



Dr. Gökhan Alcan

April 12, 1990 (Age: 29)
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Research Interests

Modeling and Control

System Identification

Control Theory and Applications

Machine Learning

Deep Learning

Reinforcement Learning

Computer Vision

2D/3D Shape Modeling

Detection

Tracking

Recognition

Robotics

Autonomous Ground & Aerial Robots

Theses

Ph.D.

Data Driven Nonlinear Dynamic Models for Predicting Heavy-Duty Diesel Engine Torque and Combustion Emissions

M.Sc.

Novel Vision Based Estimation Techniques for the Analysis of Cavitation Bubbles

Languages

Turkish (native) ●●●●●

English ●●●●●

German ●●●●●

Education

- 2015 – 2019 **Ph.D. in Mechatronics Engineering, Sabanci University** Istanbul, Turkey
GPA: 3.67 / 4.00
- 2013 – 2015 **M.Sc. in Mechatronics Engineering, Sabanci University** Istanbul, Turkey
GPA: 4.00 / 4.00
- 2008 – 2013 **B.Sc. in Mechatronics Engineering, Sabanci University** Istanbul, Turkey
GPA: 3.45 / 4.00
- 2008 – 2013 **Math Minor Honor Program, Sabanci University** Istanbul, Turkey
GPA: 3.67 / 4.00
- 2004 – 2008 **Çapa Anatolian Teacher's Training High School** Istanbul, Turkey
Grade: 92.82/100

Work Experience

- 2020 – ... Postdoctoral Researcher in Intelligent Robotics Research Group, Aalto University, Espoo, Finland.
- 2019 – 2020 Postdoctoral Researcher in Control, Vision and Robotics Research Group, Sabanci University, Istanbul, Turkey.
- 2015 – 2019 Research and Teaching Assistant in Mechatronics Engineering, Sabanci University, Istanbul, Turkey.
- 2013 – 2015 Research and Teaching Assistant in Mechatronics Engineering, Sabanci University, Istanbul, Turkey.

Projects

- 2018 – 2019 **Machine Learning Techniques for Driver Evaluation in Heavy-Duty Vehicles**
Ford Otosan of Turkey
Role: *Researcher*
- 2016 – 2018 **System Identification Methods for Dynamic Calibration of Diesel Engines**
Ford Otosan of Turkey
Role: *Researcher*
- 2013 – 2016 **Design and Development of a National Endoscopic Device for Medical Applications Based on Hydrodynamic Cavitation**
The Scientific and Technological Research Council of Turkey
Role: *Researcher* - Project No: 113S092

Publications

Journals

- J10. 2019 **Optimization-Oriented High Fidelity NFIR Models for Estimating Indicated Torque in Diesel Engines**
G. Alcan, V. Aran, M. Unel, M. Yilmaz, C. Gurel, K. Koprubasi, *International Journal of Automotive Technology*, Accepted/In Press.
- J9. 2019 **Robust Trajectory Control of an Unmanned Aerial Vehicle Using Acceleration Feedback**
H. Zaki, G. Alcan, M. Unel, *International Journal of Mechatronics and Manufacturing Systems*, 12(3-4), 298-317.
- J8. 2019 **Estimating Soot Emission in Diesel Engines Using Gated Recurrent Unit Networks**
G. Alcan, E. Yilmaz, M. Unel, V. Aran, M. Yilmaz, C. Gurel, K. Koprubasi, *IFAC International Symposium on Advances in Automotive Control (AAC '19), Orléans, France, June 23-27, IFAC-PapersOnLine*, 52 (5) 544-549.

Reviewer Invitation

Journals

- Measurement, Journal of the Int. Measurement Conf.
- Turkish Journal of Electrical Eng. and Computer Sci.

Conferences

- IFAC International Symposium on Advances in Automotive Control
- IFAC Symposium on System Identification

Teaching Experience

Autonomous Mobile Robotics

2013,2014,2015,2017,2018
Spring Terms

Role: Teaching Assistant

Instructor: Prof. Dr. Mustafa Unel

Computer Vision

2016,2018 Fall Terms

Role: Teaching Assistant

Instructor: Prof. Dr. Mustafa Unel

Linear Algebra

2017 Fall Term

Role: Teaching Assistant

Instructor: Dr. Canan Kasikci

Systems Modeling and Control

2016 Spring Term

Role: Teaching Assistant

Instructor: Prof. Dr. Mustafa Unel

Control System Design

2014,2015 Fall Terms

Role: Teaching Assistant

Instructor: Prof. Dr. Mustafa Unel

Industrial Control

2012, 2013 Fall Terms

Role: Teaching Assistant

Instructor:

Assoc. Prof. Dr. Kemalettin Erbatur

Introduction to Computing

2012 Spring Term

Role: Teaching Assistant

Instructor: Dr. Gülşen Demiröz

Summer Internship

Mercedes-Benz Turk

2012 - Summer Internship

Project: Designing an automated drilling machine with Siemens PLC Systems and programming by ladder logic

Samet R&D

2012 - Summer Internship

Project: Designing a mobile line following robot used in the transportation of Raw Materials between designated stations

