Agent-based modeling: An introduction to simulation and experimental methods

Tuesdays, 3.00pm - 6.00pm

Room: David Rittenhouse Labs (209 S. 33rd St), Room 3C4

Instructor: Alexander Funcke

Office: 313 Claudia Cohen Hall
Email: funcke@0z.se (note: that is a zero)
Course page: http://0z.se/teaching/abm15.html (note: that is a zero)
Mailing list: http://groups.google.com/group/ABM2015/

Instructions

Please note that all readings are to be read critically. Further a short 1-2 paragraph summary is to be handed in before the start of the lecture for which it is due, either on paper or via mail.

Evaluation

Class participation makes up for 30% of the final grade. Students are expected to be present, prepared and engaged. There will be a midterm project that will account for 40% of the grade, and lastly a final paper accounting for the remaining 30% of the grade. In the final paper students will be asked to extend the midterm project to a simulation scenario.

Basic Theory Segment

Week 1: Introduction

Podcast:

Emanuel Derman, *Theories, Models, and Science*, Econtalk, 2012
http://www.econtalk.org/archives/2012/03/derman_on_theor.html
(Note that Derman is neither a philosopher or an economist, and hence he will not necessarily use concepts as academics in these camps would.)

Week 2: Some classic models

Readings:

Mark Granovetter, *Threshold models of collective behavior,* American journal of sociology, 1978
http://www.jstor.org/stable/2778111

Thomas C. Schelling, Dynamic models of segregation, The Journal of Mathematical Sociology, 1971
http://www.tandfonline.com/doi/abs/10.1080/0022250X.1971.9989794

Avinash Dixit and Barry Nalebuff, Prisoner's Dilemma in The Concise Encyclopedia Economics, 2nd Edition, 2014:
http://www.econlib.org/library/Enc/PrisonersDilemma.html

Week 3: What is good science?

Readings:

Milton Friedman, *The methodology of positive economics*, 1953
http://digamo.free.fr/hausman82.pdf

Paul Feyerabend, Excerpt from *Against Method*, 1971
http://www.marxists.org/reference/subject/philosophy/works/ge/feyerabe.htm

Deirdre McCloskey, *Rhetorics of Economics*, Journal of Economic Literature, 1983
http://www.jstor.org/stable/2724987

Week 4: Some classic experiments

Readings:

Elizabeth Hoffman and Matthew L. Spitzer, The Coase Theorem: Some Experimental Tests
http://www.jstor.org/stable/725226

Sheena S. Iyengar and Mark R. Lepper, When Choice is Demotivating: Can One Desire Too Much of a Good Thing?
http://www.columbia.edu/~ss957/articles/Choice_is_Demotivating.pdf

Russell Cooper, et al., Cooperation without Reputation: Experimental Evidence from Prisoner's Dilemma Games
http://www.sciencedirect.com/science/article/pii/S0899825696900135

Week 5: What is a good model / experiment / simulation?

Readings:

Robert Sugden, Credible worlds: the status of theoretical models in economics, Journal of Economic Methodology, 2000
http://www.tandfonline.com/doi/abs/10.1080/.VADIch9yi1k

Rachel Croson, Why and how to experiment: Methodologies from experimental economics
http://illinoislawreview.org/wp-content/ilr-content/articles/2002/4/Croson.pdf

Michael W. Macy and Robert Willer, From Factors to Actors: Computational Sociology and Agent-Based Modeling
http://www.jstor.org/stable/3069238

Project segment

Week 6: Discuss modeling of phenomena

Prepare:

Read up on the following two phenomena. Do not read scholarly work, but rather everyday sources such as newspapers, magazines, blogs and what not. What are the stylized facts? What are the involved entities? What is the history of the phenomenon? What is the future? What determines if and how it occurs? And so forth ...

- (Online) dating
- Stereotyping
- Trust
- Signaling

Write a 1-2 page summary (don't over invest in this) of your main take aways, include proper citations. Spend at least a focused hour to read up on each topic, before summarizing.

Week 7: Present a draft idea

Prepare:

Use a presentation software, such as Prezi, Google Slides or PowerPoint, to sketch a model of some aspect of either (online) dating or the stereotyping. Be sure to be clear about:

1. the purpose of the model/experiment
2. the ontology of the model/experiment
3. the relationships in the model/experiment
4. any potential implications of the model/experiment
5. and not least, the weaknesses of the model/experiment

Week 8: Present the improved draft idea

Readings (no summarizing paragraph required):

Donald/Deirdre McCloskey, *Economical writing*, Economic Inquiry, 1985
http://onlinelibrary.wiley.com/doi/10.1111/j.1465-7295.1985.tb01761.x/abstract

Prepare:
Create a first draft of your experiment, it should include all the elements previously featured in the presentation, but reflect the feedback given during the previous presentation. Please employ symbolic language where appropriate in the paper, and where it is appropriate only.

Week 9: A few classic simulation

Prepare:
Midterm paper

Week 10: Present draft simulation draft

Prepare:
Use a presentation software, such as Prezi, Google Slides or PowerPoint, to sketch a model of some aspect of either (online) dating or the stereotyping. Be sure to be clear about:

6. the purpose of the model/experiment
7. the ontology of the model/experiment
8. the relationships in the model/experiment
9. any potential implications of the model/experiment
10. and not least, the weaknesses of the model/experiment

Week 11: Present updated simulation draft

Prepare:
Create a first draft of your simulation (or description thereof), it should include all the elements previously featured in the presentation, but reflect the feedback given during the previous presentation. Please employ symbolic language where appropriate in the paper, and where it is appropriate only.

Week 12: Networks

Reading
TBA

Week 13/14: Culture and social norms

Readings:
Cristina Bicchieri, Grammar of Society, 2006
(Chapter 1)

TBA

Policies

There is no explicit requirement for attendance, but if you fail to attend central parts of the course you will score badly on both the participation and project pillar of your grade. Very badly. Apart from being present in class you are expected to contribute to a constructive discussion, be concise and polite.

Late assignments will not be considered, respect the deadline. If you have reason to believe you might

If you have any special needs, please be sure to communicate this as soon as possible.

Academic Integrity

In this class we follow the Academic Integrity Code:

“No one will cheat or plagiarize or tolerate those who do so.“

Any malpractice will be reported. Collaboration in the project segment is encouraged up until the actual production of the presentations and papers.