Gökhan Göksu

Contact Information	Yıldız Technical University, Department of Mathematical Engineering, 34220, Esenler, Istanbul, Türkiye	☎ (TR): +90 (533) 477 58 69 ✉: gokhan.goksu@yildiz.edu.tr 🐾: gokhangoksu.github.io

Research Interests

Dynamical systems with a particular emphasis to:

- Switched systems

- Time-delay systems

Robust stability with a particular emphasis to "input-to-state stability" related properties

Control engineering applications especially on "freeway traffic control"

Education

Istanbul Technical University (ITU), Istanbul, Türkiye

Ph.D., Mathematical Engineering, January 2020
- Thesis Title: *Finite-Time Control for Switched Linear Systems with Interval Time-Delay.*
- Supervisor: Prof. Ulviye Başer Ilgaz

M.Sc., Transportation Engineering, July 2013

B.Sc., Mathematical Engineering (Major), June 2011
- *Honor List*
- Physics Engineering (Minor)
- Erasmus Exchange Student at University of Stuttgart, Summer 2010
- One year English Prep. Class, September 2006 to June 2007

Professional Experience

Application Unit Lecturer   February 2022 till now
Department of Mathematical Engineering
Yıldız Technical University

Postdoctoral Scholar   May 2020 till December 2021
Intelligent Transportation Systems Research Laboratory
Istanbul Technical University
I worked with Prof. Hilmi Berk Çelikoğlu on:
- TÜBİTAK 1001 - The Scientific and Technological Research Project namely "Environment Friendly Optimization of Transportation Networks: Analysis Over Small Sized Real Network", National Research Project No 218M307.

Scientific Visitor   February 2019 till April 2020
Laboratoire des Signaux et Systèmes (L2S)
CentraleSupélec - Université Paris-Saclay
I worked with Prof. Antoine Chaillet on:
- Input-to-state stability characterization of time-delay systems with pointwise dissipation,
- Cascades of integral input-to-state stability time-delay systems

Compulsory Military Training   February 2016 till July 2016
NBC Defence Corps, Turkish Armed Forces, Konya, Türkiye

Research Assistant   December 2013 till January 2020
Department of Mathematics, Istanbul Technical University

Non-Academic Experience as Data Scientist   July 2011 till December 2013

JOURNAL PAPERS (INT'L)

1. **Göksu, G.** (2024) "Input-to-State Exponential Stability of Switched Nonlinear Time-Delay Systems Having Stable/Unstable Subsystems", Systems&Control Letters, 184, 105724.

2. Hamidoğlu, A. and **Göksu, G.** (2023) "ϵ-Controllability/ϵ-Observability of Linear Switched Sampled-Data Systems with the Non-Equidistant Time Schedule", ISA Transactions, 139, 167-178.

3. **Göksu, G.** and Chaillet, A. (2022) "Integral Input-to-State Stable Time-Delay Systems in Cascade", Automatica, 139, 110175.

4. Chaillet, A., **Göksu, G.** and Pepe, P. (2022). "Lyapunov-Krasovskii Characterizations of Integral Input-to-State Stability of Delay Systems with Non-Strict Dissipation Rates", IEEE Transactions on Automatic Control, 67(7), 3259-3272.

5. Silgu, M. A., Erdağı, İ. G., **Göksu, G.** and Çelikoğlu, H. B. (2022). "Combined Control of Freeway Traffic Involving Cooperative Adaptive Cruise Controlled and Human Driven Vehicles Using Feedback Control Through SUMO", IEEE Transactions on Intelligent Transportation Systems, 23(8), 11011-11025.

6. **Göksu, G.** and Başer, U. (2021). "Finite-Time Stability for Switched Linear Systems by Jordan Decomposition", Applied Mathematics and Computation, 395, 125853.

7. **Göksu, G.** and Başer, U. (2019). "Observer-Based H_∞ Finite-Time Control for Switched Linear Systems with Interval Time-Delay", Transactions of the Institute of Measurement and Control, 41(5), 1348-1360.

SELECTED CONFERENCE PUBLICATIONS

1. Kara, Ö. and **Göksu, G.**. "Bozucu Girdisi Altında Bir Uçağın Dayanıklı Kontrolü", 24th *Automatic Control National Congress 2023 (TOK 2023)*, İstanbul Technical University, İstanbul, Türkiye, 14.09.2023-16.09.2023. [**Full Paper Submission**]

2. **Göksu, G.**, Chaillet, A. and Pepe, P. "Zaman Gecikmeli Sistemlerin İntegral Girdiden Duruma Kararlılığının Lyapunov-Krasovskii Karakterizasyonları", 34th *National Mathematics Symposium*, Dokuz Eylül University, İzmir, Türkiye, 31.08.2022-03.09.2022. [**Abstract Submission**]

3. **Göksu, G.** and Mahmudov, E. N. "Time Optimal Control Problem for Second Order LTI Systems", 8th *International Conference on Control and Optimization with Industrial Applications (COIA 2022)*, Baku, Azerbaijan, 24.08.2022-26.08.2022. [**Extended Abstract Submission**]

