ESEN YEL

esenyel@stanford.edu | esenyel.github.io/personal

ACADEMIC APPOINTMENTS

Postdoctoral Scholar *10/2021 - Present*
Stanford University *Stanford, CA*
Stanford Intelligent Systems Lab (SISL)
Advisor: Mykel Kochenderfer

- Leading three industry-sponsored research projects on safe planning for and validation of autonomous vehicles operating under uncertainties

EDUCATION

Ph.D., Systems Engineering *08/2021*
University of Virginia *Charlottesville, VA*
Dissertation: *Online Predictive Monitoring and Proactive Planning for Safe Autonomous Robot Operations*

- Research on safe planning, runtime learning, scheduling and runtime monitoring for autonomous systems under disturbances and uncertainties

M.S., Electrical and Electronics Engineering *08/2016*
Bogazici University *Istanbul, Turkey*
Thesis: *Appearance-based Self Localization and Navigation Using Place Memory*

- Research on appearance-based self-localization and navigation for mobile ground robots

B.S., Electrical and Electronics Engineering *06/2014*
Bogazici University *Istanbul, Turkey*

RESEARCH INTERESTS

- Assured autonomy • Safe planning under uncertainty • Runtime monitoring • Robot learning

PUBLICATIONS

Journal and Magazine Articles

- **E. Yel***, S. Gao*, N. Bezzo, "*Meta-Learning-based Proactive Online Planning for UAVs under Degraded Conditions*", (*equal contribution), Robotics and Automation Letters (RA-L), 2022 (accepted)

- **E. Yel**, T. X. Lin, N. Bezzo, "*Computation-Aware Adaptive Planning and Scheduling for Safe Unmanned Airborne Operations*" Journal of Intelligent and Robotic Systems, 2020, pp.575–596

- **E. Yel**, T. Carpenter, C. di Franco, R. Ivanov, Y. Kantaros, I. Lee, J. Weimer, N. Bezzo, "*Assured Runtime Monitoring and Planning: Towards Verification of Deep Neural Networks for Safe Autonomous Operations*" Robotics and Automation Magazine, Special Issue on Deep Learning and Machine Learning in Robotics, June 2020, vol. 27, no. 2, pp. 102-116.

Conference Papers

- M. Toyungyernsub, **E. Yel**, J.Li, M. Kochenderfer, "*Dynamics-Aware Spatiotemporal Occupancy Prediction in Urban Environments*", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2022 (accepted)

- M. Cleaveland, **E. Yel**, Y. Kantaros, I. Lee, N. Bezzo, "*Learning Enabled Fast Planning and Control in Dynamic Environments with Intermittent Information*", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2022 (accepted)

- L. Kruse, **E. Yel**, R. Senanayake, M. Kochenderfer, "*Uncertainty-Aware Online Merge Planning with Learned Driver Behavior*", IEEE International Conference on Intelligent Transportation Systems (ITSC), 2022 (accepted)

- **E. Yel**, N. Bezzo, "*A Meta-Learning-based Trajectory Tracking Framework for UAVs under Degraded Conditions*", 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2021, pp. 6884-6890.

- **E. Yel**, N. Bezzo, "*GP-based Runtime Planning, Learning, and Recovery for Safe UAV Operations under Unforeseen Disturbances*" 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020, pp. 2173-2180.

- **E. Yel** and N. Bezzo, "*Fast Run-time Monitoring, Replanning, and Recovery for Safe Autonomous System Operations*" 2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2019, pp. 1661-1667.

- **E. Yel**, T. X. Lin and N. Bezzo, "*Self-triggered Adaptive Planning and Scheduling of UAV Operations,*" 2018 IEEE International Conference on Robotics and Automation (ICRA), 2018, pp. 7518-7524.

- T. X. Lin, **E. Yel** and N. Bezzo, "*Energy-aware Persistent Control of Heterogeneous Robotic Systems,*" 2018 Annual American Control Conference (ACC), 2018, pp. 2782-2787.

- **E. Yel**, T. X. Lin and N. Bezzo, "*Reachability-based self-triggered scheduling and replanning of UAV operations,*" 2017 NASA/ESA Conference on Adaptive Hardware and Systems (AHS), 2017, pp. 221-228.

