

Daniel Gabrić
University of Guelph
50 Stone Road E, Guelph, ON N1G 2W1

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Email: dgabric@uoguelph.ca
Website: socs.uoguelph.ca/~dgabric

Education

- **University of Waterloo** Waterloo, Ontario
PhD Computer Science Sep. 2018 - Sep. 2022
 - Thesis: [On the Properties and Structure of Bordered Words and Generalizations](#)
 - Supervisor: [Jeffrey Shallit](#)
- **University of Guelph** Guelph, Ontario
MSc Computer Science Jan. 2017 - Aug. 2018
 - Thesis: [Constructing de Bruijn sequences by concatenating cycles of feedback shift registers](#)
 - Supervisor: [Joe Sawada](#)
- **University of Guelph** Guelph, Ontario
Honours B.Comp, Computer Science, Minor Mathematics Sep. 2013 - Dec. 2016

Professional Employment

- **Postdoctoral Fellow** Guelph, Ontario
School of Comp. Sci., University of Guelph Jan. 2024 - present
 - Supervisor: Joe Sawada
- **Postdoctoral Fellow** Winnipeg, Manitoba
Dept. of Math/Stats, University of Winnipeg Nov. 2022 - Nov. 2023
 - Supervisors: [James Currie](#) and [Narad Rampersad](#)

Publications

1. D. Gabrić and J. Sawada. Efficient construction of long orientable sequences. Accepted manuscript (CPM 2024), Arxiv preprint [arXiv:2401.14341](https://arxiv.org/abs/2401.14341) [cs.DS], available at <https://arxiv.org/abs/2401.14341>, 2024
2. D. Gabrić. Asymptotic bounds for the number of closed and privileged words. Arxiv preprint [arXiv:2206.14273](https://arxiv.org/abs/2206.14273) [math.CO], available at <https://arxiv.org/abs/2206.14273>, 2023
3. D. Gabrić. Ranking and unranking bordered and unbordered words. *Information Processing Letters* **184** (2023), 106452. doi: [10.1016/j.ipl.2023.106452](https://doi.org/10.1016/j.ipl.2023.106452)
4. D. Gabrić and J. Shallit. Smallest and largest block palindrome factorizations. In A. Frid and R. Mercas, editors, *Combinatorics on Words, WORDS 2023*, Vol. 13899 of *Lecture Notes in Computer Science*, pp. 181–191. Springer, Cham, 2023. doi: [10.1007/978-3-031-33180-0_14](https://doi.org/10.1007/978-3-031-33180-0_14)

