

Kenneth Hung

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EDUCATION

University of California, Berkeley

Ph.D. in Mathematics; Advisor: Prof. William Fithian; GPA: 3.9/4.0

Berkeley, CA

Aug. 2014 – May 2019

California Institute of Technology (Caltech)

B.S. with Honors in Mathematics and Computer Science (minor); GPA: 4.0/4.0

Pasadena, CA

Sept. 2010 – May 2014

PUBLICATION AND PREPRINTS

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

Large-scale metric defense

Poster, Conference on Digital Experimentation (CODE)

Virtual

2021

Statistical methods for replicability assessment

Invited talk, International Seminar on Selective Inference (ISSI)

Virtual

2021

Statistical methods for replicability assessment

Invited talk, Joint Statistical Meeting (JSM)

Virtual

2021

Rank verification for exponential families

Poster, Workshop on Higher-Order Asymptotics and Post-Selection Inference (WHOA-PSI)

St. Louis, MO

2017

Rank verification for exponential families

Talk, International Conference on Multiple Comparison Procedures (MCP)

Riverside, CA

2017

WORK EXPERIENCE

Meta Platforms Inc.

Research Scientist, Core Data Science

San Francisco, CA

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

Quantitative Researcher Intern

Chicago, IL

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.

Software Engineer Intern

Menlo Park, CA

Jun. 2012 – Sept. 2012

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

RESEARCH EXPERIENCE

Summer Undergraduate Research Fellowship

California of Institute of Technology

Pasadena, CA

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

California of Institute of Technology

Pasadena, CA

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, L^AT_EX