pp. 3-11).
- Manning, C. D. (2015). Computational linguistics and deep learning. Computational Linguistics, 41(4), 701-707. <http://mitp.nautil.us/article/170/last-words-computational-linguistics-and-deep-learning>

Implication in Cognitive Science

- Griffiths, T. L. (2015). Manifesto for a new (computational) cognitive revolution. Cognition, 135, 21-23.
- Jones, K. S. (2007). Computational linguistics: what about the linguistics?. Computational linguistics, 33(3), 437-441.

#### Videos & Presentations:

Introduction to Computational Linguistics:

- Linguistic Engineering - Computers and Linguistics, Jurgen Handke, 2012  
<https://www.youtube.com/watch?v=aRxIPqbxQAQ>
- Kevin Tang, Raffaele Vacca, Till Krenz & Thomas Smith. October, 2020. College of Liberal Arts and Sciences AI Workshop: Natural Language Processing. University of Florida, FL, USA.  
<https://clas.ufl.edu/event/clas-ai-workshop-natural-language-processing/>
- Computational Modules in Linguistics:
- Phonetics:

- o <https://www.youtube.com/watch?v=BNbO6FG-AJM>
- o <https://www.youtube.com/watch?v=RBgfLvAOrss>
- o <https://www.youtube.com/watch?v=7eUfAb8de8c>
- Phonology:
- o <https://www.youtube.com/watch?v=GQ81KbRKej8>
- o <https://www.youtube.com/watch?v=L73hY1pBcQI>
- Morphology:
- o <https://www.youtube.com/watch?v=GKqoTNLRq9g>
- Syntax:
- o [https://www.youtube.com/watch?v=sL\\_W\\_l8DpuU](https://www.youtube.com/watch?v=sL_W_l8DpuU)

#### Data Analysis Exercise:

Language detection – Evaluate an unknown language computationally

- Objectives: find and evaluate regularity in the unknown language and a number of known languages
- o Compute n-grams, and other recursive structures)
- o Compute known-universal linguistic laws (such as Zipf law) over linguistic statistics
- o Apply top-down and bottom-up compression and clustering algorithm to reveal potential
- Compare the unknown language against known languages and reflect the results on the typological distribution of human languages (such as <https://wals.info/>, <https://phoible.org/>)

Data Analysis Exercise and write-up 4 (Geography) Due

#### Week 11-12: AI in Political Science

##### Readings

1. Bond, R.M., Fariss, C.J., Jones, J.J., Kramer, A.D., Marlow, C., Settle, J.E. and Fowler, J.H., 2012. A 61-million-person experiment in social influence and political mobilization. *Nature*, 489(7415), pp.295-298.
2. Colaresi, M. and Mahmood, Z., 2017. Do the robot: Lessons from machine learning to improve conflict forecasting. *Journal of Peace Research*, 54(2), pp.193-214.
3. Kaufman, A.R., Kraft, P. and Sen, M., 2019. Improving Supreme Court Forecasting Using Boosted Decision Trees. *Political Analysis*, 27(3), pp.381-387.
4. Martin, G.J. and McCrain, J., 2019. Local news and national politics. *American Political Science Review*, 113(2), pp.372-384.

##### Videos & Presentations

1. A.I. Is Making it Easier to Kill (You). Here's How:  
[https://www.youtube.com/watch?v=GFD\\_Cgr2zho](https://www.youtube.com/watch?v=GFD_Cgr2zho)
2. The Era of Blind Faith in Big Data Must End:  
[https://www.youtube.com/watch?v=\\_2u\\_eHHzRto](https://www.youtube.com/watch?v=_2u_eHHzRto)
3. How China Tracks Everyone: <https://www.youtube.com/watch?v=CLo3e1Pak-Y>

##### Data Analysis Exercise

1. Download the replication files for the Kaufman et al. Paper:  
<https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/JJCXTH>
2. Read through the readme.txt
3. Replicate the results of the paper using the replication files. NB: per the authors' instructions, the python may take up to 5 hours. If you have computer issues, use a simpler model from this course and compare the results to the ones in the paper.