5. D. Gabric. Mutual borders and overlaps. *IEEE Transactions on Information Theory* **68**(10) (2022), 6888–6893. doi: [10.1109/TIT.2022.3167935](https://doi.org/10.1109/TIT.2022.3167935)
6. D. Gabrić. Words that almost commute. *Discrete Mathematics* **345**(112898) (2022), 1–8. doi: [10.1016/j.disc.2022.112898](https://doi.org/10.1016/j.disc.2022.112898)
7. D. Gabrić and J. Sawada. Investigating the discrepancy property of de Bruijn sequences. *Discrete Mathematics* **345**(112780) (2022), 1–15. doi: [10.1016/j.disc.2021.112780](https://doi.org/10.1016/j.disc.2021.112780)
8. D. Gabrić, N. Rampersad, and J. Shallit. An inequality for the number of periods in a word. *International Journal of Foundations of Computer Science* **32**(05) (2021), 597–614. doi: [10.1142/S0129054121410094](https://doi.org/10.1142/S0129054121410094)
9. D. Gabrić and J. Shallit. The simplest binary word with only three squares. *RAIRO - Theoretical Informatics and Applications* **55**(3) (2021), 1–7. doi: [10.1051/ita/2021001](https://doi.org/10.1051/ita/2021001)
10. D. Gabrić, J. Shallit, and X. F. Zhong. Avoidance of split overlaps. *Discrete Mathematics* **344**(112176) (2021), 1–11. doi: [10.1016/j.disc.2020.112176](https://doi.org/10.1016/j.disc.2020.112176)
11. D. Gabrić, Š. Holub, and J. Shallit. Maximal state complexity and generalized de Bruijn words. *Information and Computation* (104689) (2021), 1–10. doi: [10.1016/j.ic.2021.104689](https://doi.org/10.1016/j.ic.2021.104689)
12. D. Gabrić and J. Shallit. Borders, palindrome prefixes, and square prefixes. *Information Processing Letters* **165** (2021), 106027. doi: [10.1016/j.ipl.2020.106027](https://doi.org/10.1016/j.ipl.2020.106027)
13. T. Clokie, D. Gabrić, and J. Shallit. Circularly squarefree words and unbordered conjugates: A new approach. In R. Mercaş and D. Reidenbach, editors, *Combinatorics on Words, WORDS 2019*, Vol. 11682 of *Lecture Notes in Computer Science*, pp. 133–144. Springer, Cham, 2019. doi: [10.1007/978-3-030-28796-2_10](https://doi.org/10.1007/978-3-030-28796-2_10)
14. D. Gabrić, Š. Holub, and J. Shallit. Generalized de Bruijn words and the state complexity of conjugate sets. In M. Hospodár, G. Jirásková, and S. Konstantinidis, editors, *Descriptive Complexity of Formal Systems, DCFS 2019*, Vol. 11612 of *Lecture Notes in Computer Science*, pp. 137–146. Springer, Cham, 2019. doi: [10.1007/978-3-030-23247-4_10](https://doi.org/10.1007/978-3-030-23247-4_10)
15. D. Gabric, J. Sawada, A. Williams, and D. Wong. A successor rule framework for constructing k -ary de Bruijn sequences and universal cycles. *IEEE Transactions on Information Theory* **66**(1) (2019), 679–687. doi: [10.1109/TIT.2019.2928292](https://doi.org/10.1109/TIT.2019.2928292)
16. D. Gabrić, J. Sawada, A. Williams, and D. Wong. A framework for constructing de Bruijn sequences via simple successor rules. *Discrete Mathematics* **341**(11) (2018), 2977–2987. doi: [10.1016/j.disc.2018.07.010](https://doi.org/10.1016/j.disc.2018.07.010)
17. D. Gabrić and J. Sawada. Constructing de Bruijn sequences by concatenating smaller universal cycles. *Theoretical Computer Science* **743** (2018), 12–22. doi: [10.1016/j.tcs.2018.06.039](https://doi.org/10.1016/j.tcs.2018.06.039)
18. D. Gabrić and J. Sawada. A de Bruijn sequence construction by concatenating cycles of the complemented cycling register. In S. Brlek, F. Dolce, C. Reutenauer, and É. Vandomme, editors, *Combinatorics on Words, WORDS 2019*, Vol. 10432 of *Lecture Notes in Computer Science*, pp. 49–58. Springer, Cham, 2017. doi: [10.1007/978-3-319-66396-8_6](https://doi.org/10.1007/978-3-319-66396-8_6)

Honours and Awards

- Ontario Graduate Scholarship (\$15,000) 2020 - 2021
- Presidents Graduate Scholarship (\$10,000) 2020 - 2021
- Math Domestic Graduate Student Award (\$6,000 per year) 2018 - 2022
- David R. Cheriton Graduate Scholarship (\$10,000 per year) 2018 - 2020
- Graduate Deans Scholarship (\$2000) 2017 - 2018
- Deans Scholarship (\$2000) 2015 - 2016
- Dr. James Linders Scholarship (\$400) 2015 - 2016
- Undergraduate Deans Honour List 2014 - 2016

