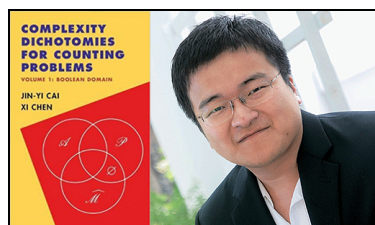




Theory



Interview with Xi Chen, coauthor of Complexity Dichotomies for Counting Problems

Interview with Xi Chen, whose new book (coauthored with Jin-Yi Cai) gives a thorough introduction to complexity dichotomies of counting problems by summarizing major results contributing to progress in field.

(<https://www.cs.columbia.edu/2018/interview-with-xi-chen-coauthor-of-complexity-dichotomies-for-counting-problems/>)



Four Papers from the Theory Group Accepted to FOCS 2019

(<https://www.cs.columbia.edu/2019/12747/>)



Xi Chen Awarded the Gödel Prize

The Gödel Prize for outstanding papers in the area of theoretical computer science is sponsored jointly by the EATCS and the ACM SIGACT. Chen is recognized for his 2017 paper on constraint satisfaction problems (CSP).

(<https://www.cs.columbia.edu/2021/xi-chen-awarded-the-godel-prize/?redirect=b7ca6c02584c415c9fbeb3d4e8430c85>)

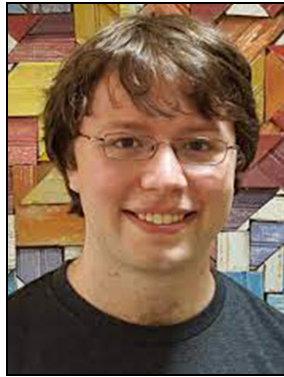
About

The group does research on the fundamental capabilities and limitations of efficient computation.

In addition, they use computation as a lens to gain deeper insights into problems from the natural, social, and engineering sciences.

The group is highly collaborative, both within Columbia and among peer institutions. They hold a weekly Theory Lunch and a bi-weekly Student Seminar. Most graduate students have (at least) two advisors and collaborate with several professors and other students. Some of the faculty are cross-listed with the IEOR department and the Data Science Institute.

Faculty and Affiliates



(<http://joshalman.com>)

Josh Alman

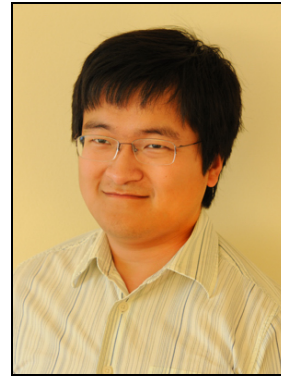
(<http://joshalman.com>)



(<http://www.mit.edu/~andoni/>)

Alexandr Andoni

(<http://www.mit.edu/~andoni/>)



(<http://www.cs.columbia.edu/~xi>)

Xi Chen

(<http://www.cs.columbia.edu/~xi>
chen/)



(<http://datascience.columbia.edu/eleni-drinea>)

Eleni Drinea

(<http://datascience.columbia.edu/eleni-drinea>)



(<http://www.cs.columbia.edu/~dhsu/>)

Daniel Hsu

(<http://www.cs.columbia.edu/~dhsu/>)



(<http://www.cs.columbia.edu/~tal>)

Tal Malkin

(<http://www.cs.columbia.edu/~tal>)



(https://en.wikipedia.org/wiki/Christos_Papadimitriou)

Christos

Papadimitriou
(https://en.wikipedia.org/wiki/Christos_Papadimitriou)



(<https://www.cs.columbia.edu/~toni/>)

Toniann Pitassi

(<https://www.cs.columbia.edu/~toni/>)



(<http://timroughgarden.org>)

**Tim
Roughgarden**
(<http://timroughgarden.org>)



(<http://www.cs.columbia.edu/~rocco>)

Rocco Servedio
(<http://www.cs.columbia.edu/~rocco>)



(<http://www.cs.columbia.edu/~cs2035/>)

Clifford Stein
(<http://www.columbia.edu/~cs2035/>)



(<http://cs2035.cs.columbia.edu/~verma/>)

