

# Sungmin Kim, Ph.D. Candidate

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🌐 <https://renariodyne.github.io/>



Research interests:

- String, subsequence, and pattern matching algorithms
- Quantum algorithms and quantum computing

## Education

- 2022 – Present    📖 **Ph.D. candidate, Yonsei University**
- 2017 – 2022    📖 **B.A. English Language and Literature, Yonsei University**
- 📖 **B.E. Computer Science, Yonsei University**  
Double major, Highest honors at graduation.

## Research Publications

### Journal Articles

- 1    **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 Descriptive 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 한국소프트웨어융합학술대회 논문집*, 2023, pp. 299–301.
- 4    **S. Kim**, Y.-S. Han, S.-K. Ko, and K. Salomaa, “On the Simon’s congruence neighborhood 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 Descriptive 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 (topic TBD)
- Jan. 2024    📖 Participant of the IBM-Yonsei Quantum Computing Application Course
- Fall 2023    📖 Participant of the Yonsei Theory Study Group, Quantum Computing series

## Experience (continued)


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- 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

- Fall 2023     Teaching Assistant for the undergrad Data Structures course
- Spring 2023     Teaching Assistant for the undergrad Automata and Formal Languages course








## Miscellaneous Experience

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



## Achievements

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### Awards

- 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

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

### Certification

- 2021     **Certified Level 4 in HSK.**

## References

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Available on Request