Yale's PhD Program in Statistics & Data Science

Daniel A. Spielman

Statistics & Data Science
Computer Science
Mathematics
Yale University

Department of Statistics and Data Science

Undergraduate major: approximately 80 majors. 25 graduated this year

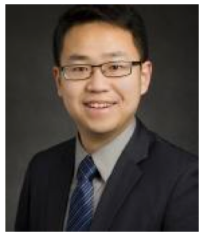
New Ph.D. program: 6 entering students

From “Statistics” to “Statistics and Data Science”











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John Lafferty
(from U. Chicago)


Dan Spielman
(half from CS)

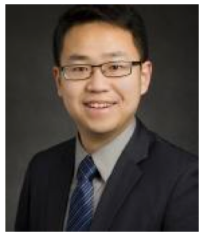

Sekhar Tatikonda
(moved from EE)

From “Statistics” to “Statistics and Data Science”












Zhou Fan
(from Stanford)

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John Lafferty
(from U. Chicago)

Dan Spielman
(half from CS)

Sekhar Tatikonda
(moved from EE)

Roy Lederman
(from Princeton)

Secondary Appointments

Peter Aranow (Political Science)
Timothy Armstrong (Economics)
Katarzyna Chawarska (Child Study Center)
Xiaohong Chen (Economics)
Nicholas Christakis (Sociology)
Ronald Coifman (Mathematics)
James Duncan (Radiology & Biomedical Imaging)
Debra Fischer (Astronomy)
Alan Gerber (Political Science)
Mark Gerstein (Molecular Biophysics & Biochemistry)
Theodore Holford (Biostatistics)
Edward Kaplan (School of Management / Operations)
Joshua Kalla (Political Science)
Amin Karbasi (Electrical Engineering)
Harlan Krumholz (Internal Medicine)
Amin Karbasi (Electrical Engineering)
Donald Lee (School of Management / Operations)
Vahideh Manshadi (School of Management / Operations)
Peter Phillips (*Economics*)
Fredrik Savje (Political Science)
Hemant Tagare (Radiology & Biomedical Imaging)
Van Vu (Mathematics)
Heping Zhang (Biostatistics)
Hongyu Zhao (Biostatistics)
Steve Zucker (Computer Science)

Yale’s PhD in Statistics & Data Science

Requirements:

- Probability
- Statistics
- Computation
- Practical Data Analysis

Yale's PhD in Statistics & Data Science

Requirements:

- Probability – Course & Qualifying Exam
- Statistics – Course & Qualifying Exam
- Computation – Coursework
- Practical Data Analysis:
  - Case Studies course
  - Practical Exam
  - Practical Work

- Research oral exam
- 12 courses (Practical Work is 1)

Practical work

One semester project with faculty in another department.
Often leads to a paper.

Typical departments:

Poly Sci, Economics, Psychology, Linguistics,
Biostatistics, School of Management

Bringing in:

Sociology, Public Health, Ecology and Environmental Biology,
Geology and Geophysics, Forestry, Astronomy, and more

Short workshops to introduce potential projects.

Classwork (12 courses, subject to DGS approval)

Probability
Stochastic Processes
Statistical Inference
Information Theory
Machine Learning

Topics Courses

Data Analysis
Case Studies

Statistical Computing
Fast algorithmic tools
Optimization and Hardness

+ courses from other departments
Computer Science, Electrical Engineering, Comp. Biology

Thesis

Supervised, at least in part, by member of department

Administrative changes in graduate program

Increasing program size

from 4 to 6 students per year.

Grant support

some students to be supported on grants after 2nd year

these students will teach less

Potential difficulties

Many requirements in the Ph.D.

Potential difficulties

Many requirements in the Ph.D.

Awkward name.

“Statistics & Data Science”, “S&DS”

“Department of Statistics & Data Science”, “$(DS)^2$”, “DS2”