Data Analysis Exercise and write-up 5 (Linguistics) Due

#### Week 13-14: AI in Psychology

##### Readings:

1. Delgadoillo, J., & Duhne, P.G. S. (2020) Targeted prescription of cognitive-behavioral therapy

versus person-centered counseling for depression using a machine learning approach. *Journal of Consulting and Clinical Psychology*, 88, 14-24.

2. Lake, B. M., Salakhutdinov, R., & Tenenbaum, J. B. (2015). Human-level concept learning through probabilistic program induction. *Science*, 350(6266), 1332-1338. See also supplemental materials available online.

3. Farrell, S., & Lewandowsky, S. (2015). An introduction to cognitive modeling. In B. U. Forstmann & E.-J. Wagenmakers (Eds.), *An introduction to model-based cognitive neuroscience* (p. 3–24). Springer Science + Business Media.

#### Videos & Presentations:

1. <https://openai.com/blog/emergent-tool-use/>
2. Neuroscience and Artificial Intelligence Need Each Other | Marvin Chun | TEDxKFAS: <https://www.youtube.com/watch?v=97iYdJE9mQ4>
3. Josh Tenenbaum Computational Models of Cognition: Part 1 <https://www.youtube.com/watch?v=TFyAEHk5asY>

#### Data Analysis Exercise:

From Farrell & Lewandowsky (above). Detailed assignment description posted in Canvas.

#### Data Analysis Exercise and write-up 6 (Political Science) Due

#### Week 15: AI in Sociology and Criminology & Law

#### Readings:

1. Klein, Aaron. 2020. Reducing Bias in AI-based Financial Services. <https://www.brookings.edu/research/reducing-bias-in-ai-based-financial-services/> Brookings
2. Edelmann A, Wolff T, Montagne D, & Bail CA. 2020. Computational Social Science and Sociology. *Annual Review of Sociology*.
3. Berk RA. 2021. Artificial Intelligence, Predictive Policing, and Risk Assessment for Law Enforcement. *Annual Review of Criminology*.
4. Shiffer-Sebba D & Behrman J. 2020. Gender and Wealth in Demographic Research : A Research Brief on a New Method and Application. *Population Research and Policy Review*.

#### Videos & Presentations:

1. An Introduction to Computational Social Science. <https://www.youtube.com/watch?v=zGG9wPI1C5E>
2. The Use of Artificial Intelligence in the Administration of Justice. <https://www.youtube.com/watch?v=ozfY8tqVjLs>
3. Keynote: AI for Social Good. <https://www.youtube.com/watch?v=GMJKKqI0MqU>
4. We're Training Machines to be Racist: The Fight Against Bias is On. <https://www.youtube.com/watch?v=N-Lxw5rcfZg>

#### Data Analysis Exercise:

From Farrell & Lewandowsky (above). Detailed assignment description posted in Canvas.

#### Data Analysis Exercise and write-up 7 (Psychology) Due

#### FINAL EXAM

### Grading Scheme

*List the types of assessments, assignments and other activities that will be used to determine the course grade, and the percentage contribution from each. This list should have sufficient detail to evaluate the course rigor and grade integrity. Include details about the grading rubric and percentage breakdowns for determining grades. If participation and/or attendance are part of the students grade, please provide a rubric or details regarding how those items will be assessed.*

#### Response:

The course grade is determined by performance on a two-hour final exam (100 points) and the average of seven equally-weighted short report assignments (100 points), following the scale below:

A 185 – 200 points.  
A- 180 – 184 points  
B+ 175 – 179 points  
B 165 – 174 points  
B- 160 – 164 points  
C+ 155 – 159 points  
C 145 – 154 points  
C- 140 – 144 points  
D+ 135 – 139 points  
D 125 – 134 points  
D- 120 – 124 points  
E < 120 points

Assume all grades are rounded to the nearest integer. For example, a 184.49 will be assigned an A-, and a 184.50 will be assigned an A.

