Asst.Prof.Burak KURKCU

| CONTACT INFORMATION | Department of Computer Engineering Beytepe Campus 06800 Ankara/Turkey | +90-542-612-33-47 kurkcub@gmail.com |

| RESEARCH INTERESTS | Robust control theory, model predictive control, adaptive control theory, switched systems/control, LPV systems, autonomous systems, mechatronics, and robotics. |

| PROFESSIONAL EXPERIENCE | **Assistant Prof. Dr.** | March 2021 to present |

Department of Computer Engineering,
Hacettepe University

Part-time Lecturer — May 2018 to 2021

Department of Electrical and Electronics Engineering,
TOBB University of Economics and Technology

Senior Control System Design Engineer — 2011 to 2021

Division of Microelectronics, Guidance and Electro-optics,
ASELSAN Inc.
Positions:

- Team leader - Flight control systems design team, — 2016 to 2019
  Responsible for:
    - Design of robust autopilot systems
    - Design of guidance systems
    - Flight dynamics
    - Hardware-in-the-loop test
    - Monte-Carlo simulations
- Senior team member - Mechatronic systems design team, — 2014 to 2016
  Responsible for:
    - Design of stabilization loops for gimbal systems
    - Design of stabilization loops for pan-tilt systems
- Team member - Mechatronic systems design team. — 2011 to 2014
  Responsible for:
    - Design of speed/position loops for DC/BLDC motors

EDUCATION

TOBB University of Economics and Technology, Ankara, TR

Ph.D., Electrical and Electronics Engineering, 05/2015-01/2019

- Thesis Topic: *Development of Robust Stability and Robust Performance Based Control Theory and Applications*
- Advisors: Cosku Kasnakoglu, Prof.

M.Sc., Electrical and Electronics Engineering, 09/2013-03/2015

- Thesis Topic: *LQG/LTR Controller Design for Two Axis Precise Gimbal Stabilization*
- Advisors: Cosku Kasnakoglu, Prof.

Istanbul Technical University, Istanbul, TR

B.Sc., Mechanical Engineering, 09/2005 - 07/2010

- Thesis Topic: Snake-like Robot Design and Prototype Production
- Advisors: Z. Yagiz Bayraktaroglu, Assoc. Prof.

SCI JOURNAL PUBLICATIONS	J1. **Kurkcu, B.**, Kasnakoglu, C., Efe, M. Ö., Su, R., "On the Existence of Equivalent-Input-Disturbance and Multiple Integral Augmentation via H-Infinity Synthesis for Unmatched Systems" *ISA Transactions*, 2022. - Q1- IF:5.468

J2. **Kurkcu, B.**, Kasnakoglu, C. "Robust Autopilot Design Based on a Disturbance/Uncertainty/Coupling Estimator." *IEEE Transactions on Control System Technology*,2018. - Q1 - IF:5.312

J3. **Kurkcu, B.**, Kasnakoglu, C.and Efe, M. O. "Disturbance/Uncertainty Estimator Based Integral Sliding Mode Control." *IEEE Transactions on Automatic Control*, 2018. - Q1 - IF:5.625

J4. **Kurkcu, B.**, Kasnakoglu and C., Efe, M. O. "Disturbance/Uncertainty Estimator Based Robust Control of Non-minimum Phase Systems." *IEEE/ASME Transactions on Mechatronics*, 2018. - Q1 - IF:5.673

J5. **Kurkcu, B.** and Kasnakoglu. "Robust Temperature Control of a Thermoelectric Cooler via μ-Synthesis" *Journal of Electronic Materials*, 2018. - Q3 - IF:1.774

NON-SCI JOURNAL PUBLICATIONS

NJ1. **Kurkcu, B.**, Kasnakoglu, C. "Estimation of Unknown Disturbances in Gimbal Systems." *Applied Mechanics and Materials*, 2015

INTERNATIONAL CONFERENCE PUBLICATIONS

IC1. Albayrak, M., **Kurkcu, B.**, and Ayasun, S. "Switching Based MIMO Robust Autopilot Design: A Munition Example" IEEE 13th *International Conference on Mechanical and Intelligent Manufacturing Technologies (ICMIMT)*, 2022

IC2. Eser, A. Ö., **Kurkcu, B.**, and Ayasun, S. "Adaptive Notch Filter Design for Flexible Modes of Guided Munitions" IEEE 13th *International Conference on Mechanical and Intelligent Manufacturing Technologies (ICMIMT)*, 2022

IC3. Gunes, U., **Kurkcu, B.**, and Kasnakoglu, C. "A Comparison of $\mathcal{H}_\infty$-Synthesis and Feedback Linearization for Rotary Inverted Pendulum" 11th *International Conference on Mechanical and Aerospace Engineering (ICMAE)*, 2020