Workshop and Symposium Papers

- G. Glaubit, K. Kleeman, N. Law, J. Thomas, S. Gao, R. Peddi, **E. Yel**, N. Bezzo "*Fast, Safe, and Proactive Runtime Planning and Control of Autonomous Ground Vehicles in Changing Environments*" IEEE Systems and Information Engineering Design Symposium (SIEDS), 2021

- **E. Yel** and N. Bezzo, "*Reachability-based Adaptive UAV Scheduling and Planning in Cluttered and Dynamic Environments*" ICRA Workshop on Informative Path Planning and Adaptive Sampling, Brisbane, 2018

- **E. Yel**, T. X. Lin and N. Bezzo, "*Reachability-based Self-triggered UAV Motion Planning,*" International Symposium on Aerial Robotics, Philadelphia, PA, 2017

- **E. Yel** and H.I. Bozma, "*Verifying the Recognized Place Through Localization,* " IROS Workshop on Introspective Methods for Reliable Autonomy, Vancouver 2017

AWARDS

Link Lab Outstanding Graduate Research Award   *2021*
Link Lab, University of Virginia
"This award was established as a way for faculty to recognize Link Lab students who have demonstrated excellence in research during the academic year."

RSS Pioneers Workshop Participant   *2021*

"RSS Pioneers brings together a cohort of the world's top early-career researchers."

Link Lab Student Seminar Award   *2020*
Link Lab, University of Virginia

"The Link Lab Graduate Seminar provides a prestigious honor and award for a PhD student to showcase the highest quality research happening at Link Lab conveying impact and relevance in the CPS field"

Travel Awards

IEEE/RSJ International Conference on Intelligent Robots and Systems	*2019*
IEEE International Conference on Robotics and Automation PhD Forum	*2018*

Ruthie Oxford Memorial Award - Promising Graduate Student   *2018*
University of Virginia, Department of Systems and Information Engineering

Dean's Honor List   *2014*
Bogazici University, School of Engineering

TEACHING EXPERIENCE

Guest Lecture	Stanford University
Sequential Decision Making	*Winter 2022*

Graduate Teaching Assistantship	Bogazici University
System Dynamics and Control (Discussion and Grading TA)	*Spring 2015, Spring 2016*
Control Technology and Design (Lab and Grading TA)	*Fall 2015*
Introduction to Electrical Engineering (Discussion TA)	*Fall 2015*

Undergraduate Teaching Assistantship	Bogazici University
System Dynamics and Control (Discussion TA)	*Spring 2014*
Orientation to Electrical Engineering (Lab TA)	*Fall 2013*

PRESENTATIONS

Stanford SystemX 2021 Fall Conference, Poster	*11/2021*
Stanford Intelligent Systems Lab, Invited Talk	*04/2021*
UPenn GRASP Lab, Invited Talk	*02/2021*
UVA Link Lab Student Seminars, Talk	*12/2020*
UVA Link Lab Student Flash Talks, Talk	*12/2020*
UVA ESE Graduate Symposium, Poster	*02/2018, 02/2020*
ICRA PhD Forum, Poster	*05/2018*
UVA ECE Student Research Session, Poster	*08/2017*

PROFESSIONAL ACTIVITIES AND LEADERSHIP

Professional Service

Co-chair, Learning for Dynamics & Control Conference (L4DC)	*2022*
Program Committee, RSS Pioneers Workshop	*2022*
Session Co-chair, IEEE/RSJ International Conference on Intelligent Robots (IROS)	*2021*
Panelist, UVA Link Lab Academic Writing Panel	*2021*
Co-organizer, UVA INFORMS Alumni Panel	*2020*
President, UVA Student Chapter of INFORMS	*2020*
Vice President, UVA Student Chapter of INFORMS	*2018-2019*
Session Chair, IEEE Systems and Information Engineering Design Symposium	*2019*

Review Activities
Conferences:
IEEE International Conference on Robotics and Automation (ICRA)
IEEE/RSJ International Conference on Intelligent Robots (IROS)
Conference on Robot Learning (CoRL)

IEEE Conference on Decision and Control (CDC)
American Control Conference (ACC)
ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS) (subreviewer)
International Conference on Runtime Verification (RV)
IEEE International Conference on Intelligent Transportation Systems (ITSC)
Journals:
IEEE Robotics and Automation Letters (RA-L)
Journal of Artificial Intelligence Research (JAIR)
Journal of Aerospace Information Systems
IEEE Computer Magazine

Mentorship Activities
Graduate Mentor, Society of Women Engineers at University of Virginia *2017*

Professional Memberships
Institute of Electrical and Electronics Engineers (IEEE) *2017-Present*
Societies: Robotics and Automation Society (RAS), Young Professionals (YP)

PROFESSIONAL EXPERIENCE

Engineering Intern *08/2013 - 09/2013*
RMK Marine Istanbul, Turkey

Engineering Intern *06/2013 - 07/2013*
Turkish Aerospace Industries Ankara, Turkey

Engineering Intern *06/2012 - 07/2012*
Lely Industries Istanbul, Turkey

SKILLS

Programming: C/C++, ROS, Matlab, Python
Tools: Latex, Microsoft Office, HitFilm (video editor)
Languages: Turkish, English