

Asst. Prof. EBRU AYDIN GÖL

Personal Information

Office Phone: [+90 312 210 5540](tel:+903122105540)

Email: ebrugol@metu.edu.tr

Web: <https://cps.ceng.metu.edu.tr>

Address: ebrugol@metu.edu.tr

International Researcher IDs

ScholarID: iO5JVYIAAAAJ

ORCID: 0000-0002-5813-9836

Publons / Web Of Science ResearcherID: N-4741-2017

ScopusID: 55515138200

Yoksis Researcher ID: 249121

Education Information

Doctorate, Boston University, Sistem Muhendisligi, United States Of America 2010 - 2014

Postgraduate, Ecole Polytechnique Fédérale de Lausanne, EPFL (The Federal Institute of Technology, Lausanne), Bilisim Muhendisligi, Switzerland 2008 - 2010

Undergraduate Minor, Middle East Technical University, Faculty of Arts and Sciences, Department of Mathematics, Turkey 2005 - 2008

Undergraduate, Middle East Technical University, Faculty of Engineering, Department of Computer Engineering, Turkey 2003 - 2008

Dissertations

Doctorate, Formal verification and controller synthesis for discrete-time systems, Boston University, Sistem Muhendisligi, 2014

Postgraduate, Co-evolution for Roombots, Ecole Polytechnique Fédérale De Lausanne, Epfl (The Federal Institute Of Technology, Lausanne), Bilisim Muhendisligi, 2010

Research Areas

Discrete Time Systems and Computer Control, Theoretical Computer Science, Automated Problem Solving, Theorem Proving and Logical Reasoning, Software

Academic Titles / Tasks

Assistant Professor, Middle East Technical University, Faculty of Engineering, Department of Computer Engineering, 2018 - Continues

Assistant Professor, Middle East Technical University, Faculty of Engineering, Department of Computer Engineering, 2016 - 2018

Advising Theses

Aydın Göl E., Synthesis of past time signal temporal logic formulas using monotonicity properties, Postgraduate, M.ERGÜRTUNA(Student), 2020

Aydın Göl E., Synthesis of signal temporal logic formulas with genetic algorithms, Postgraduate, S.KAĞAN(Student), 2019

AYDIN GÖL E., Synthesis of formal control strategies for traffic systems, Postgraduate, K.ÇAĞRI(Student), 2018

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Field teams coordination for earthquake-damaged distribution system energization**
IŞIK İ., AYDIN GÖL E.
Reliability Engineering and System Safety, vol.245, 2024 (SCI-Expanded)
- II. **MDP based real time restoration for earthquake damaged active distribution systems**
Arpali O. Y., Yilmaz U. C., GÜLDÜR ERKAL B., AYDIN GÖL E., GÖL M.
Electric Power Systems Research, vol.218, 2023 (SCI-Expanded)
- III. **An automated system repair framework with signal temporal logic**
Ergurtuna M., Yalcinkaya B., Aydın Göl E.
Acta Informatica, vol.59, no.2-3, pp.183-209, 2022 (SCI-Expanded)
- IV. **TIMED AUTOMATA ROBUSTNESS ANALYSIS VIA MODEL CHECKING**
Bendik J., Sencan A., AYDIN GÖL E., Cerna I.
LOGICAL METHODS IN COMPUTER SCIENCE, vol.18, no.3, 2022 (SCI-Expanded)
- V. **Control synthesis for parametric timed automata under reachability**
GOL E.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.29, no.3, pp.1751-1764, 2021 (SCI-Expanded)
- VI. **Synthesis of Monitoring Rules with STL**
Aydın S. K., AYDIN GÖL E.
JOURNAL OF CIRCUITS SYSTEMS AND COMPUTERS, vol.29, no.11, 2020 (SCI-Expanded)
- VII. **A Formal Methods Approach to Pattern Recognition and Synthesis in Reaction Diffusion Networks**
Bartocci E., AYDIN GÖL E., Haghighi I., Belta C.
IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS, vol.5, no.1, pp.308-320, 2018 (SCI-Expanded)
- VIII. **Formal Methods for Discrete-Time Dynamical Systems Background**
Belta C., Yordanov B., AYDIN GÖL E.
FORMAL METHODS FOR DISCRETE-TIME DYNAMICAL SYSTEMS, vol.89, pp.257-271, 2017 (SCI-Expanded)
- IX. **Traffic Network Control From Temporal Logic Specifications**
Coogan S., AYDIN GÖL E., Arcak M., Belta C.
IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS, vol.3, no.2, pp.162-172, 2016 (SCI-Expanded)
- X. **Temporal logic model predictive control**
AYDIN GÖL E., Lazar M., Belta C.
AUTOMATICA, vol.56, pp.78-85, 2015 (SCI-Expanded)
- XI. **Finite Bisimulations for Switched Linear Systems**
AYDIN GÖL E., Ding X., Lazar M., Belta C.
IEEE TRANSACTIONS ON AUTOMATIC CONTROL, vol.59, no.12, pp.3122-3134, 2014 (SCI-Expanded)
- XII. **Language-Guided Controller Synthesis for Linear Systems**
AYDIN GÖL E., Lazar M., Belta C.
IEEE TRANSACTIONS ON AUTOMATIC CONTROL, vol.59, no.5, pp.1163-1176, 2014 (SCI-Expanded)
- XIII. **Time-constrained temporal logic control of multi-affine systems**
AYDIN GÖL E., Belta C.
NONLINEAR ANALYSIS-HYBRID SYSTEMS, vol.10, pp.21-33, 2013 (SCI-Expanded)