- J7. 2019 **Predicting NOx Emissions in Diesel Engines via Sigmoid NARX Models Using A New Experiment Design for Combustion Identification**
G. Alcan, M. Unel, V. Aran, M. Yilmaz, C. Gurel, K. Koprubasi, *Measurement*, 137, 71-81.
- J6. 2018 **Diesel Engine NOx Emission Modeling Using a New Experiment Design and Reduced Set of Regressors**
G. Alcan, M. Unel, V. Aran, M. Yilmaz, C. Gurel, K. Koprubasi, *IFAC Symposium on System Identification (SYSID '18)*, *IFAC-PapersOnLine*, 51 (15) 168-173.
- J5. 2018 **Biomedical Device Prototype Based on Small Scale Hydrodynamic Cavitation**
M. Ghorbani, C. Sozer, **G. Alcan**, M. Unel, S. Ekici, H. Uvet, A. Kosar, *AIP Advances*, 8 (3), 035108.
- J4. 2018 **Characterization and Pressure Drop Correlation for Sprays under the Effect of Micro Scale Cavitation**
M. Ghorbani, **G. Alcan**, A. K. Sadaghiani, A. Mohammadi, M. Unel, D. Gozuacik, A. Kosar, *Experimental Thermal and Fluid Science*, 91, 89-102.
- J3. 2016 **A New Visual Tracking Method for the Analysis and Characterization of Jet Flow**
G. Alcan, M. Ghorbani, A. Kosar, M. Unel, *Flow Measurement and Instrumentation*, 51, 55-67.
- J2. 2016 **Visualization of Microscale Cavitating Flow Regimes via Particle Shadow Sizing Imaging and Vision Based Estimation of the Cone Angle**
M. Ghorbani, **G. Alcan**, M. Unel, D. Gozuacik, S. Ekici, H. Uvet, A. Sabanovic, A. Kosar, *Experimental Thermal and Fluid Science*, 78, 322-333.
- J1. 2015 **Visualization and Image Processing of Spray Structure Under the Effect of Cavitation Phenomenon**
M. Ghorbani, **G. Alcan**, D. Yilmaz, M. Unel, A. Kosar, *International Symposium on Cavitation (CAV '15)*, *EPFL, Lausanne, Switzerland, December 6-10, Journal of Physics: Conference Series*, 656, Article No: 012115.

Book Chapters

- BC1. 2016 **Single Droplet Tracking in Jet Flow**
G. Alcan, M. Ghorbani, A. Kosar, M. Unel, *International Conference on Image Analysis and Recognition (ICIAR '16)*, *Póvoa de Varzim, Portugal, July 13-15, Lecture Notes in Computer Science*, 9730, 415-422.

Conference Proceedings

- C4. 2019 **Driving Behavior Classification Using Long Short Term Memory Networks**
M. E. Mumcuoglu, **G. Alcan**, M. Unel, O. Cicek, M. Mutluergil, M. Yilmaz, K. Koprubasi, *International Conference of Electrical and Electronic Technologies for Automotive, (AEIT AUTOMOTIVE '19)*, Torino, Italy, July 2-4.
- C3. 2017 **Design, Prototyping and Control of a Flexible Cystoscope for Biomedical Applications**
C. Sozer, M. Ghorbani, **G. Alcan**, H. Uvet, M. Unel, A. Kosar, *International Conference on Mechanics and Mechatronics Research, (ICMMR '17)*, Xi'an, China, June 20-24.
- C2. 2017 **Robust Hovering Control of a Quadrotor using Acceleration Feedback**
G. Alcan, M. Unel, *International Conference on Unmanned Aircraft Systems, (ICUAS '17)*, Miami, Florida, USA, June 13-16.
- C1. 2015 **Vision Based Cone Angle Estimation of Bubbly Cavitating Flow and Analysis of Scattered Bubbles using Micro Imaging Techniques**
G. Alcan, M. Ghorbani, A. Kosar, M. Unel, *Annual Conference of the IEEE Industrial Electronics Society, (IECON '15)*, Yokohama, Japan, November 9-12.

Certificates

- 2019 **Reinforcement Learning Specialization** by University of Alberta on Coursera.
November Certificate Credential ID: UU362D7MZU7W. Completed Courses:
 - *Fundamentals of Reinforcement Learning*
 - *Sample-based Learning Methods*
 - *Prediction and Control with Function Approximation*
 - *A Complete Reinforcement Learning System (Capstone)*

Skills

Development Languages:

Python C++ C C#

Ladder Logic

Development Tools:

Tensorflow MATLAB/Simulink

ROS OpenCV

Development Boards:

dSPACE Quanser Q8

STM32F4-Discovery

Raspberry Pi PLC

Personal Interest:

Adobe Photoshop

Adobe Illustrator

Adobe Premiere Pro

Hobbies

Web Design

2D/3D Graphics Design

Travelling Photography

Swimming Sailing

Personal Strengths

Problem Solver Motivator

Leader Team Work

Responsibility Ambition

Honors and Awards

- 2015 – 2019 Sabanci University Full Scholarship for Ph.D. Education
- 2016 Elginkan Foundation Technology Award
<https://gazetesu.sabanciuniv.edu/2016-04/sutaba-elginkan-vakfi-teknoloji-odulu>
- 2013 – 2016 Research Scholarship from the Scientific and Technological Research Council of Turkey (TUBITAK) (Grant No: 113S092)
- 2012 – 2013 Sakip Sabanci Encouragement Scholarship for superior achievement
- 2006 – 2007 Ranking 34th among 300 participants in Mathematic Competition organized by Sabanci University Mathematic Club

Extra-Curricular Activities

- 2017 – 2018 Participating in Major Fest activities of Sabanci University as valunteer to introduce Mechatronics Program to undergraduate students
- 2012 – 2013 General Coordinator of Sabanci University Robotic Club (SURK)
- 2011 Participating in RoboCup 2011 Istanbul, Turkey
- 2010 – 2012 Student Union, Reporter of WEB / IT, Sabanci University
- 2009 – 2013 Member of Sailing Club (SUSAIL), Sabanci University
Taking 32 hours practical and theoretical lessons about sailing
- 2009 – 2013 Member of Computer Club, Sabanci University
- 2008 – ... Member of Make a Wish Association, Akbank
- 2008 – 2009 Civic Involvement Project named “Make a Wish Association Project”

References

References are available upon request.