

XIAOSHENG MU

<https://scholar.harvard.edu/xiaoshengmu>

<http://xiaoshengmu.strikingly.com>

XIAOSHENGMU@FAS.HARVARD.EDU

HARVARD UNIVERSITY

Placement Director: John Y. Campbell	JOHN_CAMPBELL@HARVARD.EDU	617-496-6448
Placement Director: Nathaniel Hendren	NHENDREN@FAS.HARVARD.EDU	617-496-3588
Graduate Administrator: Brenda Piquet	BPIQUET@FAS.HARVARD.EDU	617-495-8927

Office Contact Information

Littauer Center M-37, 1805 Cambridge Street
Cambridge, MA 02138
Cell phone number: (203) 909-2814

Undergraduate Studies:

B.A. in Economics and Mathematics, Yale College, 2009-2013

Graduate Studies:

Harvard University, 2013 to present
Ph.D. Candidate in Economics
Thesis Title: "Essays on the Economics of Information"
Expected Completion Date: June 2018

References:

Professor Eric Maskin
Littauer Center 312, 1805 Cambridge Street
Cambridge, MA 02138
(617) 495-1746
EMASKIN@FAS.HARVARD.EDU

Professor Drew Fudenberg
77 Massachusetts Avenue, E52-418
Cambridge, MA 02139
(617) 715-4582
DREWF@MIT.EDU

Professor Tomasz Strzalecki
Littauer Center 322, 1805 Cambridge Street
Cambridge, MA 02138
(617) 496-6284
TOMASZ_STRZALECKI@HARVARD.EDU

Teaching and Research Fields:

Game Theory, Decision Theory, Behavioral Economics

Teaching Experience:

Spring, 2014	Ec 2052 Graduate Game Theory, teaching fellow for Professor Drew Fudenberg
Fall, 2016	Ec 2052 Topics in Game Theory, teaching fellow for Professor Michihiro Kandori
Fall, 2016	Ec 1011 Undergraduate Microeconomics, teaching fellow for Prof. Edward Glaeser
Spring, 2017	Ec 2010 Graduate Microeconomics, teaching fellow for Professor Oliver Hart

Research Experience and Other Employment:

Spring, 2015	Harvard University, research assistant for Professor Matthew Rabin
Fall, 2015	Harvard University, research assistant for Professor Tomasz Strzalecki

Honors, Scholarships, and Fellowships:

2013-2017	Weiss Family Program Fund for Research in Economics
2009, 2011	Winner of the William Lowell Putnam Mathematics Competition
2008	Gold Medal in 49 th International Mathematical Olympiad

Publications:

“Log-concavity of a Mixture of Beta Distributions”
Statistics and Probability Letters, 99: 125-130, 2015

“Differentially Private and Incentive Compatible Recommendation System for the Adoption of Network Goods” (with Kevin He)
EC’14, Proceedings of the 15th ACM Conference on Economics and Computation, 2014

Job Market Paper:

“Dynamic Information Acquisition from Multiple Sources” with Annie Liang and Vasilis Syrgkanis
Decision-makers often aggregate information across many sources, each of which provides relevant information. We introduce a dynamic learning model where a decision-maker learns about unknown states by sequentially sampling from a finite set of Gaussian signals with arbitrary correlation. Such a setting describes sequential search between similar products, as well as reading news articles with correlated biases. We study the optimal sequence of information acquisitions. Assuming the final decision depends linearly on the states, we show that myopic signal acquisitions are nonetheless optimal at sufficiently late periods. For classes of correlation structures that we describe, the myopic rule is optimal from period 1. These results hold independently of the decision problem and its (endogenous or exogenous) timing. We apply these results to characterize dynamic information acquisition in games.

Other Research Papers:

“Overabundant Information and Learning Traps” with Annie Liang
We study a model of sequential learning, where agents choose what kind of information to acquire from a large, fixed set of Gaussian signals with arbitrary correlation. In each period, a short-lived agent acquires a signal from this set of sources to maximize an individual objective. All signal realizations are public. We study the community's asymptotic speed of learning, and characterize the set of sources observed in the long run. A simple property of the correlation structure guarantees that the community learns as fast as possible, and moreover that a “best” set of sources is eventually observed. When this property fails, the community may get stuck in an inefficient set of sources and learn (arbitrarily) slowly. There is a specific, diverse set of possible final outcomes, which we characterize.

