# KEVIN (KUANG-YU) PENG

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## EDUCATION

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| **Economics, Ph.D.**, University of California, Irvine | *Expected by* June 2026 |
| **Master of Arts, Economics**, University of California, Irvine <br> 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.*** Co-authored with Igor Kopylov.

**Abstract**: We model stochastic choice rules via finitely many types $\theta$ that maximize distinct expected utility functions and use endogenous tie-breaking rules. In general, the likelihoods $\mu_A(\theta)$ of such types are allowed to depend on the feasible menu $A$, and we also derive representations where the distribution $\mu(\theta)$ is unaffected by $A$. This invariant case provides a discrete version for the *random expected utility* of Gul and Pesendorfer (2006), but we use distinct axioms and identification methods. More generally, we study representations where the menu-dependent type distribution $\mu_A(\theta)$ accommodates various kinds of *context dependence*. In particular, we show that the standard monotonicity principle imposed on stochastic choice data can be used to characterize *self-selection* in type likelihoods. In other words, type $\theta$ should not become more likely when new alternatives are added to a feasible menu, but do not improve the best choice for $\theta$. Both the discrete type space $\Theta$ and the bivariate function $\mu$ can be identified uniquely in our model. Finally, we discuss applications to heterogeneous risk attitudes and beliefs, and to filtering measurement noise.

## 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.

## CONFERENCES AND WORKSHOPS

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| **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 |

## TEACHING EXPERIENCE

**Associate Instructor of Record** — 2023 - 2025
University of California, Irvine — *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** — 2023 - 2025
University of California, Irvine — *Irvine, CA*

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

**Teaching Assistant** — 2020 - today
University of California, Irvine — *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**     2020
Science & Math Learning Center at James Madison University     *Harrisonburg, VA*

## 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 | LaTeX

## 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

| **Igor Kopylov** (Chair) | **Stergios Skaperdas** | **John Duffy** |
|---|---|---|
| Associate Professor | Clifford S. Heinz Chair, Professor | Professor |
| Department of Economics | Department of Economics | Department of Economics |
| University of California, Irvine | University of California, Irvine | University of California, Irvine |
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