# Sungmin Kim, Ph.D. Candidate

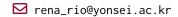✉ rena_rio@yonsei.ac.kr 🌐 https://renariodyne.github.io/

Research interests:

- String, subsequence, and pattern matching algorithms
- Formalization of language process models

## Education

2022 – Present 🔖 **Ph.D. candidate in Computer Science, Yonsei University**

2017 – 2022 🔖 **B.A. in English Language and Literature, Yonsei University**

🔖 **B.E. in Computer Science, Yonsei University**
Double major, Highest honors at graduation.

## Research Publications

### Journal Articles

**1** **S. Kim**, S.-K. Ko, and Y.-S. Han, "Simon's congruence pattern matching," *Theoretical Computer Science*, 2024, to appear.

**2** **S. Kim**, Y.-S. Han, S.-K. Ko, and K. Salomaa, "On Simon's congruence closure of a string," *Theoretical Computer Science*, vol. 972, p. 114 078, 2023.

### Conference Proceedings

**1** P. Fleischmann, **S. Kim**, T. Koß, *et al.*, "Matching patterns with variables under Simon's congruence," in *Proceedings of the 17th International Conference on Reachability Problems*, vol. 14235, 2023, pp. 155–170.

**2** Y.-S. Han, **S. Kim**, S.-K. Ko, and K. Salomaa, "Existential and universal width of alternating finite automata," in *Proceedings of the 25th International Conference on Descriptional Complexity of Formal Systems*, vol. 13918, 2023, pp. 51–64.

**3** **S. Kim** and Y.-S. Han, "양자 컴퓨터 기반 문자열 간 사이먼 합동 판별 알고리즘," in *한국정보과학회 2023 한국소프트웨어종합학술대회 논문집*, 2023, pp. 299–301.

**4** **S. Kim**, Y.-S. Han, S.-K. Ko, and K. Salomaa, "On the Simon's congruence neighborhod of languages," in *Proceedings of the 27th International Conference on Developments in Language Theory*, vol. 13911, 2023, pp. 168–181.

**5** **S. Kim**, Y.-S. Han, S.-K. Ko, and K. Salomaa, "On Simon's congruence closure of a string," in *Proceedings of the 24th International Conference on Descriptional Complexity of Formal Systems*, vol. 13439, 2022, pp. 127–141.

**6** **S. Kim**, S.-K. Ko, and Y.-S. Han, "Simon's congruence pattern matching," in *Proceedings of the 33rd International Symposium on Algorithms and Computation*, vol. 248, 2022, 60:1–60:17.

## Experience

### Research Experience

2022 – Present 🔖 Researcher at ToC lab

2024 🔖 Co-leader of the Yonsei Theory Study Group, Information Theory series

## Experience (continued)

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| Jan. 2024 | Participant of the IBM-Yonsei Quantum Computing Application Course |
| Fall 2023 | Participant of the Yonsei Theory Study Group, Quantum Computing series |
| Summer 2023 | Visiting research at Göttingen University, Germany |
| Spring 2023 | Participant of the Yonsei Theory Study Group, Mechanism Design series |
| Summer 2022 | Visiting research at Queen's University, Canada |
| 2020 – 2021 | Undergrad research intern at ToC lab |

## Teaching Experience

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| Fall 2023 | Teaching Assistant for the undergrad Data Structures course |
| Spring 2023, 2024 | Teaching Assistant for the undergrad Automata and Formal Languages course |

## Miscellaneous Experience

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| 2022, 2023 | ACM International Collegiate Programming Contest (Korea Regional) Question Writer |

# Achievements

## Awards

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| 2022 | **Highest honors at graduation**, Yonsei University. |
| Fall 2021 | **Highest honors**, Yonsei University. |
| Fall 2020 | **Highest honors**, Yonsei University. |
| Spring 2019 | **Honors**, Yonsei University. |
| Spring 2018 | **Highest honors**, Yonsei University. |
| Fall 2017 | **Highest honors**, Yonsei University. |
| Spring 2017 | **Highest honors**, Yonsei University. |

## Graduate Scholarships

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| 2022 – Present | **Accelerated degree program scholarship** |
| 2023 | **Academic research support ARF fellowship grant** |

## Certification

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| 2024 | **TOEIC official score 990** (Listening 495, Reading 495). |
| 2021 | **Certified Level 4 in HSK** (expired). |

# References

Available on Request