

## Prof. AFŞAR SARANLI

### Personal Information

**Office Phone:** [+90 312 210 4529](tel:+903122104529)

**Fax Phone:** [+90 312 210 2304](tel:+903122102304)

**Email:** [afsars@metu.edu.tr](mailto:afsars@metu.edu.tr)

**Web:** <https://www.meu.edu.tr/~afsars>

**Address:** Elektrik ve Elektronik Mühendisliği Bölümü, Üniversiteler Mah. Dumlupınar Bulv. 1 06800, Çankaya, Ankara

### International Researcher IDs

ScholarID: j2tjDdMAAAAJ

ORCID: 0000-0001-9680-2558

Publons / Web Of Science ResearcherID: ABA-4458-2020

ScopusID: 6506741475

Yoksis Researcher ID: 114951

### Education Information

Doctorate, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü, Turkey  
1995 - 2000

Postgraduate, University of London-Imperial College of Science, Technology and Medicine, Department Of Electrical And Electronics Engineering, United Kingdom 1993 - 1994

Undergraduate, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü,  
Turkey 1989 - 1993

### Foreign Languages

French, C1 Advanced

English, C1 Advanced

### Dissertations

Doctorate, A Unifying theory for rank-based multiple classifier systems, with applications in speaker identification and speech recognition, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü,  
2000

Postgraduate, Investigation of an Alternative B-Spline Basis in Adaptive RBF Networks with Applications to System Identification and Time-Series Prediction, University Of London-Imperial College Of Science, Technology And Medicine, Department Of Electrical And Electronics Engineering, 1994

### Academic Titles / Tasks

Associate Professor, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü,  
2013 - Continues

Assistant Professor, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü,  
2006 - 2013

## Advising Theses

- SARANLI A., Adaptive mesh-grid based spatially non-uniform video motion deblurring using IMU-camera sensor fusion, Postgraduate, A.ARSLAN(Student), 2021
- SARANLI A., A comparative study of quadtree decomposition and constrained delaunay triangulation using MDP and artificial potential field based path planning, Postgraduate, B.Kandehir(Student), 2019
- SARANLI A., FPGA implementation of field oriented control for permanent magnet synchronous motor, Postgraduate, G.Irmak(Student), 2019
- ANKARALI M. M., SARANLI A., Control of an underactuated system around a periodic orbit, Postgraduate, A.DENİZ(Student), 2018
- SARANLI A., A comparative study on tightly coupled visual aided inertial navigation systems for unmanned aerial vehicles, Postgraduate, T.İNCE(Student), 2018
- ANKARALI M. M., SARANLI A., RG-trees: Trajectory-free feedback motion planning using sparse random reference governor trees, Postgraduate, F.GÖLBOL(Student), 2018
- Saranlı A., Yazıcıoğlu Y., BODY ATTITUDE CONTROL OF A PLANAR ONE-LEGGED HOPPING ROBOT USING A NOVEL AIR DRAG ASSISTED REACTION WHEEL, Postgraduate, N.ÜNVER(Student), 2016
- SARANLI A., A Study on particle filter based audio-visual face tracking on the AV16.3 dataset, Postgraduate, Y.Emre(Student), 2016
- SARANLI A., Single and multi-frame motion deblurring for legged robots: Characterization using a novel FD-AROC performance metric and a comprehensive motion-blur dataset, Doctorate, G.KORAY(Student), 2016
- SARANLI A., A study on particle filter based audio-visual face tracking on the AV16.3 dataset, Postgraduate, Y.EMRE(Student), 2016
- SARANLI U., SARANLI A., A novel real-time inertial motion blur metric with applications to motion blur compensation, Postgraduate, M.MUTLU(Student), 2014
- SARANLI A., Modeling and control of the three degrees-of-freedom parallel manipulated robotic sensor head, Doctorate, M.ORKUN(Student), 2014
- SARANLI A., SARANLI U., A Novel real-time inertial motion blur metric with applications to motion blur compensation /, Postgraduate, M.Mutlu(Student), 2014
- LEBLEBİCİOĞLU M. K., SARANLI A., Optimal control of a half circular compliant legged monopod, Doctorate, Y.ÖZKAN(Student), 2013
- Saranlı A., Yazıcıoğlu Y., Acoustic surface perception through the ground interaction of compliant legs of a hexapod robot, Postgraduate, M.CÜNEYİTOĞLU(Student), 2012
- SARANLI A., PID and LQR control of a planar head stabilization platform, Postgraduate, E.AKGÜL(Student), 2011
- Saranlı A., Yazıcıoğlu Y., Modelling the effects of half circular compliant legs on the kinematics and dynamics of a legged robot, Postgraduate, E.SAYGINER(Student), 2010
- SARANLI A., An FPGA based high performance optical flow hardware design for autonomous mobile robotic platforms, Postgraduate, G.KORAY(Student), 2010
- SARANLI A., SARANLI U., Control of hexapedal pronking through a dynamically embedded spring loaded inverted pendulum template, Postgraduate, M.MERT(Student), 2010
- SARANLI A., Camera motion blur and its effect on feature detectors, Postgraduate, F.ÜZER(Student), 2010
- SARANLI A., A novel mobile robot navigation method based on combined feature based scan matching and FastSLAM algorithm, Postgraduate, A.ÖZGÜR(Student), 2010
- SARANLI A., RRT based Kinodynamic motion planning for multiple camera industrial inspection, Postgraduate, B.BİLGE(Student), 2009
- SARANLI A., BAYKAL B., Tracker-aware detection: A theoretical and an experimental study, Doctorate, M.ŞAMİL(Student), 2009
- SARANLI A., Kalman filter based fusion of camera and inertial sensor measurements for body state estimation, Postgraduate, G.ASLAN(Student), 2009

