

Further topics in statistics and probabilities

Your paper

Possible topics

A summary and discussion of one of the following articles:

- Dalkey (1969), “The Delphi method: an experimental study in group opinion” (forerunner of Bayesian dialogues)
- DeGroot (1974), “Reaching a consensus” (forerunner of Bayesian dialogues)
- Milgrom and Stokey (1982), “Information, trade and common knowledge” (builds on Aumann’s work; similar to Geanakoplos and Polemarchakis’s scenario of indirect communication, but in the context of markets)
- Sebenius and Geanakoplos (1983), “Don’t bet on it: contingent agreements with asymmetric information” (builds on Aumann’s work; similar to Geanakoplos and Polemarchakis’s scenario of indirect communication, but in the context of bets)
- McKelvey and Page (1986), “Common knowledge, consensus and aggregate information” (extends Aumann’s result to aggregate statistics; technically challenging)
- Samet (1990), “Ignoring ignorance and agreeing to disagree” (builds on Aumann’s work; uses a knowledge operator instead of information partitions and extends the result to situations in which individuals do not necessarily know what they do not know)
- Polemarchakis (2016), “Rational dialogs” (builds on Geanakoplos and Polemarchakis’s scenario of indirect communication; shows that any sequence of probabilities can be the result of a Bayesian dialogue)
- Pawlowitsch (2021), “Strategic manipulation in Bayesian dialogues” (builds on Geanakoplos and Polemarchakis’s scenario of indirect communication; shows that truthfully announcing the Bayesian posteriors at every step is not necessarily the best that two individuals who “just want to learn the truth” can do)

Or:

- Write a computer program + documentation for a Bayesian dialogue (as defined in the slides of this class, page 40)
- Write a computer program + documentation for finding a matrix representing two partitions (see page 24, slides)

Your expected audience should be your peers or someone from a related field who has some basic knowledge of probability theory. Your paper should be self-contained relative to this audience. That is, you should introduce, or recall from your first class in probabilities, all concepts and mathematical notions that you need to present the content of the respective contribution.

Your paper should, at the same time, be more than a simple summary of the respective article. Specifically, you should illustrate the results shown or the process introduced by *your own examples*. You can replicate examples given by the authors in the original article, but then, first, you have to indicate this, and, second, you should include at least one example that you have constructed yourself. Ideally, your own example (or examples) will complement examples given in the original article. Your examples could, for instance, highlight an aspect of the general result that is not seen so easily in the examples given in the original article. Or it could be an example that shows what can happen when the premise of the result does not hold. You can certainly use examples that you have created already for your homework assignments. In preparing your paper, play around with these examples. The so-gained observations will help you to get a better understanding of the general result, which will help you to communicate it to your reader. If you use examples that you have found elsewhere (other articles, books, internet resources), you have to indicate the respective reference.

In addition to that, you can include comments on the original contribution. These can be comments that you have read in other articles, books, lecture notes, dictionaries, or online resources (in that case, of course, you have to indicate the respective reference too) or comments that arise from your own observations, or – and this is not rare in mathematical research – observations that you have received from some of your peers. In that case, this needs attribution too. You can, for example, put in a footnote in the style of: “I want to thank Jean Malaurie for having shared this observation with me.”

Alternatively, you can suggest your own topic from the range of questions and theories that we discuss in this class. In that case, you have to discuss it with me so that we can see together if the suggested study is appropriate for this course.

Important dates

Proposal: The topic of your paper has to be decided until **Thursday, November 25, 2021**.

Final paper: Your final paper is due **January 7, 2022 (18h, Paris time)**.

It has to be sent to: christina.pawlowitsch@u-paris2.fr

In your message, please indicate your name and the program in which you are enrolled and make sure that this information is also contained in the title of your file. Use as a file name something like: “2021-Compl-Stat-Collège-Jean-Malaurie.pdf” or “2021-Compl-Stat-CMI-Juliette-Vasseur.pdf”.

Format

Your paper has to be written in English, following American-English standards for spelling and punctuation.

It should be in *Word* or pdf-format, 5-10 pages, 12pt, single-spaced. Since this is a short document, please do not include a table of contents and do not start a new page at the end of a section or subsection. Choose a neutral layout (no logos or other graphical elements). If you hand in your document in pdf format, you also have to hand in the original file source (for example, the tex file, if you have typed it in LaTeX).

Pages should be numbered.

The title page should indicate:

- The title of your paper
- Your name
- The title of the class and the instructor as well as the university and the program
- The date

Example

A review of Aumann's model of interactive knowledge

Jean Malaurie

Term paper

Further Topics in Statistics
Instructor: Christina Pawlowitsch

Collège d'Economie
Université Panthéon-Assas, Paris II

December 10, 2019

Your paper should have a reference list.

References should be given in the author-date style as recommended by *The Chicago Manual of Style*:

https://www.chicagomanualofstyle.org/tools_citationguide/citation-guide-2.html

This is a quite minimalist style: In the text, the reference is indicated simply by the name of the author or the authors with the year of publication in parenthesis.

Example

But still, even if a “fully revealing” equilibrium exists, it is possible that a game has also equilibria in which none of the first player’s types ever uses the costly signal (Spence 1973).

If the phrase in the text mentions already the author’s name, it is sufficient to indicate the year of publication in parenthesis.

Example

As already demonstrated by Spence (1973), it is possible that there are equilibria in which none of the first player’s types uses the costly signal.

However, for each reference, there has to be an entry in the list of references at the end of the document, specifying the full name of the authors, the title of the work and the publisher.

Example

Spence, Michael. 1973. “Job market signaling.” *The Quarterly Journal of Economics* 87 (3): 355–374.

Useful resources for writing an essay in English

The Chicago Manual of Style, 16th ed. Chicago: University of Chicago Press, 2010.

Online companion: <https://www.chicagomanualofstyle.org/home.html>

Turabian, Kate L. *A Manual for Writers of Research Papers, Theses, and Dissertations*, 8th ed. Revised by Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams, and the University of Chicago Press Editorial Staff, Chicago: University of Chicago Press, 2013.

Online companion: <https://www.chicagomanualofstyle.org/turabian/toc.html>