



**Stanford** | Institute for Computational  
& Mathematical Engineering

## ***We design***

mathematical and computational models and algorithms

*80 PhD students, 54 associated faculty*

## ***We advance***

disciplinary fields by designing and improving computational approaches

*faculty from 20+ departments across all areas of campus*

## ***We train***

with focus on computational mathematics, data science, machine/deep learning, high performance computing, data visualization, and related fields

*nearly 60 courses from undergrad to PhD level*

**and we create a strong community for  
interdisciplinary research and collaboration**

## ICME, anno 2004



9	staff
65	affiliated faculty & friends
3	joint faculty
8	instructors
3	adjunct faculty
85	PhD students
90	MS students



# Medicine



Optimization – statistical analysis – machine learning / AI – uncertainty quantification  
HPC – matrix computations – numerical analysis – numerical simulation of anything  
stochastics – financial math – CFD – visualization – computer graphics – personalized  
medicine – genomics – computational surgery – design – PDEs – abstract math .....



MS Data Science

MS Imaging Science

MS Computational Geosciences

MS Mathematical & Computational Finance

MS General

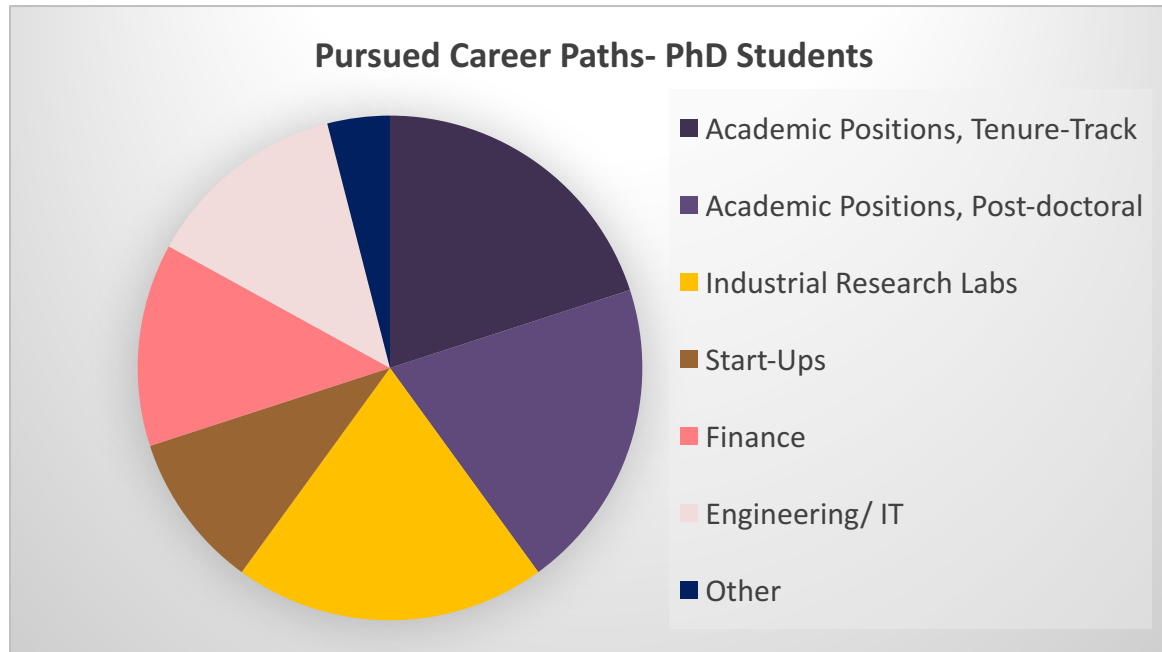
PhD

Profile incoming students

- outstanding math/stat background
- background / interest in applications
- interdisciplinary



# Where do our PhD Students go?



Close agreement expected and pursued paths

Research careers dominate

We have placed students at Harvard, MIT, Purdue, Columbia, Rice, Cornell, ....

# Strong Collaboration With Industry

## Strategic Partners



## Education Affiliates



# *ICME Education Affiliate Program*

- **Recruiting** - Company info night, career fair, interviews on campus, resume book, internship screening
- **Research** - invitation to ICME roundtables, workshops, seminars and symposiums on technology trends and research involving ICME faculty and students. Faculty liaison.
- **Curriculum** - Short courses for industry partners on Fundamentals of Data Science. Guest lecturer opportunities in ICME 60+ courses.
- **Facilities** – tours of ICME facilities; regular updates on what's happening at the HIVE, HPC and Data Lab



# *ICME Education Affiliate+ Program*

## *Additional Partnership Opportunities:*

- **Research:** Research collaboration with ICME-affiliated faculty and students, ie. ability to pose broad questions for investigation
- **Visiting Scholar:** Office space in ICME. Ability to audit courses, co-advise students, leverage HIVE visualization center for research, and potentially join research team
- **Student-Advisor-Mentor:** Students work with Total on real-world research problems closely related to industry
- **Curriculum:** Co-develop and pilot short courses; Train-the-Trainer sessions. Company problems incorporated into project courses.
- **Sponsorship:** of a lecture series or hackathon at Stanford
- **Theme workshop:** Total-proposed theme used as the basis for a workshop that is of common interest to ICME faculty and students

# Upcoming ICME Events

## *Summer*

- Mid August, 2017: Summer Workshops / short courses:  
Optimization, Machine Learning, Deep Learning, NLP, Optimization  
Data Visualization, Python, De-rust Linear Algebra, De-rust Statistics

## *Fall Quarter*

- GPUUniversity of Deep Learning and Beyond
- ICME Xtend Recruiting Event

## *Winter Quarter*

- ICME Xtrapolate Roundtable
- Women in Data Science Conference

# TODAY

1:15-1:30	Aaron Sidford	Management Science & Engineering
1:30-1:45	Ali Mani	Mechanical Engineering
1:45-2:00	Ken Jung	School of Medicine
2:00-2:15	Mary Wootters	Computer Science, Electrical Engineering
2:15-2:30	Amin Saberi	Management Science and Engineering
2:30-2:45	Amir Zamir	Computer Science
2:45-3:00	Mykel Kochendorfer	Aeronautics and Astronautics

# *Facilities*

## HIVE Immersive Visualization Environment

- State-of-the-art facility for high resolution data visualization and collaboration; for classes and research across Stanford

## Prototype Data Café

- Maker-space for data
- Open to students to explore, learn and collaborate
- Feels like an Apple store -- inviting to all
- Latest software and hardware technologies available including large touch-screen monitors, data visualization software

## Genius bar for consultation in HIVE and Data Café

- Staffed by broad ICME computational consulting group, C2