GÖKÇE NUR YILDIRIM

Mechanical Engineer | Nonlinear Machine Dynamics Control Systems Researcher
Ankara, Türkiye | LinkedIn

RESEARCH INTERESTS

Nonlinear optimal control and the State-Dependent Riccati Equation (SDRE) method; Barrier-Riccati Synthesis (BaS-SDRE) for constrained nonlinear systems; autonomous ground vehicle dynamics and control; electric and autonomous vehicle technologies; spacecraft attitude determination and control (CubeSat ADCS).

EDUCATION

Ph.D. in Mechanical Engineering *2026 – Present*
Gazi University, Ankara, Türkiye
- Research focus: extending the Barrier-Riccati Synthesis (BaS-SDRE) framework to autonomous ground vehicle dynamics (lane-boundary, slip-angle, rollover, and obstacle-distance constraints)

M.Sc. in Mechanical Engineering *2023 – 2026*
Gazi University, Ankara, Türkiye | GPA: 3.76 / 4.00
- Thesis: *"State-Dependent Riccati Equation Based Control of Tractor Active Suspension System with Nonlinear Spring and Damper Characteristics"*
- Advisor: Prof. Dr. Sinan Kılıçaslan

B.Sc. in Mechanical Engineering *2018 – 2022*
Gazi University, Ankara, Türkiye
- Board Member, ASME Gazi University Student Chapter

Brand Communication *2021 – 2023*
Anadolu University (Open Education Faculty)

PUBLICATIONS & PRESENTATIONS

- Yıldırım, G. N. (2026). *STATE-DEPENDENT RICCATI EQUATION BASED CONTROL OF TRACTOR ACTIVE SUSPENSION SYSTEM WITH NONLINEAR SPRING AND DAMPER* [M.Sc. Thesis, Gazi University]. Advisor: Prof. Dr. Sinan Kılıçaslan.
- Yıldırım, G. N., & Kılıçaslan, S. (2025, December 17–19). Studies on modeling and control of suspension systems in tractors. Paper presented at the *4th International Symposium on Graduate Research (DEUISGR 2025)*, İzmir, Türkiye.

RESEARCH & PROFESSIONAL EXPERIENCE

Research Assistant *October 2023 – Present*
Department of Mechanical Engineering, Başkent University, Ankara, Türkiye

Management & Organization Intern *July 2021 – August 2021*
TTK Mining Machinery Factory, Operations Management

Design and Manufacturing Intern *September 2020 – February 2021*
TE Design

TECHNICAL SKILLS

- **Nonlinear Machine Dynamics Control & Simulation:** MATLAB/Simulink; SDRE-based controller design; algebraic Riccati equation solvers (care, icare); state-dependent coefficient (SDC) parametrization; Q/R weight tuning
- **Programming:** MATLAB, C#, C++
- **CAD & Design:** AutoCAD, SolidWorks, Siemens Solid Edge, Siemens NX Unigraphics

CERTIFICATES

- Modern Robotics, Course 2: Robot Kinematics — September 2023
- Modern Robotics, Course 1: Foundations of Robot Motion — August 2023
- English Proficiency, C2 Level — October 2022

- C#.NET Programming — March 2020
- AutoCAD Technical Drawing — January 2019

LANGUAGES

- English — Professional Working Proficiency
- German — Limited Working Proficiency