Bayesian Persuasion

Course title – Intitulé du cours	Bayesian Persuasion
Level / Semester – Niveau /semestre	DEEQA / 2nd semester
School – Composante	Ecole d'Economie de Toulouse
Teacher – Enseignant responsable	Alex SMOLIN
Other teacher(s) – Autre(s) enseignant(s)	
Other teacher(s) – Autre(s) enseignant(s)	
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Other teacher(s) – Autre(s) enseignant(s)	
Lecture Hours – Volume Horaire CM	15
TA Hours – Volume horaire TD	
TP Hours – Volume horaire TP	
Course Language – Langue du cours	English
TA and/or TP Language – Langue des TD et/ou TP	English

Teaching staff contacts:

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- Office T.584,
- Office hours: by appointment

Course Description:

This class provides an introduction to recent developments in Bayesian persuasion and information design. I plan to cover the following topics (papers indicated by an asterisk will be discussed in greater detail and should be read in advance):

Statistical Experiments. Informativeness Orders

1. Blackwell, David. (1951). "The Comparison of Experiments," in Proceedings, Second Berkeley Symposium on Mathematical Statistics and Probability, Berkeley, CA: University of California Press, 93–102.
2. *Crémer, Jacques. "A Simple Proof of Blackwell's "Comparison of Experiments" Theorem," Journal of Economic Theory 27, no. 2 (1982): 439–443.
3. Lehmann, Erich L. "Comparing Location Experiments," The Annals of Statistics 16, (1988): 521– 533.
4. Quah, John, and Bruno Strulovici. "Comparative Statics, Informativeness, and the Interval Dominance Order," Econometrica 77, no. 6 (2009): 1949–1992.
5. de Oliveira, Henrique. "Blackwell's Informativeness Theorem Using Diagrams." Games and Economic Behavior 109, (2018): 126-131.
6. Frankel, Alexander, and Emir Kamenica. "Quantifying Information and Uncertainty." American Economic Review 109 (2019), no 10, p. 3650-80.
7. Brooks, Benjamin, Alexander Frankel, and Emir Kamenica. "Information Hierarchies."

Working paper (2020).
8. N. Bertschinger and J. Rauh, "The Blackwell Relation Defines No Lattice," *2014 IEEE International Symposium on Information Theory*, 2014, pp. 2479-2483.

Bayesian Persuasion and Information Design. Single Agent

1. Rayo, Luis, and Ilya Segal. "Optimal Information Disclosure." Journal of Political Economy 118, no. 5 (2010): 949-987.
2. *Kamenica, Emir, and Matthew Gentzkow. "Bayesian Persuasion." American Economic Review 101, no. 6 (2011): 2590-2615.
3. Kamenica, Emir. "Bayesian Persuasion and Information Design." Annual Review of Economics 11 (2018).
4. Kolotilin, Anton. "Optimal Information Disclosure: A Linear Programming Approach." Theoretical Economics 13, no. 2 (2018): 607-635.
5. Dworczak, Piotr, and Giorgio Martini. "The Simple Economics of Optimal Persuasion." Journal of Political Economy, 2019, vol. 127, no 5, p. 1993-2048.
6. Guo, Yingni, and Eran Shmaya. "The Interval Structure of Optimal Disclosure." Econometrica 87.2 (2019): 653-675.
7. Kolotilin, Anton, and Alexander Wolitzky. "Assortative Information Disclosure." Working paper (2020).
8. Dworczak, Piotr, and Alessandro Pavan. "Robust (Bayesian) Persuasion." Working paper (2020).
9. Malamud, Semyon, and Andreas Schrimpf. "Persuasion by Dimension Reduction." Working paper (2021).

