Kenneth Hung

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Education

University of California, Berkeley — Berkeley, CA
Ph.D. in Mathematics; Advisor: Prof. William Fithian; GPA: 3.9/4.0 — *Aug. 2014 – May 2019*

California Institute of Technology (Caltech) — Pasadena, CA
B.S. with Honors in Mathematics and Computer Science (minor); GPA: 4.0/4.0 — *Sept. 2010 – May 2014*

Publication and Preprints

Empirical Bayesian selection for value maximization
Kenneth Hung and William Fithian, arXiv — *2022*

- **Regret bound**: Proof of a regret bound in a one-shot multi-armed bandit problem using an empirical Bayesian approach
- **Simulations and recommendations**: Semi-synthetic simulations illustrating attainment of the bound in a parametric case

Critical groups of strongly regular graphs and their generalizations
Kenneth Hung and Chi Ho Yuen, Innovations in Incidence Geometry — *2022*

- **Maximal order of a critical group**: Explicit constructed an element in the critical group of graph Laplacians with exactly two non-zero eigenvalues, that achieves the spectral bound for all such graphs except for notable exceptions

Statistical methods for replicability assessment
Kenneth Hung and William Fithian, Annals of Applied Statistics — *2020*

- **Meta-analysis**: Analyzed dataset from experimental psychology replications to quantitatively answer previously vague questions about replicability in the scientific domain
- **Multiple testing and post-selection inference**: Developed new tests and new metrics for replicability analysis
- **Simulations and recommendations**: Simulations and data visualizations in support of better future scientific practices

Rank verification for exponential families
Kenneth Hung and William Fithian, Annals of Statistics — *2019*

- **Multiple comparison with sample best**: Devised a more powerful approach to this classical problem that handles sparse large parameters without sacrificing power in the dense case
- **Simulations**: Demonstrated gains in power using Matlab, Python and R

Presentations

Empirical Bayesian selection for value maximization — Boston, MA
Talk, Conference on Digital Experimentation (CODE) — *2022*

Large-scale metric defense — Virtual
Poster, Conference on Digital Experimentation (CODE) — *2021*

Statistical methods for replicability assessment — Virtual
Invited talk, International Seminar on Selective Inference (ISSI) — *2021*

Statistical methods for replicability assessment — Virtual
Invited talk, Joint Statistical Meeting (JSM) — *2021*

Rank verification for exponential families — St. Louis, MO
Poster, Workshop on Higher-Order Asymptotics and Post-Selection Inference (WHOA-PSI) — *2017*

Rank verification for exponential families — Riverside, CA
Talk, International Conference on Multiple Comparison Procedures (MCP) — *2017*

Work Experience

Meta Platforms Inc. San Francisco, CA
Research Scientist, Core Data Science *Jul. 2019 – Present*

- **Meta-analysis of experimental data**: Improved experimentation efficiency and quality through empirical Bayesian methods
- **Causal inference**: Semiparametric-efficient estimation in experiments, treatment effect estimation in experiments with spillover

Citadel LLC Chicago, IL
Quantitative Researcher Intern *May 2017 – Aug. 2017*

- **Market making team**: Two projects on high frequency trading stock price predictive models
- **Model selection**: Investigated new high-dimensional feature selection in linear models for best model and best model path
- **Machine learning methods**: Predictive models based on kernel methods and random forests using R

Facebook Inc. Menlo Park, CA
Software Engineer Intern *Jun. 2012 – Sept. 2012*

- **Pages team**: Implemented UI elements for page admins and crowd-sourced information using XHP

Research Experience

Summer Undergraduate Research Fellowship Pasadena, CA
California of Institute of Technology *Jun. 2013 – Sept. 2013*

- **Algebraic combinatorics**: Critical groups of Strongly Regular Graphs (SRGs); worked under Prof. Mohamed Omar on properties of the critical groups in relation to the parameters

Summer Undergraduate Research Fellowship Pasadena, CA
California of Institute of Technology *Jun. 2011 – Sept. 2011*

- **Solid Mechanics Group**: Optimizations of the quasicontinuum method on lattice structure computation; worked under Prof. Malena Inés Español. Displacements of atoms in a lattice structure can be found by minimizing the approximation for the total energy; I analyzed several approximations with the help of Matlab for numerical simulations

Professional Activities

Causal inference reading group
University of California, Berkeley *Aug. 2016 – May 2019*

- **Topics**: Philosophy, randomized experiment, observational studies, matching, propensity score, DAGs, instrumental variable, sensitivity analysis, regression discontinuity

Board of Control
California of Institute of Technology *Jan. 2012 – Jun. 2014*

- **House Representative**: Served as representative for Avery House on a committee charged with hearing cases of potential Honor System violations among undergraduates

Reviewing

Statistics (number of papers in parentheses): Journal of the American Statistical Association (1)

Honors and Awards

Outstanding Graduate Student Instructor, UC Berkeley
Awarded for outstanding work in the teaching of undergraduates *2018*

Scott Russell Johnson Undergraduate Prize, Caltech
Awarded to the best graduating mathematics major *2014*

Herbert J. Ryser Scholarships, Caltech
Awarded based on merit, preferably in pure mathematics *2013*

The Robert P. Balles Caltech Mathematics Scholars Award, Caltech
Awarded based on performance in mathematics courses completed in the student's first three years at Caltech *2013*

Fredrick J. Zeigler Memorial Award, Caltech
Awarded for excellence in scholarship *2012*

International Mathematical Olympiad
Represented Hong Kong; Bronze and Silver *2009, 2010*

Asian Physics Olympiad
Represented Hong Kong; Honorable Mention *2010*

Skills

Programming languages: C/C++, Mathematica, Matlab, Python, R, SQL

Languages: Cantonese, English, Mandarin

Technologies: git, LaTeX