IC4. Akyurek, S., **Kurkcu, B.**, Kasnakoglu, C., and Kaynak, U. "Control Loss Recovery Autopilot Design for Fixed-Wing Aircraft." *IFAC Papers Online*, 2016

IC5. Akyurek, S., Ozden, G. S., **Kurkcu, B.**, Kasnakoglu, C., and Kaynak, U. "Design of a flight stabilizer for fixed-wing aircrafts using $\mathcal{H}_\infty$-loop shaping method." 9th *International Conference on Electrical and Electronics Engineering (ELECO)*, 2015

IC6. **Kurkcu, B.**, Kasnakoglu, C. "LQG/LTR position control of a BLDC motor with experimental validation." 9th *International Conference on Electrical and Electronics Engineering (ELECO)*, 2015

NATIONAL CONFERENCE PUBLICATIONS

NC1. Buyuksarikulak, M., S., **Kurkcu, B.**, and Karakurt, M. "Effects of Different Disturbance Sources on Stabilization Performance for Two Axis Gimbal Systems." *TOK Automatic Control National Committee Meeting, Eskisehir,Turkey*, 2016 - In Turkish.

NC2. **Kurkcu, B.**, Kasnakoglu, C. and Cetin, S. "Optimal State-Space Control of a Brushless DC Motor." *TOK Automatic Control National Committee Meeting, Kocaeli,Turkey*, 2014 - In Turkish.

NC3. **Kurkcu, B.**, Celik, M., Cetin, S., and Ozsoy, I. "Modelling, Simulation and Application of a Brushless DC Motor for a Guided System." *TOK Automatic Control National Committee Meeting-Malatya,Turkey*, 2013 - In Turkish.

NC4. Kuzucu, A., Bayraktaroglu, Z., Y., **Kurkcu, B.**, and Meric, V. "Propulsion by Undulatory Motion." *National Mechanics Congress-Kayseri,Turkey*, 2009 - In Turkish.

Awards

Academic Awards
- TUBITAK BIDEP - Research Grant (36K USD)   2022
- IEEE Turkey Best PhD Thesis Award   2020
- National Mechanics Congress - Best Paper Award   2009

Scholarships
- TOBB University of Economics and Technology   2015-2019
  Full Scholarship for Ph.D Studies
- TOBB University of Economics and Technology   2013-2015
  Full Scholarship for M.Sc. Studies

Others
- Certificate of excellence by ASELSAN Inc.   2016

Teaching & Advising Experience

Teaching
- Instructor: CMP 756 - Swarm Systems   Spring 2021/2022
  Department of Computer Engineering,
  Hacettepe University
- Instructor: BBM 407 - Fuzzy Logic   Spring 2021/2022
  Department of Computer Engineering,
  Hacettepe University
- Instructor: BBM 205 - Introduction to Discrete Mathematics   Fall 2021/2022
  Department of Computer Engineering,
  Hacettepe University
- Instructor: BBM 231 - Logic Design   Fall 2021/2022
  Department of Computer Engineering,
  Hacettepe University
- Instructor: ELE 301 - Control Systems   Summer 2019/2020
  Department of Electrical and Electronics Engineering,
  TOBB University of Economics and Technology
- Instructor: ELE 501 - Linear System Theory   Summer 2017/2018
  Department of Electrical and Electronics Engineering,
  TOBB University of Economics and Technology

Certificates

1. Instructor: Daniel Liberzon,   2018
   Title: Switched Systems and Control,
   Given by: *European Embedded Control Institute.*

2. Instructor: Alberto Isidori,   2015
   Title: Advances in feedback Design for MIMO nonlinear systems,
   Given by: *European Embedded Control Institute.*

3. Instructor: James M. Hilkert,   2012
   Title: Precision Stabilized Pointing and Tracking Systems-SC160,
   Given by: *Alpha-Theta Technologies.*

SERVICE	Membership - Turkish National Council on Automatic Control, TOK Associate Editor for - International Journal of Robotics and Control Systems Reviewer for - Mechatronics - Elsevier (SCI) - IEEE Transactions on Cybernetics (x2) (SCI) - ISA Transactions (x2) (SCI) - Turkish Journal of Electrical Engineering and Computer Sciences (x2) (SCI) - IEEE Transactions on Industrial Electronics (TIE) (x2) (SCI) - Robotica (SCI) - The 11th IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles - The 11th IEEE Conference on Industrial Electronics and Applications - The 10th IEEE Conference on Industrial Electronics and Applications