Bayesian Persuasion and Information Design. Multiple Agents

1. Aumann, Robert J. "Correlated Equilibrium as an Expression of Bayesian Rationality." Econometrica 55, no. 1 (1987): 1-18.
2. *Bergemann, Dirk, and Stephen Morris. "Bayes Correlated Equilibrium and the Comparison of Information Structures in Games." Theoretical Economics 11, no. 2 (2016): 487-522.
3. Bergemann, Dirk, and Stephen Morris. "Information Design: A Unified Perspective." Journal of Economic Literature 57, no. 1 (2019): 44-95.
4. Mathevet, Laurent, Jacopo Perego, and Ina Taneva. "On Information Design in Games." Journal of Political Economy (2020), vol. 128, no 4, p. 1370-1404.
5. Doval, Laura, and Jeffrey Ely. "Sequential Information Design." Econometrica 88.6 (2020): 2575-2608.
6. Morris, Stephen, Daisuke Oyama, and Satoru Takahashi. "Information Design in Binary Action Supermodular Games." Working paper (2020).

Applications

1. Anderson, Simon P., and Régis Renault. "Advertising Content." American Economic Review 96, no. 1 (2006): 93-113,
2. Bergemann, Dirk, and Martin Pesendorfer. "Information Structures in Optimal Auctions." Journal of Economic Theory 137, no. 1 (2007): 580-609.
3. Ostrovsky, Michael, and Michael Schwarz. "Information Disclosure and Unraveling in Matching Markets." American Economic Journal: Microeconomics 2.2 (2010): 34-63.
4. Kremer, Ilan, Yishay Mansour, and Motty Perry. "Implementing the “Wisdom of the Crowd”." Journal of Political Economy 122, no. 5 (2014): 988-1012,

5. Bergemann, Dirk, Benjamin Brooks, and Stephen Morris. "The Limits of Price Discrimination." American Economic Review 105, no. 3 (2015): 921-57.
6. Ely, Jeffrey, Alexander Frankel, and Emir Kamenica. "Suspense and Surprise." Journal of Political Economy 123, no. 1 (2015): 215-260.
7. Alonso, Ricardo, and Odilon Câmara. "Persuading Voters." American Economic Review 106, no. 11 (2016): 3590-3605.
8. Ely, Jeffrey. "Beeps." American Economic Review 107, no. 1 (2017): 31-53.
9. Gratton, Gabriele, Richard Holden, and Anton Kolotilin. "When to Drop a Bombshell." Review of Economic Studies 85, no. 4 (2017): 2139-2172.
10. Kolotilin, Anton, Tymofiy Mylovanov, Andriy Zapechelnyuk, and Ming Li. "Persuasion of a Privately Informed Receiver." Econometrica 85, no. 6 (2017): 1949-1964.
11. Bergemann, Dirk, Alessandro Bonatti, and Alex Smolin. "The Design and Price of Information." American Economic Review 108, no. 1 (2018): 1-48.
12. DeMarzo, Peter M., Ilan Kremer, and Andrzej Skrzypacz. "Test Design and Minimum Standards." American Economic Review 109.6 (2019): 2173-2207.
13. Romanyuk, Gleb, and Alex Smolin. "Cream Skimming and Information Design in Matching Markets." American Economic Journal: Microeconomics 11.2 (2019): 250-76.
14. Ichihashi, Shota. "Online Privacy and Information Disclosure by Consumers." American Economic Review 110.2 (2020): 569-95.
15. Saeedi, Maryam, and Ali Shourideh. "Optimal Rating Design." Working paper (2020).
16. Smolin, Alex. "Dynamic Evaluation Design." American Economic Journal: Microeconomics 13.4 (2021): 300-331.
17. Hopenhayn, Hugo, and Maryam Saeedi. "Optimal Ratings and Market Outcomes." Working paper (2021).

Course Objectives:

This is an advanced class in game theory. The goal is to make students familiar with the topic of information design. After this class, the students are expected to be able to engage with the frontier papers on this topic.

Prerequisites:

The basic knowledge of calculus and probability theory.

Practical information about the sessions:

Students are expected to attend and actively participate in all classes.

Grading system:

The final grade will be based on class participation and home assignment(s).