Teaching

- **Instructor** University of Guelph
Summary of course(s) below *Jan. 2024 - present*
 - CIS*1910: Discrete Structures in Computing I (W24)
- **Instructor** University of Manitoba
Summary of course(s) below *Sep. 2023 - Dec. 2023*
 - COMP 2080: Analysis of Algorithms (F23)
- **Graduate Teaching Assistant** University of Waterloo
Summary of course(s) below *Sep. 2018 - May 2022*
 - MATH 643: Theory of Computation (F18, F20)
 - CS 240E: Data Structures and Data Management Enriched (W19, S19, W21)
 - CS 360: Introduction to Theory of Computing (F19, S20, S21, F21)
 - CS 240: Data Structures and Data Management (W20)
 - CS 462/662: Formal Languages and Parsing (W20, W21, W22)
- **Graduate Teaching Assistant** University of Guelph
Summary of course(s) below *Jan. 2017 - May 2018*
 - CIS*3490: The Analysis and Design of Computer Algorithms (W17, W18)
 - CIS*3150: Theory of Computation (F17)
- **Undergraduate Teaching Assistant** University of Guelph
Summary of course(s) below *Sep. 2015 - Dec. 2016*
 - CIS*3250: Software Design III (F15)
 - CIS*1500: Introduction to Programming (W16)
 - CIS*1200: Introduction to Computing (F16)

Talks

- D. Gabrić and J. Shallit. Smallest and largest block palindrome factorizations. 14th International Conference on Combinatorics on Words (WORDS 2023), June 12, 2023
- D. Gabrić. Mutual borders and overlaps. Algorithms and Complexity seminar, School of Computer Science, University of Waterloo, June 30, 2022
- D. Gabrić. Words that almost commute and anti-commute. Algorithms and Complexity seminar, School of Computer Science, University of Waterloo, March 10, 2022
- D. Gabrić. Words that almost commute. Day of short talks, One World Combinatorics on Words Seminar, November 22, 2021
- D. Gabrić. The maximum number of unbordered conjugates among binary words. Algorithms and Complexity seminar, School of Computer Science, University of Waterloo, November 3, 2021
- D. Gabrić. Unbordered conjugates of binary words. Cheriton Research Symposium, September 20, 2019
- T. Clokie, D. Gabrić, and J. Shallit. Circularly squarefree words and unbordered conjugates: a new approach. 12th International Conference on Combinatorics on Words (WORDS 2019), September 9, 2019
- D. Gabrić and J. Sawada. A de Bruijn sequences construction by concatenating cycles of the complemented cycling register. 11th International Conference on Combinatorics on Words (WORDS 2017), September 11, 2017
- D. Gabrić. De Bruijn sequence constructions based on concatenation schemes. 24th Ontario Combinatorics Workshop, June 10, 2017

Journal and Conference Review Activities

- Designs, Codes and Cryptography — 1 paper
- Discrete Mathematics — 1 paper
- European Journal of Combinatorics — 1 paper
- The Electronic Journal of Combinatorics — 3 papers
- IEEE Transactions on Information Theory — 1 paper
- SIAM Journal on Discrete Mathematics (SIDMA) — 1 paper
- Annual Symposium on Combinatorial Pattern Matching (CPM) — 2 papers
- International Colloquium on Automata, Languages, and Programming (ICALP) — 1 paper
- International Conference on Descrip. Complexity of Formal Systems (DCFS) — 2 papers
- International Conference on Developments in Language Theory (DLT) — 1 paper

Outreach Activities

- **Open problem seminar organizer** University of Waterloo
Summary below Sep. 2018 - May 2020
 - Organizer of a weekly seminar on open problems related to theoretical computer science and discrete mathematics
- **University of Guelph programming competition organizer** University of Guelph
Summary below Jan. 2016 - Aug. 2018
 - Co-facilitated 3 ACM-style programming competitions
 - Prepared problems for competition with Prof. Joe Sawada
- **Highschool programming competition preparation** Centennial CVI
Summary below May 2015 - May 2016
 - Prepared students at a local highschool for programming competitions, including the Canadian Computing Competition (CCC)
 - Prepared and presented lectures on common algorithms used in competitions