Nakul Verma
(<http://www.cs.columbia.edu/~verma/>)



(<http://www.cs.columbia.edu/~mihalis>)

**Mihalis
Yannakakis**
(<http://www.cs.columbia.edu/~mihalis>)



(<http://www.henryyuen.net>)

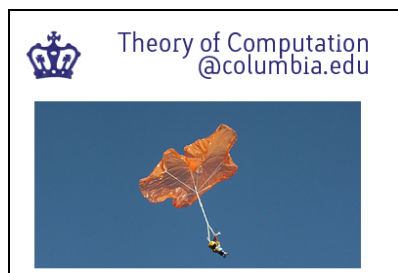
Henry Yuen
(<http://www.henryyuen.net>)



()

Art Werschulz ()

Research Labs



Theory of Computing
Group

(<http://www.cs.columbia.edu/theory/>)

Find the COVID-19 Resource Guide here (<https://news.columbia.edu/news/update-covid-19-university-guidance>).

Computer Science at Columbia University

The computer science department advances the role of computing in our lives through research and prepares the next generation of computer scientists with its academic programs.

Find out more about the department here (/about).

Upcoming Events

SEP
26

CSB 480

Theory Student Seminar

Tuesday 12:30 pm

SEP
29

Friday 12:30 pm

CS conference room (CSB453)

Peter Manohar, Carnegie Mellon University

Semirandom CSP refutation via Kikuchi matrices: Algorithms, Certificates, and Connections

Theory Lunch

OCT
03

CSB 480

Theory Student Seminar

Tuesday 12:40 pm

OCT
06

Theory Lunch - Sunoo Park

Theory Lunch

Friday 12:30 pm

CS conference room (CSB453)

Sunoo Park, New York University

[View All >> \(https://www.cs.columbia.edu/calendar/\)](https://www.cs.columbia.edu/calendar/)

In the News

MIT Technology Review

(<https://www.cs.columbia.edu/2023/the-computer-scientist-who-hunts-for-costly-bugs-in-crypto-code/?redirect=0c99d322ac4a621f0cb1bf31ffea64ba>)

The Computer Scientist Who Hunts for Costly Bugs in Crypto Code (<https://www.cs.columbia.edu/2023/the-computer-scientist-who-hunts-for-costly-bugs-in-crypto-code/?redirect=0c99d322ac4a621f0cb1bf31ffea64ba>)

(Ronghui Gu)



This Self-Aware Robot Taught Itself How to Control Its Own Body (<https://www.cs.columbia.edu/2022/this-self-aware-robot-taught-itself-how-to-control-its-own-body/?redirect=2275dd724f7cd014090b808bf9f6c3c9>)

(Carl Vondrick)

(<https://www.cs.columbia.edu/2022/this-self-aware-robot-taught-itself-how-to-control-its-own-body/?redirect=2275dd724f7cd014090b808bf9f6c3c9>)



Columbia Awarded \$185 Million in Patent-Infringement Lawsuit (<https://www.cs.columbia.edu/2022/columbia-awarded-185-million-in-patent-infringement-lawsuit/?redirect=00ff51e39830d7b7a1521ed64b5174b7>)

(Salvatore Stolfo)

(<https://www.cs.columbia.edu/2022/columbia-awarded-185-million-in-patent-infringement-lawsuit/?redirect=00ff51e39830d7b7a1521ed64b5174b7>)



Mathematicians Transcend Geometric Theory of Motion (<https://www.cs.columbia.edu/2021/mathematicians-transcend-geometric-theory-of-motion/?redirect=5673fa940ca6c0bede69f18e4810731e>)

(Andrew Blumberg)

(<https://www.cs.columbia.edu/2021/mathematicians-transcend-geometric-theory-of-motion/?redirect=5673fa940ca6c0bede69f18e4810731e>)

FINANCIAL TIMES

Auto-scans of phones would violate data privacy, say security experts (<https://www.cs.columbia.edu/2021/auto-scans-of-phones-would-violate-data-privacy-say-security-experts/?redirect=2ed01b3c9d786fd4c2557ead92be01b1>)

(Steven Bellovin)