Make up assignments will be arranged in accordance with UF policy. This information can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/exams.aspx>

The above grading policies are consistent with UF policies regarding grade determination. This information can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Information regarding UF attendance policies can be found at:  
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

### **Instructor(s)**

*Enter the name of the planned instructor or instructors, or "to be determined" if instructors are not yet identified.*

Response:

To Be Determined

### **Attendance & Make-up**

*Please confirm that you have read and understand the University of Florida Attendance policy.*

*A required statement related to class attendance, make-up exams and other work will be included in the syllabus and adhered to in the course. Courses may not have any policies which conflict with the University of Florida policy. The following statement may be used directly in the syllabus.*

• *Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:*  
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Response:

Yes

### **Accommodations**

*Please confirm that you have read and understand the University of Florida Accommodations policy.*

*A statement related to accommodations for students with disabilities will be included in the syllabus and adhered to in the course. The following statement may be used directly in the syllabus:*

• *Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation.*

*Students with disabilities should follow this procedure as early as possible in the semester.*

Response:

Yes

### **UF Grading Policies for assigning Grade Points**

*Please confirm that you have read and understand the University of Florida Grading policies.*

*Information on current UF grading policies for assigning grade points is require to be included in the course syllabus. The following link may be used directly in the syllabus:*

- <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Response:

Yes

### **Course Evaluation Policy**

*Course Evaluation Policy*

*Please confirm that you have read and understand the University of Florida Course Evaluation Policy.*

*A statement related to course evaluations will be included in the syllabus. The following statement may be used directly in the syllabus:*

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/public-results/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

&nbsp;

Response:

Yes

## **IDS 4XXX: Artificial Intelligence in the Social Sciences**

### **Instructor:** TBD

Office: TBD

Office Hours: Two periods per week will be scheduled on the syllabus' plus "available by appointment"

Office Phone: TBD

E-mail: TBD

### **Teaching Assistant:** TBD

Office: TBD

Office Hours: Two periods per week will be scheduled on the syllabus' plus "available by appointment"

Office Phone: TBD

E-mail: TBD

**Prerequisites:** 'ENGXXXX: AI Fundamentals' or permission of the instructor

### **Required Textbooks, Readings and Software**

Readings will be assigned from different sources and developed by the instructors. All reading materials, data sets and required software will be provided or made available in the Canvas course shell.

**Course Description:** Defines the fields of artificial intelligence, big data, and machine learning and discusses the distinctions between these potentially-overlapping areas. Describes the use of machine learning, search algorithms, text and image analysis, and other AI methodologies to address important social science research questions. Presents a broad set of artificial intelligence applications to various social sciences disciplines and provides hands-on data analysis experience of the use of AI within the social sciences.

**Course Objectives:** A successful student will:

- (i) Describe the distinction between artificial intelligence and machine learning;
- (ii) Communicate how machine learning, search algorithms, text and image analysis can be applied in social science research;
- (iii) Identify innovative uses of AI to answer currently unresolved societal problems;
- (iv) Explain how AI is currently being applied in various social sciences disciplines; and
- (v) Analyze real-world data using AI techniques to address societal problems within the social sciences.

**Class Format:** This is a full semester class that will meet three periods per week. The weekly format will consist of three one-period classes per week, which will involve a combination of lectures, discussions and hands-on class activities. The topic outline, schedule by week, and related readings are listed below.

