Beyazit Yalcinkaya

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Research Interests

Formal methods, cyber-physical systems, AI/ML, AI safety, statistical verification, compositional analysis, runtime monitoring/assurance, goal-conditioned RL, representation learning.

Education

2021 - Present	**Ph.D. in Computer Science** Advised by Sanjit A. Seshia *University of California, Berkeley, USA*
2015 - 2020	**B.Sc. in Computer Engineering** Valedictorian of the department *Middle East Technical University, Ankara, Turkey*

Research Experience

2021 - Present	**Graduate Student Researcher** Supervised by Sanjit A. Seshia *University of California, Berkeley, USA*
Summer 2023	**Applied Scientist Intern** Supervised by Ankush Desai *Amazon Web Services, East Palo Alto, USA*
Summer 2022	**Applied Scientist Intern** Supervised by Ankush Desai *Amazon Web Services, Cupertino, USA*
2017 - 2020	**Undergraduate Research Assistant** Supervised by Ebru Aydin Gol *University of California, Berkeley, USA*
Summer 2019	**Research Intern** Supervised by George Candea *École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*
Summer 2018	**Research Intern** Supervised by Björn B. Brandenburg *Max Planck Institute for Software Systems, Kaiserslautern, Germany*

Teaching Experience

Fall 2022	**Graduate Student Instructor** EE/CS 149/C249A Introduction to Embedded Systems *University of California, Berkeley, USA*
Fall 2017	**Undergraduate Teaching Assistant** CENG 230 Introduction to C Programming *Middle East Technical University, Ankara, Turkey*

Refereed Conference and Journal Papers

[1] *Beyazit Yalcinkaya**, Niklas Lauffer*, Marcell Vazquez-Chanlatte*, and Sanjit A. Seshia, **Compositional Automata Embeddings for Goal-Conditioned Reinforcement Learning**, *to appear in NeurIPS*, 2024. *Equal contribution.

[2] *Beyazit Yalcinkaya*, Hazem Torfah, Daniel J. Fremont, and Sanjit A. Seshia, **Compositional Simulation-Based Analysis of AI-Based Autonomous Systems for Markovian Specifications**, *International Conference on Runtime Verification (RV)*, 2023.

[3] *Beyazit Yalcinkaya*, Hazem Torfah, Ankush Desai, and Sanjit A. Seshia, **ULGEN: A Runtime Assurance Framework for Programming Safe Cyber-Physical Systems**, *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, 2023.

[4] Niklas Lauffer*, *Beyazit Yalcinkaya**, Marcell Vazquez-Chanlatte, Ameesh Shah, and Sanjit A. Seshia, **Learning deterministic finite automata decompositions from examples and demonstrations**, *Formal Methods in Computer-Aided Design (FMCAD)*, 2022. *Equal contribution.

[5] Mert Ergurtuna, *Beyazit Yalcinkaya*, and Ebru Aydin Gol, **An automated system repair framework with signal temporal logic**, *Acta Informatica*, 2022.

[6] *Beyazit Yalcinkaya* and Ebru Aydin Gol, **Clock reduction in timed automata while preserving design parameters**, *International Conference on Formal Methods in Software Engineering (FormaliSE)*, 2019.

[7] *Beyazit Yalcinkaya*, Mitra Nasri, and Björn B. Brandenburg, **An exact schedulability test for non-preemptive self-suspending real-time tasks**, *Design, Automation and Test in Europe Conference (DATE)*, 2019.

Refereed Workshop Papers

[8] *Beyazit Yalcinkaya**, Niklas Lauffer*, Marcell Vazquez-Chanlatte, and Sanjit A. Seshia, **Automata Conditioned Reinforcement Learning with Experience Replay**, *NeurIPS 2023 Workshop on Goal-Conditioned Reinforcement Learning*, 2023. *Equal contribution.

Awards and Honors

Fall 2021	**University of California, Berkeley, EECS Department Fellowship**
2018 - 2020	**Scientific and Technological Research Council of Türkiye Research Fellowship**
2019	**Summer@EPFL Fellowship**