4. Silgu, M. A., Erdağı, İ. G., Akti, S., Hulagu, S., Akova, H., **Göksu, G.** and Çelikoğlu H. B. "A Methodology to Consider Explicitly Emissions in Dynamic User Equilibrium Assignment", 18th *International Conference on Computer Aided Systems Theory (EUROCAST 2022)*, Las Palmas de Gran Canaria, Canary Islands, Spain, 20.02.2022-25.02.2022. [**Extended Abstract Submission**]

5. **Göksu, G.**, Silgu, M. A., Erdağı, İ. G. and Çelikoğlu H. B. "Integral Input-to-State Stability of Traffic Flow with Variable Speed Limit", 16th *IFAC Symposium on Control in Transportation Systems*, Lille, France, 08.06.2021-10.06.2021 (IFAC-PapersOnLine 54 (2), 31-36). [**Full Paper Submission**]

6. Silgu, M. A., Erdağı, İ. G., **Göksu, G.** and Çelikoğlu H. B. "H_∞ State Feedback Controller for ODE Model of Traffic Flow", 16th *IFAC Symposium on Control in Transportation Systems*, Lille, France, 08.06.2021-10.06.2021 (IFAC-PapersOnLine 54 (2), 19-24). [**Full Paper Submission**]

7. **Göksu, G.** and Chaillet, A. "Analysis of Integral Input-to-State Stable Time-Delay Systems in Cascade", 21st *IFAC World Congress*, Berlin, Germany, 11.07.2020-17.07.2020 (IFAC-PapersOnLine, 53(2), 6404-6409). [**Full Paper Submission**]

8. **Göksu, G.** and Başer, U. "Finite Time Control for Switched Linear Systems with Interval Time Delay", 14th *IFAC Workshop on Time Delay Systems*, Pesti Vigadò, Budapest, Hungary, 26.06.2018-30.06.2018 (IFAC-PapersOnLine, 51(14), 130-135). [**Full Paper Submission**]

PROJECTS, GRANTS AND FELLOWSHIPS

- Co-Principal Investigator of the Project "Characterizations of Input-to-State Stability Related Properties for Time-Delay Systems" with Prof. Antoine Chaillet (French Side Co-Principal Investigator)
    - 2509 - TÜBİTAK-French Ministry of Foreign Affairs Bilateral Cooperation Project
        * Status: Decided to be funded, contract to be signed
        * Duration: 18 Months
        * Covers travel, scholarship and dissemination expenses
- TÜBİTAK Research Fellowship 2214-A (01 July 2019-31 December 2019).
- French Embassy/CampusFrance Research Fellowship (01 May 2019-31 June 2019).
- TÜBİTAK Travel Grant 2224-A (July 2018, August 2022).
- Istanbul Technical University Travel Grant (July 2014).

REVIEW SERVICES

Automatica, IEEE Transactions on Automatic Control, Systems&Control Letters, International Journal of Control, IEEE Transactions on Intelligent Transportation Systems, IEEE Transactions on Fuzzy Systems, IEEE Intelligent Transportation Systems Magazine, IEEE Access, International Journal of Control, Transportation Research: Part C, Transactions of the Institute of Measurement and Control, Journal of Optimization Theory and Applications, Expert Systems with Applications, Advances in Continuous and Discrete Models: Theory and Applications, ISA Transactions, International Journal of Robust and Nonlinear Control

TEACHING EXPERIENCE

Yıldız Technical University Courses
- MTM 3502 - Partial Differential Equations
- MTM 3691 - Linear Programming Theory
- MTM 4501 - Operations Research
- MTM 4502 - Optimization Techniques
- MTM 5101 - Dynamical Systems and Chaos (Graduate)

TALKS AND SEMINARS

1. "Integral Input-to-State Stability of Time-Delay Systems: Recent Results and Open Questions", Bahçeşehir University, Istanbul, Türkiye, 09.05.2023.

2. "Input-to-State Stability of Time-Delay Systems", Department of Mathematics, Galatasaray University, Istanbul, Türkiye, 03.02.2021.

3. "Zaman Gecikmeli Sistemlerin Girdiden Duruma Kararlılığı", Department of Mathematics, Istanbul Technical University, Istanbul, Türkiye, 13.01.2021.

4. "Zaman Gecikmeli ve Anahtarlamalı Doğrusal Sistemlerin Gözlemci Tabanlı Sonlu Zaman Sınırlılığı Üzerine", Department of Mathematics, Mimar Sinan Fine Arts University, Istanbul, Türkiye, 19.10.2017.

5. "Zaman Gecikmeli ve Anahtarlamalı Doğrusal Sistemlerin Gözlemci Tabanlı Sonlu Zaman Sınırlılığı Üzerine", Department of Mathematics, Istanbul Technical University, Istanbul, Türkiye, 20.10.2017.

LANGUAGE
SKILLS

German
- Deutsches Sprachdiplom Stufe II   March 2006
  (German Language Diploma-CEFR Level C1)
  Look for Common European Framework of Reference for Languages (CEFR).

English
- e-YDS   June 2021
  Score: 87.5/100

French, Italian
- Self-assessment: Limited