**Short Report Assignments:** Students will complete 7 hands-on activities with related written assignments in this course. Each of these assignments will address AI applications in a different

social science discipline and involve data analysis, manipulation and interpretation. After undertaking the hands-on data analysis exercise students will then be expected to identify a current or potential application to AI in that discipline other than that from the data analysis already undertaken; describe the specific research question, public policy issue, or societal challenge that the methodology is being used to address; explain why an innovative AI approach is more effective than other methodologies; and provide any insights or results that may be currently available. In this manner students will be taken through the process of both hand-on data analysis with an example from the main branches within the social sciences and also then challenged to think of additional applications and innovations which AI could be used to address.

**Grading:** The course grade is determined by performance on a two-hour final exam (100 points) and the average of seven equally-weighted short report assignments (100 points), following the scale below:

A	185 – 200 points.
A-	180 – 184 points
B+	175 – 179 points
B	165 – 174 points
B-	160 – 164 points
C+	155 – 159 points
C	145 – 154 points
C-	140 – 144 points
D+	135 – 139 points
D	125 – 134 points
D-	120 – 124 points
E	< 120 points

Assume all grades are rounded to the nearest integer. For example, a 184.49 will be assigned an A-, and a 184.50 will be assigned an A.

Make up assignments will be arranged in accordance with UF policy. This information can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/exams.aspx>

The above grading policies are consistent with UF policies regarding grade determination. This information can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Information regarding UF attendance policies can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

**Professionalism and Honor Code:** UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students 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](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates



academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

**Software Use Policy:** All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

**Students Requiring Accommodations:** Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

**Course Evaluation:** Students are expected to provide feedback on the quality of instruction in this course by completing [online evaluations](#). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students on the [Gator Evals page](#).

**Health Counseling and Emergencies:** Contact information for UF counseling and mental health services are: 392-1575, <http://www.counseling.ufl.edu/cwc/Default.aspx> . Dial 9-1-1 for any emergencies.

## Health and Wellness

### **U Matter, We Care:**

If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student.

**Counseling and Wellness Center:** [counseling.ufl.edu/cwc](http://counseling.ufl.edu/cwc), and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

### **Sexual Assault Recovery Services (SARS)**

Student Health Care Center, 392-1161.

**University Police Department** at 392-1111 (or 9-1-1 for emergencies), or [police.ufl.edu](http://police.ufl.edu).

## Academic Resources

**E-learning technical support**, 352-392-4357 (select option 2) or e-mail to [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu).

[Career Resource Center](#), Reitz Union, 392-1601. Career assistance and counseling.

[Library Support](#), Various ways to receive assistance with respect to using the libraries or finding resources.

[Teaching Center](#), Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

[Writing Studio](#), 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

[Student Complaints Campus](#)

[On-Line Students Complaints](#)

## COURSE SCHEDULE

### Week 1-2: AI in Anthropology

#### Readings:

1. Gitelman, Lisa and Virginia Jackson. 2013. "Introduction" in *Raw Data is an Oxymoron*, p. 1-14. Cambridge, MA: The MIT Press.
2. Benjamin, Ruha. 2019. "Engineered Inequity" in *Race After Technology*, p. 49-76. London: Polity.
3. Applin, Sally. 2017. "Artificial Intelligence: Making AI in Our Images" <https://savageminds.org/2017/09/07/artificial-intelligence-making-ai-in-our-images/>
4. Royer, Alexandrine. "The Short Anthropological Guide to the Study of Ethical AI" <https://montrealethics.ai/the-short-anthropological-guide-to-the-study-of-ethical-ai/>

#### Videos & Presentations:

1. "The Coded Gaze: Unmaking Algorithmic Bias" <https://www.youtube.com/watch?v=162VzSzzoPs>
2. "Wrongfully Accused by an Algorithm." The Daily, August 3, 2020. *New York Times*. <https://www.nytimes.com/2020/06/24/technology/facial-recognition-arrest.html>
3. Joy Buolamwini, "How I'm Fighting Bias in Algorithms" [https://www.ted.com/talks/joy\\_buolamwini\\_how\\_i\\_m\\_fighting\\_bias\\_in\\_algorithms?language=en](https://www.ted.com/talks/joy_buolamwini_how_i_m_fighting_bias_in_algorithms?language=en)

