

KEVIN (KUANG-YU) PENG

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EDUCATION

Economics, Ph.D., University of California, Irvine	Expected by June 2026
Master of Arts, Economics, University of California, Irvine with distinction in Microeconomic Theory Qualifying Examination.	2020 - 2023
Bachelor of Arts, Public Finance, National Chengchi University, Taiwan	2015 - 2020
Bachelor of Science, Risk Management and Insurance, National Chengchi University, Taiwan	2015 - 2020
Minor, Management Information Systems, National Chengchi University, Taiwan	2015 - 2020
Exchange Program, Mathematics and Statistics, James Madison University, Virginia	2019 - 2020

RESEARCH FIELDS AND INTERESTS

Primary: Algorithmic decision theory | Experimental economics | Behavioral economics.

Secondary: Game theory | Industrial organization.

JOB MARKET PAPER

Discrete Random Expected Utility and Self-Selection. Co-authored with Igor Kopylov.

Abstract: We model stochastic choice rules via finitely many types θ that maximize distinct expected utility functions and use endogenous tie-breaking rules. First, we characterize *discrete random expected utility* (DREU) where the likelihood $\mu(\theta)$ of each relevant type θ is preserved across all menus A . This model is a discrete version for the *random expected utility* of Gul and Pesendorfer (2006), but our axioms, identification, and tie-breaking procedures are novel. More generally, we propose *discrete-map expected utility* (DMEU), where the likelihoods $\mu_A(\theta)$ are contingent on the menu A . The continuous map μ_A is identified uniquely in our model. DMEU captures various kinds of *context dependence*, such as reason-based choice, extremeness aversion, and other behavioral patterns. Moreover, we use DMEU to model *self-selection*, where types can increase their participation rates across distinct menus, but only if their best choices are improved. The standard *monotonicity* principle for stochastic choices delivers a novel *self-selective* property for the type likelihoods μ_A . This bias is identifiable because all types are assumed to maximize expected utility functions. By contrast, it can distort the likelihoods $\mu(\theta)$ without turning Block-Marschak polynomials negative in the general random utility model. Finally, we discuss applications to random *risk aversion* and random *Cobb-Douglas utility*.

WORKING PAPERS

Certainty as a Decoy: an Experiment to Test Menu Dependence in Heterogeneous Risk Attitudes.

Abstract: In the standard literature for modeling heterogeneity, it is commonly assumed that the distribution of types in a population is invariant across menus. This assumption does not accommodate behavioral patterns such as context dependence. In this paper, I run an experiment to test whether the distribution of risk attitudes changes depending on the construction of the menu. Specifically, when an unattractive certain option is added to a menu, does the average decision maker exhibit higher levels of risk aversion? In other words, can the certain option be used as a decoy to switch decision makers away from a high-risk option? My pilot study shows a statistically significant relation between the presence of a certain option and a decrease in the likelihood of a high-risk option being chosen. What's more, I find violations to core axioms that characterize random utility in standard literature, which evidences the need for menu dependence to model heterogeneity.

Data Algorithms in Incomplete Constant Threshold Representations.

Abstract: *Constant threshold representations* (CTRs) describe agents with limited perception who cannot distinguish small differences in utility. Unlike pure utility maximization, this model can be difficult to fit into empirical or simulated data sets as limited perception makes it impossible to observe any differences between a truly-best element in a menu and slightly worse alternatives. I implemented a novel algorithmic approach that attempts to fit CTR into general data sets. While I do not provide any theoretical complexity guarantees, my initial findings suggest that my algorithm works reasonably fast in practical settings. The algorithm is twofold, with the first part that efficiently suggests a utility ranking to complete binary relations and the second part that constructs a utility function based on binary relations built from the first step. I plan to extend this research for other structures, like true multi-utility models where choices are path independent.

PROJECTS IN PROGRESS

Algorithmic Identification of Heterogeneous Types in Incomplete Datasets.