Articles Published in Other Journals

I. Formel Yaklaşımlar ile Sürüm Değerlendirme

AYDIN GÖL E.

Acta Infologica, vol.5, no.1, pp.129-140, 2021 (Peer-Reviewed Journal)

Books & Book Chapters

I. Formal Methods for Discrete-Time Dynamical Systems

Belta C., Yordanov B., Aydın Göl E.

Springer, London/Berlin , Chur, 2017

II. A Plume Tracking Algorithm Based on Crosswind Formations

Lochmatter T., AYDIN GÖL E., Navarro I., Martinoli A.

in: Springer Tracts in Advanced Robotics, , Editor, Springer Berlin Heidelberg, pp.91-102, 2013

Refereed Congress / Symposium Publications in Proceedings

I. Optimal Policy Synthesis from A Sequence of Goal Sets with An Application to Electric Distribution System Restoration

Isik I., ARPALI O. Y., AYDIN GÖL E.

7th IFAC Conference on Analysis and Design of Hybrid Systems (ADHS), Brussels, Belgium, 7 - 09 July 2021, vol.54, pp.271-276

II. MDP based Decision Support for Earthquake Damaged Distribution System Restoration

ARPALI O. Y., YILMAZ U. C., AYDIN GÖL E., GÜLDÜR ERKAL B., GÖL M.

IEEE-PES General Meeting, 2 - 06 August 2020

III. Classification of Time-Series Data using ptSTL

Ergurtuna M., Gol E.

28th Signal Processing and Communications Applications Conference (SIU), ELECTR NETWORK, 5 - 07 October 2020

IV. Synthesis of Controllable ptSTL Formulas

Saglam I., Gol E.

28th Signal Processing and Communications Applications Conference (SIU), ELECTR NETWORK, 5 - 07 October 2020

V. Learning Parameters of ptSTL Formulas with Backpropagation

Ketenci A., Gol E.

28th Signal Processing and Communications Applications Conference (SIU), ELECTR NETWORK, 5 - 07 October 2020

VI. Synthesis of Monitoring Rules via Data Mining

ketenci a., AYDIN GÖL E.

American Control Conference, 10 - 12 July 2019

VII. Clock Reduction in Timed Automata While Preserving Design Parameters

Yancinkaya B., Aydın Göl E.

2019 IEEE/ACM 7th International Conference on Formal Methods in Software Engineering (FormaliSE), Montreal, Canada, 27 May 2019

VIII. Optimizing Parameters of Signal Temporal Logic Formulas with Local Search

Aydin S. K., AYDIN GÖL E.

27th Signal Processing and Communications Applications Conference (SIU), Sivas, Turkey, 24 - 26 April 2019

IX. Cause Mining and Controller Synthesis with STL

Saglam I., AYDIN GÖL E.

58th IEEE Conference on Decision and Control (CDC), Nice, France, 11 - 13 December 2019, pp.4589-4594