#### Data Analysis Exercise:

This week's material has explored some of the ways that social and cultural values get encoded into technical systems, including those presumed to be neutral or apolitical. Pick a machine learning / AI problem that interests you, and identify how socio-cultural norms, assumptions, and/or biases might factor in at the point of:

1. Project design
2. Data collection / preparation
3. Model selection / deployment
4. Implementation

### Week 3-4: AI in Economics

#### Readings

1. Artificial Intelligence, Economics, and Industrial Organization: [https://www.nber.org/system/files/working\\_papers/w24839/w24839.pdf](https://www.nber.org/system/files/working_papers/w24839/w24839.pdf)
2. What Can Machine Learning Do? Workforce Implications: [https://science.sciencemag.org/content/sci/358/6370/1530.full.pdf?casa\\_token=tES6mkiPQRcAAAAA:azzudanzPAr\\_k6XBuuybYFQd5b4Bzay\\_-k9GNN64Ej9U04svD6b35znv3CKOYHKW5cxwtMe3\\_5YfO0](https://science.sciencemag.org/content/sci/358/6370/1530.full.pdf?casa_token=tES6mkiPQRcAAAAA:azzudanzPAr_k6XBuuybYFQd5b4Bzay_-k9GNN64Ej9U04svD6b35znv3CKOYHKW5cxwtMe3_5YfO0)

3. Combining Satellite Imagery and Machine Learning to Predict Poverty: <https://science.sciencemag.org/content/353/6301/790>
4. Artificial Intelligence, Algorithmic Pricing, and Collusion: <https://www.aeaweb.org/articles?id=10.1257/aer.20190623>

#### Videos & Presentations

1. The Costs of Prediction: <https://www.youtube.com/watch?v=ByvPp5xGL1I>
2. How Will AI Affect Income Inequality? <https://www.youtube.com/watch?v=-eDCDLdt30k>
3. How We'll Earn Money in a Future Without Jobs: [https://www.ted.com/talks/martin\\_ford\\_how\\_we\\_ll\\_earn\\_money\\_in\\_a\\_future\\_without\\_jobs](https://www.ted.com/talks/martin_ford_how_we_ll_earn_money_in_a_future_without_jobs)

#### Data Analysis Exercise

Use machine learning and simulations to predict prices in an experimental marketplace. Detailed assignment description posted in Canvas.

#### **Data Analysis Exercise and write-up 1 (Anthropology) Due**

### **Week 5-6: AI in Gender, Sexualities, and Women's Studies**

#### Readings

1. D'Ignazio, C., & Klein, L. F. (2020). *Data Feminism*. Cambridge: MIT Press. From the introduction: Intersectional feminism isn't just about women nor even just about gender. Feminism is about power – who has it and who doesn't. And in a world in which data is power, and that power is wielded unequally, data feminism can help us understand how it can be challenged and changed.
2. Buolamwini, J., & Gebru, T. (2018). Gender shades: intersectional accuracy disparities in commercial gender classification. *Proceedings of Machine Learning Research*, 81, 1–15.
3. Noble, S. (2018). Searching for Black Girls. In *Algorithms of Oppression: How Search Engines Reinforce Racism* (pp. 64-109). New York: NYU Press. doi:10.2307/j.ctt1pwt9w5.6

#### Videos & Presentations

4. Gender Shades: <https://www.youtube.com/watch?v=TWWsW1w-BVo>
5. Coded Bias documentary: <https://www.ajl.org/spotlight-documentary-coded-bias>
6. Cathy O'Neil – The era of blind faith in big data must end: [https://www.ted.com/talks/cathy\\_o\\_neil\\_the\\_era\\_of\\_blind\\_faith\\_in\\_big\\_data\\_must\\_end](https://www.ted.com/talks/cathy_o_neil_the_era_of_blind_faith_in_big_data_must_end)
7. Kriti Sharma - How to keep human bias out of AI: [https://www.ted.com/talks/kriti\\_sharma\\_how\\_to\\_keep\\_human\\_bias\\_out\\_of\\_ai?language=en](https://www.ted.com/talks/kriti_sharma_how_to_keep_human_bias_out_of_ai?language=en)

