Özlem Salehi Köken

CONTACT INFORMATION

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RESEARCH INTERESTS

Quantum computing, quantum annealing, quantum optimization, automata theory and formal languages, computational complexity, decidability

EDUCATION

Ph.D. in Computer Engineering September 2013 – June 2019
Boğaziçi University, İstanbul, Turkey

Thesis: Extended Models of Finite Automata
Advisor: Prof. A. C. Cem Say
GPA: 3.94 / 4

M.S. in Computer Engineering September 2011 – August 2013
Boğaziçi University, İstanbul, Turkey

Thesis: Real-Time Vector Automata
Advisor: Prof. A. C. Cem Say
GPA: 3.94 / 4

B.S. in Mathematics September 2007 – June 2011
Boğaziçi University, İstanbul, Turkey

Senior Thesis: A Survey on Monte Carlo Methods in PageRank Computation
Advisor: Assist. Prof. Serdar Altok
GPA: 3.00 / 4

WORK EXPERIENCE

Postdoctoral Researcher February 2021 –
Institute of Theoretical and Applied Informatics, Polish Academy of Sciences

Instructor September 2019 – January 2021
Department of Computer Science, Özyeğin University

Instructor June 2019 – August 2019
Department of Computer Engineering, Boğaziçi University

Teaching Assistant June 2014 – June 2019
Department of Computer Engineering, Boğaziçi University

Teaching Assistant September 2011 - June 2014
Department of Mathematics, Boğaziçi University

Student Assistant February 2010 - June 2011
Department of Computer Engineering, Boğaziçi University

JOURNAL PAPERS

- Ö. Salehi, Z. Seskir and İ. Tepe. A computer science-oriented approach to introduce quantum computing to a new audience. IEEE Transactions on Education, 2021.
- Ö. Salehi, A. Yakaryılmaz, and A. C. C. Say. New results on vector and homing vector automata. International Journal of Foundations of Computer Science, 30(8): 1335-1361, 2019.
- Ö. Salehi, F. D'Alessandro, and A. C. C. Say. Language classes associated with automata over matrix groups. RAIRO Theoretical Informatics and Applications, 52(2-3-4): 253-268, 2018.
- Ö. Salehi, A. C. C. Say, and F. D'Alessandro. Homing vector automata. RAIRO Theoretical Informatics and Applications, 50(4): 371-386, 2016.

CONFERENCE PAPERS

- U. Birkan, Ö. Salehi, V. Olejar, C. Nurlu, and A. Yakaryılmaz. Implementing quantum finite automata algorithms on noisy devices. In Proceedings of the International Conference on Computational Science, ICCS'21, pages 3-16, Springer, 2021.
- Şekerci and Ö. Salehi. Language inference with multi-head automata through reinforcement learning. In Proceedings of the International Joint Conference on Neural Networks, IJCNN'20, pages 1-8, 2020.
- Ö. Salehi and A. C. C. Say. Extended finite automata and decision problems for matrix semigroups. In Short Paper Proceedings of the Tenth Workshop on Non-Classical Models of Automata and Applications, NCMA'18, pages 45-52, 2018.
- Ö. Salehi, F. D'Alessandro, and A. C. C. Say. Generalized results on monoids as memory. In Proceedings of the 15th International Conference on Automata and Formal Languages, AFL'17, pages 234-247, 2017.
- Ö. Salehi, F. D'Alessandro, and A. C. C. Say. Language classes associated with automata over matrix groups. In Proceedings of the Eighth Workshop on Non-Classical Models of Automata and Applications, NCMA'16, pages 287-300, 2016.
- Ö. Salehi and A. C. C. Say. Homing vector automata. In Proceedings of the Seventh Workshop on Non-Classical Models of Automata and Applications, NCMA'15, pages 193-205, 2015.
- Ö. Salehi, A. Yakaryılmaz, and A. C. C. Say. Real-time vector automata. In Proceedings of the 19th International Conference on Fundamentals of Computation Theory, FCT'13, pages 293-304. Springer-Verlag, 2013.

PREPRINTS

- L. Botelho, A. Glos, A. Kundu, J.A. Miszczak, Ö. Salehi, Z. Zimborás. Error mitigation for variational quantum algorithms through mid-circuit measurements. arXiv:2108.10927, 2021.
- Ö. Salehi, A. Yakaryılmaz. State-efficient QFA algorithm for quantum computers. arXiv:2107.02262, 2021.
- K. Domino, A. Kundu, Ö. Salehi, K. Krawiec. Quadratic and higher-order unconstrained binary optimization of railway dispatching problem for quantum computing. arXiv:2107.03234, 2021.
- Ö. Salehi, A. Glos, J.A. Miszczak. Unconstrained binary models of the Travelling Salesman Problem variants for quantum optimization. arXiv:2106.09056, 2021.

PROFESSIONAL ACTIVITIES

Reviewer

- Fundamenta Informaticae (2018)
- 45th International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM 2019)

Program Committee

- International Conference On Computational Science - Quantum Computing Workshop Track (QCW 2021)
- KKIO Software Engineering Conference - Software Engineering in Quantum Computing Track (KKIO 2021)
- Workshop on Non-Classical Models of Automata and Applications (NCMA 2018, NCMA 2020)

Coordinator

- QTurkey - Quantum technologies community in Turkey (Founding member)
- QWorld Education Department - A global network collaborating on education and implementation of quantum technologies and research activities

TEACHING EXPERIENCE

Instructor

Özyeğin University

- Quantum Computing
- Computer Programming
- Algorithm Analysis

Boğaziçi University

- Formal Languages and Automata Theory

Teaching Assistant

Boğaziçi University

- Formal Languages and Automata Theory
- Introduction to Computing
- Discrete Computational Structures
- Algorithm Analysis

- Discrete Mathematics
- Probability Theory
- Matrix Theory
- Statistics
- Calculus II

VOLUNTARY EXPERIENCE

Instructor and organizer

QTurkey, QWorld June 2019 –

- QBronze and QSilver (*Organizing and teaching at over 10 introductory and intermediate level quantum programming workshops including an online global summer school with thousand participants)*

Instructor

Nesin Mathematics Village, Şirince, İzmir, Turkey August 2016

- Formal Languages and Automata Theory *(One-week introductory course for high school students)*

AWARDS AND SCHOLARSHIPS

- **Grant**, SIGSOFT - ACM Special Interest Group on Software Engineering (June 2017)
  Travel grant to attend the ACM 50th Celebration of the Turing Award in San Francisco, USA

- **Scholarship,** TÜBİTAK (2013 - 2017)
  Given to successful Ph.D. students based on B.S. and M.S. GPAs, YDS and ALES scores

- **Honors Certificate**, Boğaziçi University (June 2011)
  Given to graduates with a GPA of 3.00 or higher

- **Scholarship***,* Kredi Yurtlar Kurumu (2007 - 2011)
  For ranking 42nd in 2007 Turkish National University Entrance Foreign Language Exam

LANGUAGES

Turkish (native), English (fluent), French (intermediate)