

# ESEN YEL

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## RESEARCH EXPERIENCE

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### Postdoctoral Scholar

Stanford University  
Stanford Intelligent Systems Lab (SISL)  
Advisor: Mykel Kochenderfer

10/2021 - Present  
Stanford, CA

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

### Graduate Research Assistant

University of Virginia  
Advisor: Nicola Bezzo

2016 - 2021  
Charlottesville, VA

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

### Graduate Research Assistant

Bogazici University  
Advisor: H. Işıl Bozma

2014 - 2016  
Istanbul, Turkey

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

## EDUCATION

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### Ph.D., Systems Engineering

University of Virginia  
Dissertation: *Online Predictive Monitoring and Proactive Planning for Safe Autonomous Robot Operations*

08/2021

Charlottesville, VA

### M.S., Electrical and Electronics Engineering

Bogazici University  
Thesis: *Appearance-based Self Localization and Navigation Using Place Memory*

08/2016

Istanbul, Turkey

### B.S., Electrical and Electronics Engineering

Bogazici University

06/2014

Istanbul, Turkey

## RESEARCH INTERESTS

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

## PUBLICATIONS

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### Journal and Magazine Articles

- **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

- **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

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<b>Link Lab Outstanding Graduate Research Award</b>	2021
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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.”*

<b>RSS Pioneers Workshop Participant</b>	2021
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*“RSS Pioneers brings together a cohort of the world’s top early-career researchers.”*

<b>Link Lab Student Seminar Award</b>	2020
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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
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IEEE International Conference on Robotics and Automation PhD Forum	2018
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**Ruthie Oxford Memorial Award - Promising Graduate Student**  
University of Virginia, Department of Systems and Information Engineering

2018

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

2014

## TEACHING EXPERIENCE

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<b>Guest Lecture</b>	Stanford University
Sequential Decision Making	Winter 2022
<b>Graduate Teaching Assistantship</b>	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
<b>Undergraduate Teaching Assistantship</b>	Bogazici University
System Dynamics and Control (Discussion TA)	Spring 2014
Orientation to Electrical Engineering (Lab TA)	Fall 2013

## PRESENTATIONS

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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

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<b>Professional Service</b>	
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
<b>Review Activities</b>	
<b>Conferences:</b>	
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**

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<b>Engineering Intern</b> RMK Marine	<i>08/2013 - 09/2013</i> Istanbul, Turkey
<b>Engineering Intern</b> Turkish Aerospace Industries	<i>06/2013 - 07/2013</i> Ankara, Turkey
<b>Engineering Intern</b> Lely Industries	<i>06/2012 - 07/2012</i> Istanbul, Turkey

**SKILLS**

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