Abstract: Heterogeneity, both non-parametric and parametric, can be difficult to identify in stochastic choice models. Instead of the random utility model, I use a *multi-utility* (MU) model by Aizerman and Malishevski (1981) due to its simpler choice primitives. I consider three cases where individual types are respectively modeled by (i) an arbitrary utility, (ii) expected utility, and (iii) quasilinear utility. I discover that while the expected utility case is still computationally difficult to identify, there is promise with the other two models. I devise an algorithm to identify heterogeneity in a quasilinear framework. My algorithm allows for incompleteness as well as noise. I propose candidate indices to measure type dispersion and noisiness.

Two-Fold Semiorder Preference for Spatial Product Dimensions. Profit maximization problems for firms when consumers exhibit just-noticeable-differences behavior in two product dimensions.

Speedy and Accurate Decisions in the Face of Uncertainty. Using gamified programs to elicit decisions from test subjects before- and after knowledge on prospect theory.

TEACHING EXPERIENCE

Associate Instructor of Record

University of California, Irvine

2023 - 2025

Irvine, CA

- ECON 15A: Probability and Statistics in Economics I (Summer 2024, 2025).
- ECON 15B: Probability and Statistics in Economics II (Summer 2023).

Guest Lecturer

University of California, Irvine

2023 - 2025

Irvine, CA

- ECON 203A: Mathematics for Economists (Fall 2023, 2024, 2025).
MATLAB instruction, assignment creation and grading.

Teaching Assistant

University of California, Irvine

2020 - today

Irvine, CA

- Graduate courses

- ECON 210A: Microeconomic Theory I (Fall 2021, 2022, 2023, 2024).
- ECON 210C: Microeconomic Theory III (Spring 2022, 2023, 2024, 2025).
- MPAC 291: Professional Research and Communication (Fall 2025).

- Upper-division courses

- ECON 100A: Intermediate Economics I (Fall 2020).
- ECON 100B: Intermediate Economics II (Winter 2022, 2023).
- ECON 115: Behavioral Economics (Winter 2024, 2025).
- ECON 140: Managerial Economics (Summer 2021).

- Lower-division courses
 - ECON 15A: Probability and Statistics in Economics I (Summer 2022).
 - ECON 25: Economics of Accounting Decisions (Spring 2021).
 - SOCSCI 3A: Computer-Based Research in Social Sciences (Winter 2021).

Math Tutor in Calculus I-III and College Algebra
Science & Math Learning Center at James Madison University

2020
Harrisonburg, VA

CONFERENCES AND WORKSHOPS

Behavioral & Experimental Economics Stanford-Caltech-UC Student Conference. Presentation.	2025
AEA CSQIEP Mentoring Conference in Chicago. Paper Workshop.	2025
Southwest Economic Theory Conference at University of Arizona. Presentation.	2025
Northwestern-Kellogg Summer School in Economic Theory. Poster session.	2024
Southwest Economic Theory Conference at UC, Irvine. Presentation.	2023
Poster Session for Summer Research at UC, Irvine Poster sessions.	2022 - 2024
NATO ACT Tide Sprint in Virginia Beach Presentation.	2019

FELLOWSHIPS, GRANTS, AND AWARDS

Clifford S. Heinz Chair Research Funding	2025
Doc 2A Non-Resident Supplemental Tuition Funding	2025
Conference Travel Funding	2024 - 2025
Best Teaching Assistant in a Graduate Course Award	2023
Summer Research Fellowship, Department of Economics	2022 - 2025

SERVICE

Southwest Economic Theory Conference at UC, Irvine. Co-organizer.	2023
Economics Ph.D. Students Recruitment Event at UC, Irvine. Panelist and Housing Tour Guide.	2025

SKILLS

Languages: Mandarin (Traditional, native) | English (bilingual) | German (CEFR B1)

Computing: R (preferred) | MATLAB | Python (and oTree) | Java | L^AT_EX

INTERNSHIP EXPERIENCE

X-Labs, James Madison University. Collaboration with NATO Allied Command Transformation (ACT). 2020 NATO ACT sponsored the problem on decision training to the Hacking for Diplomacy course at James Madison University. I was in charge of programming and research in economic theories for this project. My team presented a prototype at Tide Sprint, Fall 2019. Project in progress for the paper *Speedy and Accurate Decisions in the Face of Uncertainty*.

REFERENCES

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