(<https://www.cs.columbia.edu/2021/auto-scans-of-phones-would-violate-data-privacy-say-security-experts/?redirect=2ed01b3c9d786fd4c2557ead92be01b1>)

Press Mentions

TIME

How The Morning Show Rewrites the Notorious 2014 Sony Hack (<https://www.cs.columbia.edu/2023/how-the-morning-show-rewrites-the-notorious-2014-sony-hack/?redirect=01cb778274fb38a72826afd84056ab79>)

(Suman Jana)

(<https://www.cs.columbia.edu/2023/how-the-morning-show-rewrites-the-notorious-2014-sony-hack/?redirect=01cb778274fb38a72826afd84056ab79>)



Your Résumé Isn't the Only Thing Popular Job Sites Evaluate (<https://www.cs.columbia.edu/2023/your-resume-isnt-the-only-thing-popular-job-sites-evaluate/?redirect=f25fb139a595563c5d6b2ebf335c354a>)

(<https://www.cs.columbia.edu/2023/your-resume-isnt-the-only-thing-popular-job-sites-evaluate/?redirect=f25fb139a595563c5d6b2ebf335c354a>)



Yes, AI Models Can Get Worse over Time (<https://www.cs.columbia.edu/2023/yes-ai-models-can-get-worse-over-time/?redirect=bd00821a18c6554527db1cab787c273b>)
(Kathleen McKeown, Vishal Misra)

(<https://www.cs.columbia.edu/2023/yes-ai-models-can-get-worse-over-time/?redirect=bd00821a18c6554527db1cab787c273b>)



Here's how AI is being used to unlock secrets still hidden in the human brain (<https://www.cs.columbia.edu/2023/heres-how-ai-is-being-used-to-unlock-secrets-still-hidden-in-the-human-brain/?...>)
(Richard Zemel)

(<https://www.cs.columbia.edu/2023/heres-how-ai-is-being-used-to-unlock-secrets-still-hidden-in-the-human-brain/?redirect=4055e95b510974e140a3552097549bb7>)

Gothamist

Does AI in NYC need restrictions? Officials hold closed-door meeting to discuss
Apply
(https://www.cs.columbia.edu/2023/does-ai-in-nyc-need-restrictions-officials-hold-closed-door-meeting-to-discuss...)

Columbia Undergraduate Admissions (SEAS)

(Jeanette Wing)

(https://www.cs.columbia.edu/2023/does-ai-in-nyc-need-restrictions-officials-hold-closed-door-meeting-to-discuss/?redirect=557ac481d534504ff10bb8a2246504e8)

ai-in-nyc-need-restrictions-officials-hold-closed-door-meeting-to-discuss/? (https://apply.engineering.columbia.edu/apply/)

hold-closed-door-meeting-to-discuss/? (http://gradengineering.columbia.edu/ms-express-application-columbia-university-undergraduates)

discuss/? (http://gradengineering.columbia.edu/ms-express-application-columbia-university-undergraduates)

redirect=557ac481d534504ff10bb8a2246504e8)

CS@CU MS Bridge Program in Computer Science (https://www.cs.columbia.edu/ms-bridge/)

(https://www.columbia.edu)

Links

Map (https://www.cs.columbia.edu/wp-content/uploads/2022/07/morningsidemap_2015aug-7.pdf)

School of Engineering And Applied Science (http://engineering.columbia.edu/)

Data Science Institute (http://datascience.columbia.edu/)

CRF (http://www.cs.columbia.edu/crf)

MICE (https://mice.cs.columbia.edu)

ASCENT Program (https://www.cs.columbia.edu/ascent/)

Copyright FAQ (https://www.cs.columbia.edu/resources/copyright/)

CS Advising (https://www.cs.columbia.edu/academic-advising/)

Contact

Computer Science Department

500 West 120 Street, Room 450

MC0401

New York, New York 10027

Phone: +1-212-853-8400

Fax: +1-212-853-8440

[Contact Us \(/contact\)](/contact)

[Directions \(https://www.cs.columbia.edu/resources/directions/\)](https://www.cs.columbia.edu/resources/directions/)

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[Privacy Policy \(https://www.cs.columbia.edu/privacy-policy/\)](https://www.cs.columbia.edu/privacy-policy/)