

Timothy Ng

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CITIZENSHIP: Canadian

Education

- 2017 **PhD**, Computing, Queen's University at Kingston
- 2013 **MSc**, Computer Science, University of Western Ontario
- 2011 **BMath**, Joint Computer Science & Pure Mathematics, University of Waterloo

Appointments

- 2025– **Associate Instructional Professor**
Department of Computer Science and the College, University of Chicago
- 2019–2025 **Assistant Instructional Professor**
Department of Computer Science and the College, University of Chicago
- 2017–2019 **Postdoctoral Fellow**
David R. Cheriton School of Computer Science, University of Waterloo

Research Interests

Automata theory, formal languages, combinatorics on words, theoretical computer science education

Teaching

University of Chicago

- CMSC 14100 **Introduction to Computer Science I** (AU22, WI25)
- CMSC 15100 **Introduction to Computer Science I** (AU20, AU21)
- CMSC 27100 **Discrete Mathematics** (AU19, AU23, AU24)
- CMSC 27200 **Theory of Algorithms** (SP20, SP21, WI22)
- CMSC 28000 **Introduction to Formal Languages** (WI20, WI21, SP22, SP23, SP24, SP25)
- CAPP 30271 **Mathematics for Computer Science and Data Analysis** (WI23, WI24)
- MPCS 50103 **Mathematics for Computer Science Discrete Mathematics** (WI20, WI21, WI22)
- MPCS 55001 **Algorithms** (SP20, SP21, SP22, SP23)

University of Waterloo

CS 245 Logic and Computation (SPI9)
CS 360 Introduction to the Theory of Computing (SPI8)

Queen's University

CISC 462 Computability and Complexity (WII7)

Publications

Journal Articles

1. F. Bellamoli, G. Franco, L. Kari, S. Lampis, **T. Ng**, and Z. Wang. Conjugate word blending: formal model and experimental implementation by XPCR. *Natural Computing* **20**(4), 647–658 (2021)
2. L. Kari and **T. Ng**. Descriptive Complexity of Semi-Simple Splicing. *International Journal of Foundations of Computer Science* **32**(06), 685–711 (2021)
3. Y.-S. Han, S.-K. Ko, **T. Ng**, and K. Salomaa. Consensus String Problem for Multiple Regular Languages. *Information and Computation* **279**, 104615 (2021)
4. Y.-S. Han, S.-K. Ko, **T. Ng**, and K. Salomaa. Closest Substring Problems for Regular Languages. *Theoretical Computer Science* **862**, 144–154 (2021)
5. S.K. Enaganti, L. Kari, **T. Ng**, and Z. Wang. Word Blending in Formal Languages. *Fundamenta Informaticæ* **171**(1–4), 151–173 (2020)
6. **T. Ng**, D. Rappaport, and K. Salomaa. State Complexity of Suffix Distance. *International Journal of Foundations of Computer Science* **30**(06&07), 203–214 (2019)
7. **T. Ng**, D. Rappaport, and K. Salomaa. State Complexity of Neighbourhoods and Approximate Pattern Matching. *International Journal of Foundations of Computer Science* **29**(02), 315–329 (2018)
8. D.-J. Cho, Y.-S. Han, **T. Ng**, and K. Salomaa. Outfix-Guided Insertion. *Theoretical Computer Science* **701**, 70–84 (2017)
9. D.-J. Cho, Y.-S. Han, **T. Ng**, and K. Salomaa. Pseudoknot-Generating Operation. *Theoretical Computer Science* **696**, 52–64 (2017)
10. **T. Ng**, D. Rappaport, and K. Salomaa. State Complexity of Prefix Distance of Subregular Languages. *Journal of Automata, Languages and Combinatorics* **22**(1–3), 169–188 (2017)
11. **T. Ng**, D. Rappaport, and K. Salomaa. State Complexity of Prefix Distance. *Theoretical Computer Science* **679**, 107–117 (2017)
12. Y.-S. Han, S.-K. Ko, **T. Ng**, and K. Salomaa. State Complexity of Insertion. *International Journal of Foundations of Computer Science* **27**(07), 863–878 (2016)

