

## Asst. Prof. EBRU AYDIN GÖL

### Personal Information

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### Education Information

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

Post Graduate, 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

Under Graduate, 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

Post Graduate, 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, Post Graduate, M.ERGÜRTUNA(Student), 2020

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

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

## Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- **Synthesis of Monitoring Rules with STL**  
Aydın S. K. , AYDIN GÖL E.  
JOURNAL OF CIRCUITS SYSTEMS AND COMPUTERS, vol.29, 2020 (Journal Indexed in SCI)
- **A Formal Methods Approach to Pattern Recognition and Synthesis in Reaction Diffusion Networks**  
Bartocci E., AYDIN GÖL E., Haghghi I., Belta C.  
IEEE TRANSACTIONS ON CONTROL OF NETWORK SYSTEMS, vol.5, pp.308-320, 2018 (Journal Indexed in SCI)
- **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 (Journal Indexed in SCI)
- **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, pp.162-172, 2016 (Journal Indexed in SCI)
- **Temporal logic model predictive control**  
AYDIN GÖL E., Lazar M., Belta C.  
AUTOMATICA, vol.56, pp.78-85, 2015 (Journal Indexed in SCI)
- **Finite Bisimulations for Switched Linear Systems**  
AYDIN GÖL E., Ding X., Lazar M., Belta C.  
IEEE TRANSACTIONS ON AUTOMATIC CONTROL, vol.59, pp.3122-3134, 2014 (Journal Indexed in SCI)
- **Language-Guided Controller Synthesis for Linear Systems**  
AYDIN GÖL E., Lazar M., Belta C.  
IEEE TRANSACTIONS ON AUTOMATIC CONTROL, vol.59, pp.1163-1176, 2014 (Journal Indexed in SCI)
- **Time-constrained temporal logic control of multi-affine systems**  
AYDIN GÖL E., Belta C.  
NONLINEAR ANALYSIS-HYBRID SYSTEMS, vol.10, pp.21-33, 2013 (Journal Indexed in SCI)

## Books & Book Chapters

- **Formal Methods for Discrete-Time Dynamical Systems**  
Belta C., Yordanov B., Aydın Göl E.  
Springer, London/Berlin , Chur, 2017
- **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

- **Synthesis of Monitoring Rules via Data Mining**  
ketenci a., AYDIN GÖL E.  
American Control Conference, 10 - 12 July 2019
- **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
- **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

● **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

● **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

● **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

● **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

● **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

● **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

● **Trafik Ağlarını Bölüntüleyerek Formel Kontrol Stratejilerinin Üretilmesi**

Bardakci K. C. , Aydın Göl E.

25. SİNYAL İŞLEME ve İLETİŞİM UYGULAMALARI KURULTAYI, Antalya, Turkey, 15 - 18 May 2017

● **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

● **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

● **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

● **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

● **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

● **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

● **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

● **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

### ● 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

### ● 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

## Supported Projects

Bostancı E., Aydın Göl E., Göl M., Tüdeş Yaman H., TÜBİTAK Project, Mikro Şebeke Uygulamaları İçin Elektrikli Araç  
Batarya Kullanımının Modellenmesi Ve Enerji İhtiyacının Tahmin Edilmesi, 2020 - 2022

Şahin E., Koku A. B. , Turgut A. E. , Saranlı U., Kalkan S., Keysan O., Cinbiş R. G. , Akbaş E., Ankaralı M. M. , Saranlı A., et al.,  
CB Strateji ve Bütçe Başkanlığı (Kalkınma Bakanlığı) Projesi, ROBOTİK TEKNOLOJİLERİ ARAŞTIRMA, GELİŞTİRME ve  
EĞİTİM MERKEZİ (ROMER), 2019 - 2022

Göl M., Aydın Göl E., Güldür Erkal B., TÜBİTAK Project, Depremde Zarar Görmüş Orta Gerilim Elektrik Dağıtım  
Şebekelerinde Ayağa Kaldırma İçin Karar Destek Yöntemlerinin Geliştirilmesi, 2018 - 2020

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

Aydın Göl E., TÜBİTAK Project, Formel Yaklaşımlar ile Sürüm Değerlendirme ve İzleme Sistemlerinin Geliştirilmesi, 2017 -  
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

Aydın Göl E., TÜBİTAK Project, Trafik Sistemlerinin Formel Metotlar Kullanılarak Kontrol Edilmesi, 2016 - 2018

## 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

## Citations

Total Citations (WOS):112

h-index (WOS):7