8. Josie Young - Why we need to design feminist AI:  
<https://www.youtube.com/watch?v=E-O3LaSEcVw>

#### Data Analysis Exercise

Much of the conversation about bias in AI is about “fixing” existing biases. Explore the following efforts to intervene in the development of data, design of algorithms, and the application of AI: <https://aplusalliance.org/en/resources>, <https://www.feminist.ai/>, <https://carolinesinders.com/feminist-data-set/>, <https://www.ajl.org/>. Consider what you’ve learned in this section about a vision for feminist intersectional AI that goes beyond avoiding bias and actually envisions AI as a tool that can help promote social justice. Choose an AI problem or project and describe how you would develop the data, design the algorithm, and apply the tool to create feminist intersectional AI.

#### **Data Analysis Exercise and write-up 2 (Economics) Due**

### **Week 7-8: AI in Geography**

#### Readings

1. GeoAI Online Series: "The birth and evolution of GeoAI" found at <https://resources.esri.ca/education-and-research/geoai-series-2-the-birth-and-evolution-of-geoai>
2. "GeoAI: spatially explicit artificial intelligence techniques for geographic knowledge discovery and beyond" Janowicz et al., 2020. International Journal of Geographical Information Science, Vol. 34, No. 4, 625-636
3. Hu, Yingjie & Li, Wenwen & Wright, Dawn & Aydin, Orhun & Wilson, Daniel & Maher, Omar & Raad, Mansour. (2019). Artificial Intelligence Approaches. Geographic Information Science & Technology Body of Knowledge. 2019. 10.22224/gistbok/2019.3.4.

#### Videos & Presentations

1. Microsoft AI: [https://www.youtube.com/watch?v=iq\\_K1OsMA](https://www.youtube.com/watch?v=iq_K1OsMA)
2. GeoAI: Machine Learning meets ArcGIS  
<https://www.youtube.com/watch?v=aKq50YM8a8w>
3. GeoAI: GeoAI & COVID response  
<https://www.geospatialworld.net/videos/what-is-geoai-and-how-it-is-being-used-for-covid-response/>

#### Data Analysis Exercise Materials for Review

1. Review examples of projects and types of analysis GeoAI is involved in
  - a. <https://medium.com/geoai>
2. Machine Learning in ARGIS:
  - a. Read: <https://www.esri.com/arcgis-blog/products/analytics/analytics/machine-learning-in-arcgis/>
3. Microsoft and Esri launch Geospatial AI on Azure

- a. Read <https://azure.microsoft.com/en-us/blog/microsoft-and-esri-launch-geospatial-ai-on-azure/>
4. The Science of Where SeaGrass Grows: Example analysis  
<https://www.esri.com/arcgis-blog/products/arcgis-enterprise/analytics/the-science-of-where-seagrasses-grow-arcgis-and-machine-learning/?rmedium=redirect&rsource=blogs.esri.com/esri/arcgis/2017/09/18/the-science-of-where-seagrasses-grow-arcgis-and-machine-learning>

Exercise: Predict seagrass habitats with machine learning

<https://learn.arcgis.com/en/projects/predict-seagrass-habitats-with-machine-learning/>

### Lesson Plan

#### Create a training dataset

Create a layer with predictor attributes.

#### Perform random forest classification

Use Python to run a machine learning classification.

#### Evaluate the prediction result

Analyze the prediction results with spatial analysis in ArcGIS Pro.