Conference Articles

1. R.E. Dougherty, T. Randolph, T.-Y. Chen, J. Erickson, M. Ferland, D. Komm, J. Liu, **T. Ng**, S. Sandu, M. Shindler, E. Talmage, and T. Zeume. A Survey of Undergraduate Theory of Computing Curricula in the United States. In: *2024 Working Group Reports on 1st ACM Virtual Global Computing Education Conference (SIGCSE Virtual-WGR 2024)*.
2. L. Kari and **T. Ng**. Descriptive Complexity of Semi-Simple Splicing. In: *Developments in Language Theory (DLT 2020)*, LNCS 12086, 150–163 (2020)
3. **T. Ng**, P. Ochem, N. Rampersad, and J. Shallit. New results on pseudosquare avoidance. In: *WORDS 2019: Combinatorics on Words*, LNCS 11682, 264–274 (2019)
4. L. Kari and **T. Ng**. State Complexity of Simple Splicing. In: *Descriptive Complexity of Formal Systems (DCFS 2019)*, LNCS 11612, 197–209 (2019)
5. L. Kari and **T. Ng**. State Complexity of Pseudocatenation. In: *Language and Automata Theory and Applications (LATA 2019)*, LNCS 11417, 203–214 (2019)
6. Y.-S. Han, S.-K. Ko, **T. Ng**, and K. Salomaa. Closest Substring Problems for Regular Languages. In: *Developments in Language Theory (DLT 2018)*, LNCS 11088, 392–403 (2018)
7. S.K. Enaganti, L. Kari, **T. Ng**, and Z. Wang. Word blending in formal languages: The Brangelina effect. In: *Unconventional Computation and Natural Computation (UCNC 2018)*, LNCS 10867, 72–85 (2018)
8. **T. Ng**, D. Rappaport, and K. Salomaa. Relative Prefix Distance Between Languages. In: *Developments in Language Theory (DLT 2017)*, LNCS 10396, 284–295 (2017)
9. **T. Ng**, D. Rappaport, and K. Salomaa. State Complexity of Suffix Distance. In: *Descriptive Complexity of Formal Systems (DCFS 2017)*, LNCS 10316, 287–289 (2017)
10. Y.-S. Han, S.-K. Ko, **T. Ng**, and K. Salomaa. Consensus String Problem for Multiple Regular Languages. In: *Language and Automata Theory and Applications (LATA 2017)*, LNCS 10168, 196–207 (2017)
11. D.-J. Cho, Y.-S. Han, **T. Ng**, and K. Salomaa. Outfix-Guided Insertion. In: *Developments in Language Theory (DLT 2016)*, LNCS 9840, 102–113 (2016)
12. **T. Ng**. Prefix Distance Between Regular Languages. In: *Implementation and Applications of Automata (CIAA 2016)*, LNCS 9705, 224–235 (2016)
13. **T. Ng**, D. Rappaport, and K. Salomaa. State Complexity of Prefix Distance of Subregular Languages. In: *Descriptive Complexity of Formal Systems (DCFS 2016)*, LNCS 9777, 192–204 (2016)
14. D.-J. Cho, Y.-S. Han, **T. Ng**, and K. Salomaa. Pseudoknot-Generating Operation. In: *SOFSEM 2016: Theory and Practice of Computer Science*, LNCS 9587, 241–252 (2016)
15. **T. Ng**, D. Rappaport, and K. Salomaa. State Complexity of Prefix Distance. In: *Implementation and Applications of Automata (CIAA 2015)*, LNCS 9223, 238–249 (2015)

16. T. Ng, D. Rappaport, and K. Salomaa. State Complexity of Neighbourhoods and Approximate Pattern Matching. In: *Developments in Language Theory (DLT 2015)*, LNCS 9168, 389–400 (2015)
17. T. Ng, D. Rappaport, and K. Salomaa. Quasi-distances and Weighted Finite Automata. In: *Descriptive Complexity of Formal Systems (DCFS 2015)*, LNCS 9118, 209–219 (2015)

Non-refereed Articles

1. T. Ng, D. Rappaport, and K. Salomaa. Descriptive Complexity of Error Detection. In: *Emergent Computation: A Festschrift for Selim G. Akl*. Springer, 101–119 (2017)
2. T. Ng, D. Rappaport, and K. Salomaa. Quasi-Distances and Weighted Finite Automata. In: *The Role of Theory in Computer Science: Essays Dedicated to Janusz Brzozowski*. World Scientific, 135–151 (2017)

Theses

1. T. Ng. Distances Between Languages: Algorithms and Descriptive Complexity. PhD thesis, Queen’s University at Kingston, Kingston, Canada (2017)
2. T. Ng. NFA reduction via hypergraph vertex cover approximation. MSc thesis, The University of Western Ontario, London, Canada (2013)

Awards & Honours

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| 2018 | Cheriton School of Computer Science Top Instructors, Spring 2018 (<i>Departmental</i>) |
| 2016 | Ontario Graduate Scholarship – \$15000 (<i>Provincial</i>) |
| 2013–2015 | R. Samuel McLaughlin Fellowship – \$10000 per year (<i>Institutional</i>) |
| 2012 | Queen Elizabeth II Graduate Scholarship in Science and Technology – \$15000 (<i>Provincial</i>) |

Professional Activities

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| 2021 | Program Committee, 23rd International Conference on Descriptive Complexity of Formal Systems (DCFS 2021) |
| 2018 | Program Committee, 22nd International Conference on Developments in Language Theory (DLT 2018) |
| 2016 | Graduate Committee, School of Computing, Queen’s University |
| 2016 | Councillor, Society of Graduate and Professional Students, Queen’s University |
| 2015 | Organizing Committee, 27th Canadian Conference on Computational Geometry (CCCG 2015) |

Journal Refereeing

- Discrete Mathematics & Theoretical Computer Science
- Fundamenta Informaticæ

- Information and Computation
- International Journal of Foundations of Computer Science
- Journal of Computational Biology
- Natural Computing
- Theoretical Computer Science

Conference Refereeing

- Algebraic Informatics (CAI) 2019
- Implementation and Application of Automata (CIAA) 2014, 2015, 2016, 2017, 2024, 2025
- Computability in Europe (CIE) 2017, 2018
- Descriptive Complexity of Formal Systems (DCFS) 2014, 2015, 2017, 2022, 2023, 2025
- Developments in Language Theory (DLT) 2020
- Language and Automata Theory and Applications (LATA) 2016, 2017
- Mathematical Foundations of Computer Science (MFCS) 2024
- ACM SIGCSE Technical Symposium (SIGCSE) 2026
- Current Trends in Theory and Practice of Computer Science (SOFSEM) 2025
- Symposium on Theoretical Aspects of Computer Science (STACS) 2021
- Unconventional Computation and Natural Computation (UCNC) 2018, 2019

Professional Memberships

2020– Association for Computing Machinery Special Interest Group on Computer Science Education (ACM SIGCSE)