- X. **An Efficient Formula Synthesis Method with Past Signal Temporal Logic**
Ergurtuna M., AYDIN GÖL E.
5th IFAC Conference on Intelligent Control and Automation Sciences (ICONS), Belfast, United Kingdom, 21 - 23 August 2019, vol.52, pp.43-48
- XI. **A Novel MDP Based Decision Support Framework to Restore Earthquake Damaged Distribution Systems**
AYDIN GÖL E., GÜLDÜR ERKAL B., GÖL M.
IEEE PES Innovative Smart Grid Technologies Europe (IEEE ISGT-Europe), Bucharest, Romania, 29 September - 02 October 2019
- XII. **Formal Control of Traffic Systems via Network Decomposition**
Bardakci K. C., Aydın Göl E.
American Control Conference, Wisconsin, United States Of America, 27 - 29 June 2018
- XIII. **On the use of genetic algorithms for synthesis of signal temporal logic formulas**
Aydin S. K., Aydın Göl E.
2018 26th Signal Processing and Communications Applications Conference (SIU), İzmir, Turkey, 2 - 05 May 2018
- XIV. **Efficient Online Monitoring and Formula Synthesis with Past STL**
Aydın Göl E.
2018 5th International Conference on Control, Decision and Information Technologies (CoDIT), Thessaloniki, Greece, 10 - 13 April 2018
- XV. **Trafik Aglarını Bölüntüleyerek Formel Kontrol Stratejilerinin Üretilmesi**
Bardakci K. C., Aydın Göl E.
25. SİNYAL İŞLEME ve İLETİŞİM UYGULAMALARI KURULTAYI, Antalya, Turkey, 15 - 18 May 2017
- XVI. **Synthesis of Formal Control Strategies for Traffic Networks via Partitioning**
Bardakci K. C., AYDIN GÖL E.
25th Signal Processing and Communications Applications Conference (SIU), Antalya, Turkey, 15 - 18 May 2017
- XVII. **Controlling a network of signalized intersections from temporal logical specifications**
Coogan S., AYDIN GÖL E., Arcak M., Belta C.
2015 American Control Conference (ACC), Chicago, IL, USA, 1 - 03 July 2015
- XVIII. **A formal methods approach to pattern synthesis in reaction diffusion systems**
AYDIN GÖL E., Bartocci E., Belta C.
53rd IEEE Conference on Decision and Control, Los Angeles, CA, USA, 15 - 17 December 2014
- XIX. **An additive cost approach to optimal Temporal Logic control**
AYDIN GÖL E., Belta C.
2014 American Control Conference, Portland, OR, USA, 4 - 06 June 2014
- XX. **Temporal logic inference for classification and prediction from data**
Kong Z., Jones A., Medina A. A., AYDIN GÖL E., Belta C.
Proceedings of the 17th international conference on Hybrid systems: computation and control - HSCC '14, Berlin, Germany, 15 - 17 April 2014
- XXI. **Data driven verification of synthetic gene networks**
AYDIN GÖL E., Densmore D., Belta C.
52nd IEEE Conference on Decision and Control, Firenze, 10 - 13 December 2013
- XXII. **Temporal logic model predictive control for discrete time systems**
AYDIN GÖL E., Lazar M.
Proceedings of the 16th international conference on Hybrid systems: computation and control - HSCC '13, Philadelphia, Pennsylvania, USA, 8 - 11 April 2013
- XXIII. **Finite bisimulations for switched linear systems**
AYDIN GÖL E., Ding X., Lazar M., Belta C.
2012 IEEE 51st IEEE Conference on Decision and Control (CDC), Maui, HI, USA, 10 - 13 December 2012
- XXIV. **A Plume Tracking Algorithm Based on Crosswind Formations**
Lochmatter T., Goel E., Navarro I., Martinoli A.

10th International Symposium on Distributed Autonomous Robotic Systems, Lausanne, Switzerland, 1 - 03 November 2010, vol.83, pp.91-93

- XXV. **Language guided controller synthesis for discrete time linear systems**
AYDIN GÖL E., Lazar M., Belta C.
Proceedings of the 15th ACM international conference on Hybrid Systems: Computation and Control - HSCC '12, Beijing, China, 17 - 19 April 2012, vol.7, pp.320-322
- XXVI. **Experimentally driven verification of synthetic biological circuits**
Yordanov B., Appleton E., Ganguly R., AYDIN GÖL E., Carr S. B., Bhatia S., Haddock T., Belta C., Densmore D.
2012 Design, Automation & Test in Europe Conference & Exhibition (DATE), Dresden, Germany, 12 - 16 March 2012
- XXVII. **Time Constrained Temporal Logic Control of Multi Affine Systems**
AYDIN GÖL E., Belta C.
4th IFAC Conference on Analysis and Design of Hybrid Systems, 06 June 2012, vol.45, pp.102-107
- XXVIII. **Locomotion Gait Optimization For Modular Robots; Coevolving Morphology and Control**
Pouya S., Aydin E., Moeckel R., Ijspeert A. J.
2nd European Future Technologies Conference and Exhibition (FET), Budapest, Hungary, 4 - 06 May 2011, vol.7, pp.320-322

Supported Projects

Aydın Göl E., H2020 Project, Automating Timed Automata Design, 2018 - 2020

AYDIN GÖL E., AYDIN S. K., Project Supported by Higher Education Institutions, Formel Metotlar Kullanılarak İzleme Sistemi Geliştirilmesi ve İzlenecek Metrik Gereksinimlerinin Veri Bazlı Sentezi, 2017 - 2019

AYDIN GÖL E., TUBITAK Project, Trafik Sistemlerinin Formel Metotlar Kullanılarak Kontrol Edilmesi, 2016 - 2017

Activities in Scientific Journals

Nonlinear Analysis-Hybrid Systems, Committee Member, 2019 - Continues

Scientific Refereeing

IFAC Conference on Analysis and Design of Hybrid Systems, Conference Paper (Full Text), February 2018

IFAC Conference on Analysis and Design of Hybrid Systems, Conference Paper (Full Text), February 2018

Metrics

Publication: 44

Citation (WoS): 215

Citation (Scopus): 334

H-Index (WoS): 9

H-Index (Scopus): 10