### Data Analysis Exercise and write-up 3 (Gender, Sexualities, and Women's Studies) Due

## Week 9-10: AI in Linguistics

### Readings:

Introduction to Computational Linguistics:

- Daniel Jurafsky and James H. Martin (2008). Chapter 1, Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition, Second Edition.  
<http://www.cs.colorado.edu/~martin/SLP/Updates/1.pdf>

Revolution of Linguistics:

- Chomsky, N. (1956). Three models for the description of language. IRE Transactions on information theory, 2(3), 113-124.
- Johnson, M. (2009, March). How the statistical revolution changes (computational) linguistics. In Proceedings of the EACL 2009 Workshop on the Interaction between Linguistics and Computational Linguistics: Virtuous, Vicious or Vacuous? (pp. 3-11).
- Manning, C. D. (2015). Computational linguistics and deep learning. Computational Linguistics, 41(4), 701-707.  
<http://mitp.nautil.us/article/170/last-words-computational-linguistics-and-deep-learning>

### Implication in Cognitive Science

- Griffiths, T. L. (2015). Manifesto for a new (computational) cognitive revolution. *Cognition*, 135, 21-23.
- Jones, K. S. (2007). Computational linguistics: what about the linguistics?. *Computational linguistics*, 33(3), 437-441.

### Videos & Presentations:

#### Introduction to Computational Linguistics:

- Linguistic Engineering - Computers and Linguistics, Jurgen Handke, 2012  
<https://www.youtube.com/watch?v=aRxlPqbxQAAQ>
- Kevin Tang, Raffaele Vacca, Till Krenz & Thomas Smith. October, 2020. College of Liberal Arts and Sciences AI Workshop: Natural Language Processing. University of Florida, FL, USA. <https://clas.ufl.edu/event/clas-ai-workshop-natural-language-processing/>
- Computational Modules in Linguistics:
  - Phonetics:
    - <https://www.youtube.com/watch?v=BNbO6FG-AJM>
    - <https://www.youtube.com/watch?v=RBgfLvAOrss>
    - <https://www.youtube.com/watch?v=7eUfAb8de8c>
  - Phonology:
    - <https://www.youtube.com/watch?v=GQ81KbRKej8>
    - <https://www.youtube.com/watch?v=L73hY1pBcQI>
  - Morphology:
    - <https://www.youtube.com/watch?v=GKqoTNLRq9g>
  - Syntax:
    - [https://www.youtube.com/watch?v=sL\\_W\\_I8DpuU](https://www.youtube.com/watch?v=sL_W_I8DpuU)

### Data Analysis Exercise:

#### Language detection – Evaluate an unknown language computationally

- Objectives: find and evaluate regularity in the unknown language and a number of known languages
  - Compute n-grams, and other recursive structures)
  - Compute known-universal linguistic laws (such as Zipf law) over linguistic statistics
  - Apply top-down and bottom-up compression and clustering algorithm to reveal potential
- Compare the unknown language against known languages and reflect the results on the typological distribution of human languages (such as <https://wals.info/>, <https://phoible.org/>)

### **Data Analysis Exercise and write-up 4 (Geography) Due**

## **Week 11-12: AI in Political Science**

### Readings

1. Bond, R.M., Fariss, C.J., Jones, J.J., Kramer, A.D., Marlow, C., Settle, J.E. and Fowler, J.H., 2012. A 61-million-person experiment in social influence and political mobilization. *Nature*, 489(7415), pp.295-298.
2. Colaresi, M. and Mahmood, Z., 2017. Do the robot: Lessons from machine learning to improve conflict forecasting. *Journal of Peace Research*, 54(2), pp.193-214.
3. Kaufman, A.R., Kraft, P. and Sen, M., 2019. Improving Supreme Court Forecasting Using Boosted Decision Trees. *Political Analysis*, 27(3), pp.381-387.
4. Martin, G.J. and McCrain, J., 2019. Local news and national politics. *American Political Science Review*, 113(2), pp.372-384.

