Shawn Ong

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Education

2018–25	**Ph.D., Applied Mathematics — Cornell University** Dissertation: *A Kleene Theorem and Decision Problems for Probability and Angelic Nondeterminism* Minors in Mathematics and Computer Science Advisor: Dexter Kozen
2018–22	**M.S., Applied Mathematics — Cornell University** Thesis proposal: *Review Systems and Probabilistic Automata*
2016–18	**M.A., Mathematics — University of Pennsylvania** Thesis topic: *On the Complexity of Lunar Lockout* Advisor: Rakesh Vohra
2014–18	**B.A., Math, Computer Science, and Logic — University of Pennsylvania** Graduated *summa cum laude*

Experience

2025–	Assistant Professor of Computer Science, Grinnell College	*Grinnell, IA*
2018–25	Graduate Research/Teaching Assistant, Cornell University	*Ithaca, NY*
2017	Software Engineering Intern, Dish Network	*Littleton, CO*
2014	Software Engineering Intern, Echostar Corp.	*Englewood, CO*

Awards & Honors

2025	Cornell Conference Travel Grant
2022	Cornell CS Teaching Award
2018	Max Mintz Undergraduate TA Hall of Fame
2018	Phi Beta Kappa
2016	William Lowell Putnam Math Competition Top 500
2016	Pincus-Magaziner Family Undergraduate Research and Travel Grant
2015	Penn Undergrad Research Mentoring Grant
2015–18	Dean's List
2014–18	Benjamin Franklin Scholar
2014–15	Integrated Studies Program

Publications

Journal Articles and Refereed Papers

[J1] **S. Ong**, Stephanie Ma, and Dexter Kozen. "Probabilistic Kleene Algebra with Angelic Nondeterminism". In: *Proc. ACM Program. Lang.* 9.PLDI (June 2025). DOI: 10.1145/3729286. URL: https://doi.org/10.1145/3729286.

Technical Reports

[W1] **S. Ong** and Dexter Kozen. *A Decision Procedure for Probabilistic Kleene Algebra with Angelic Nondeterminism*. Tech. rep. Cornell University, July 2025. DOI: 10.48550/arXiv:2507.10980. URL: https://arxiv.org/abs/2507.10980.

[W2] **S. Ong**, Stephanie Ma, and Dexter Kozen. *Probability and Angelic Nondeterminism with Multiset Semantics*. Tech. rep. Cornell University, Dec. 2024. DOI: 10.48550/arxiv:2412.06754. URL: https://arxiv.org/abs/2412.06754.

Theses

[Th1] **S. Ong**. "A Kleene Theorem and Decision Problems for Probability and Angelic Nondeterminism". Doctoral Dissertation. Cornell University, May 2025. URL: https://www.proquest.com/openview/5fb29026cb891fa97ff30b8f6aef65c0/.

[Th2] **S. Ong**. "On the Complexity of Lunar Lockout". Masters Thesis. University of Pennsylvania, May 2018.

Presentations

[T1] *Probabilistic Kleene Algebra with Angelic Nondeterminism*. National Institute of Informatics, June 2025.

[T2] *Probabilistic Kleene Algebra with Angelic Nondeterminism*. 46th ACM SIGPLAN Conference on Programming Language Design and Implementation. [video]. June 2025.

[T3] *A Kleene Theorem and Decision Problems for Probability and Angelic Nondeterminism*. Ph.D. defense. Cornell University, Apr. 2025.

[T4] *Automata and Coalgebras*. Student Colloquium in Applied Math, Cornell University, Mar. 2025.

[T5] *Probability and Angelic Nondeterminism with Multiset Semantics*. Invited Talk. Elmhurst University, Jan. 2025.

[T6] *Probability and Angelic Nondeterminism with Multiset Semantics*. Invited Talk. Computer Science Research Presentation, Grinnell College, Dec. 2024.

[T7] *Probabilistic Kleene Algebra*. Bill Sears Blitz, Cornell University, Sept. 2024.

[T8] *Promoting Creative Reasoning via Good Questions*. with G. Nair. Mathematics Teaching Seminar, Cornell University, Oct. 2022.

[T9] *Review Systems and Probabilistic Automata*. Thesis proposal. Cornell University, Sept. 2022.

[T10] *Mapping the Vowel Space*. Undergraduate Research Symposium, University of Pennsylvania, Sept. 2016.

[T11] *Mapping the Vowel Space*. Undergraduate Research Symposium, University of Pennsylvania, Sept. 2015.

Teaching

Cornell University

2024fa	Teaching Assistant, Algorithmic Game Theory (CS 6840)
2023fa	Teaching Assistant, Algorithms (CS 6820)
2023sp	Teaching Assistant, Cryptography (CS 4830/5830)
2022fa	Head Teaching Assistant, Multivariable Calculus for Engineers (MATH 1920)
2022sp	Teaching Assistant, Introduction to Python (CS 1110)
2021fa	Teaching Assistant, Calculus for Engineers (MATH 1910)
2021sp	Teaching Assistant, Decision Theory (ECON 6760/CS 5846)
2019fa	Teaching Assistant, Reasoning about Uncertainty (CS 6766)
2018fa–19sp	Teaching Assistant, Introduction to Python (CS 1110)

University of Pennsylvania

2016sp–18sp	Teaching Assistant, Mathematical Foundations of Computer Science (CIS-160)

Academic Service

Institutional Service

Cornell University

2022	Content Liason, Cornell Academic Excellence Workshops
2020–25	Peer Mentor, Cornell CAM
2019-24	Participant, Cornell Mathematics Teaching Seminar
2020-21	Participant, Cornell CAM Anti-racist reading group

University of Pennsylvania

2016-18	Research Peer Advisor, Penn Center for Undergraduate Research
2016-18	Peer Advisor, Penn College Office

Skills

Computer Languages

★★★	LaTeX, Python, Java, Gradescope
★★☆	C, MATLAB, SQL, Qualtrics
★☆☆	Javascript, Coq, OCaml, Assembly

Human Languages

English (native), Mandarin (basic), German (basic)

Last updated: July 17, 2025