“Informational Robustness in Intertemporal Pricing” with Jonathan Libgober
Consumers may be unsure of their willingness-to-pay for a product if they are unfamiliar with some of its features or have never made a similar purchase before. How does this possibility influence optimal pricing? To answer this question, we introduce a dynamic pricing model where buyers have the ability to learn about their value for a product over time. A seller commits to a pricing strategy, while buyers arrive exogenously and decide when to make a one-time purchase. The seller does not know how each buyer learns about his value for the product, and seeks to maximize profits against the worst-case information arrival processes. With only a single quality level and no known informational externalities, a constant price path delivers the optimal profit. We then demonstrate that introductory pricing can be beneficial when the seller knows information is conveyed across buyers, and that intertemporal incentives arise when there are gradations in quality.

“Keeping Your Story Straight: Truth-telling and Liespotting” with Johannes Hörner and Nicolas Vieille

An agent privately observes a Markov chain online and reports it to a designer. To what patterns in the

reported data should the designer pay attention? We show that, in general, keeping track of the empirical frequency of transition counts in the agent's reports is insufficient, despite the true state being Markovian. Nonetheless, we derive conditions under which any deviation that can be distinguished from truth-telling by checking the frequency of strings of an arbitrary (finite) size can be detected by "checking pairs." Further, we find that some undetectable deviations cannot be profitable, independent of the agent's preferences. Hence, we provide weaker sufficient conditions that ensure that the agent finds honesty to be the best strategy. We explore the implications of these results for the literature on (i) linking incentives, (ii) dynamic implementation, and (iii) repeated games and agency models.

"Paying for Attention: The Impact of Information Processing Costs on Bayesian Inference" with Scott D. Kominers and Alexander Peysakovich

Human information processing is often modeled as costless Bayesian inference. However, research in psychology shows that attention is a computationally costly and potentially limited resource. We study a Bayesian individual for whom computing posterior beliefs is costly. Such an agent faces a tradeoff between economizing on attention costs and having more accurate beliefs. We show that even small processing costs can lead to significant departures from the standard costless processing model. There exist situations where beliefs can cycle persistently and never converge. In addition, when updating is costly, agents are more sensitive to signals about rare events than to signals about common events. Thus, these individuals can permanently overestimate the likelihood of rare events (e.g., the probability of a plane crash). There is a commonly held assumption in economics that individuals will converge to correct beliefs/optimal behavior given sufficient experience. Our results contribute to a growing literature in psychology, neuroscience, and behavioral economics suggesting that this assumption is both theoretically and empirically fragile.

"Amendment Voting with Incomplete Preferences: A Revealed-Preference Approach to Robust Identification"

I study the outcome of the amendment voting procedure based on a potentially incomplete preference relation. A decision-maker evaluates candidates in a list and iteratively updates her choice by comparing the status quo to the next candidate. She favors the status quo when the two candidates are incomparable according to her underlying preference. Developing a revealed preference approach, I characterize all choice functions that can arise from such a procedure and discuss to what extent the underlying preference can be identified from observed choices.

Research Papers in Progress

"(Myopically) Searching for the Best"

I study optimal search with binary outcomes. A decision-maker sequentially acquires signals about a number of projects and has to choose one at the end of the horizon. Projects either succeed or fail, and they are ex-ante symmetric. I show that optimal information acquisition always focuses on the two projects whose current expected payoffs are highest. Thus, optimal search in this environment is quasi-myopic. I further characterize those signal distributions under which the completely myopic strategy of learning about the currently best project is optimal. I extend these results to a situation in which multiple projects are eventually chosen.

"Ranking of Experiments and Mutual Information Measure"

I characterize preferences over stochastic information structures/experiments. Relative to the previous literature, I provide a behavioral foundation for mutual information as a measure of information value. The key new axiom in my analysis is termed "independence of irrelevant priors" (IIP). It captures the decision heuristic that when comparing two experiments, the decision-maker may combine multiple states into one so long as neither experiment affects the relative probabilities of these states. I show that mutual information arises whenever the decision-maker treats states and signals anonymously and his preference satisfies IIP.