### Videos & Presentations

1. A.I. Is Making it Easier to Kill (You). Here's How: [https://www.youtube.com/watch?v=GFD\\_Cgr2zho](https://www.youtube.com/watch?v=GFD_Cgr2zho)
2. The Era of Blind Faith in Big Data Must End: [https://www.youtube.com/watch?v=2u\\_eHHzRto](https://www.youtube.com/watch?v=2u_eHHzRto)
3. How China Tracks Everyone: <https://www.youtube.com/watch?v=CLo3e1Pak-Y>

### Data Analysis Exercise

1. Download the replication files for the Kaufman et al.  
Paper: <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/JJCXTH>
2. Read through the readme.txt
3. Replicate the results of the paper using the replication files. NB: per the authors' instructions, the python may take up to 5 hours. If you have computer issues, use a simpler model from this course and compare the results to the ones in the paper.

## **Data Analysis Exercise and write-up 5 (Linguistics) Due**

## **Week 13-14: AI in Psychology**

### Readings:

1. Delgadillo, J., & Duhne, P.G. S. (2020) Targeted prescription of cognitive-behavioral therapy versus person-centered counseling for depression using a machine learning approach. *Journal of Consulting and Clinical Psychology*, 88, 14-24.
2. Lake, B. M., Salakhutdinov, R., & Tenenbaum, J. B. (2015). Human-level concept learning through probabilistic program induction. *Science*, 350(6266), 1332-1338. See also supplemental materials available online.
3. Farrell, S., & Lewandowsky, S. (2015). *An introduction to cognitive modeling*. In B. U. Forstmann & E.-J. Wagenmakers (Eds.), *An introduction*



*to model-based cognitive neuroscience* (p. 3–24). Springer Science + Business Media.

Videos & Presentations:

1. <https://openai.com/blog/emergent-tool-use/>
2. Neuroscience and Artificial Intelligence Need Each Other | Marvin Chun | TEDxKFAS: <https://www.youtube.com/watch?v=97iYdJE9mQ4>
3. Josh Tenenbaum Computational Models of Cognition: Part 1 <https://www.youtube.com/watch?v=TFyAEHk5asY>

Data Analysis Exercise:

From *Farrell & Lewandowsky* (above). Detailed assignment description posted in Canvas.

**Data Analysis Exercise and write-up 6 (Political Science) Due**

**Week 15: AI in Sociology and Criminology & Law**

Readings:

1. Klein, Aaron. 2020. Reducing Bias in AI-based Financial Services. <https://www.brookings.edu/research/reducing-bias-in-ai-based-financial-services/> Brookings
2. Edelmann A, Wolff T, Montagne D, & Bail CA. 2020. Computational Social Science and Sociology. *Annual Review of Sociology*.
3. Berk RA. 2021. Artificial Intelligence, Predictive Policing, and Risk Assessment for Law Enforcement. *Annual Review of Criminology*.
4. Shiffer-Sebba D & Behrman J. 2020. Gender and Wealth in Demographic Research : A Research Brief on a New Method and Application. *Population Research and Policy Review*.

Videos & Presentations:

1. An Introduction to Computational Social Science. <https://www.youtube.com/watch?v=zGG9wPl1C5E>
2. The Use of Artificial Intelligence in the Administration of Justice. <https://www.youtube.com/watch?v=ozfY8tqVjLs>
3. Keynote: AI for Social Good. <https://www.youtube.com/watch?v=GMJKKqI0MqU>
4. We're Training Machines to be Racist: The Fight Against Bias is On. <https://www.youtube.com/watch?v=N-Lxw5rcfZg>

Data Analysis Exercise:

From *Farrell & Lewandowsky* (above). Detailed assignment description posted in Canvas.

**Data Analysis Exercise and write-up 7 (Psychology) Due**

**FINAL EXAM**