SARANLI A., Efficient detection and tracking of salient regions for visual processing on mobile platforms, Postgraduate, G.SERHAT(Student), 2009

Saranlı A., Yazıcıoğlu Y., Flexible multibody dynamic modeling and simulation of Rhex hexapod robot with half circular compliant legs, Postgraduate, G.ORAL(Student), 2008

SARANLI A., Efficient calibration of a multi-camera measurement system using a target with known dynamics, Postgraduate, M.DENİZ(Student), 2008

SARANLI A., A comparative study of tracking algorithms in underwater environment using sonar simulation, Postgraduate, E.EGE(Student), 2007

SARANLI A., BAYKAL B., On optimal resource allocation in phased array radar systems, Postgraduate, A.IRCI(Student), 2006

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Reinforcement Learning versus Conventional Control for Controlling a Planar Bi-rotor Platform with Tail Appendage**  
Ugurlu H. I., KALKAN S., SARANLI A.  
Journal of Intelligent and Robotic Systems: Theory and Applications, vol.102, no.4, 2021 (SCI-Expanded)
- II. **Multi-Frame motion deblurring of video using the natural oscillatory motion of dexterous legged robots**  
Gultekin G. K., SARANLI A.  
IET IMAGE PROCESSING, vol.13, no.9, pp.1502-1508, 2019 (SCI-Expanded)
- III. **Feature Detection Performance Based Benchmarking of Motion Deblurring Methods: Applications to Vision for Legged Robots**  
Gultekin G. K., SARANLI A.  
IMAGE AND VISION COMPUTING, vol.82, pp.26-38, 2019 (SCI-Expanded)
- IV. **Optimal control of a half-circular compliant legged monopod**  
AYDIN Y. O., SARANLI A., YAZICIOĞLU Y., SARANLI U., LEBLEBICIOGLU K.  
CONTROL ENGINEERING PRACTICE, vol.33, pp.10-21, 2014 (SCI-Expanded)
- V. **Lagrangian based mathematical modeling and experimental validation of a planar stabilized platform for mobile systems**  
Rohani B., YAZICIOĞLU Y., MUTLU M., Ogucu O., Akgul E., SARANLI A.  
JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS, vol.259, pp.955-964, 2014 (SCI-Expanded)
- VI. **Acoustic surface perception from naturally occurring step sounds of a dexterous hexapod robot**  
Ozkul M. C., SARANLI A., YAZICIOĞLU Y.  
MECHANICAL SYSTEMS AND SIGNAL PROCESSING, vol.40, no.1, pp.178-193, 2013 (SCI-Expanded)
- VII. **An FPGA based high performance optical flow hardware design for computer vision applications**  
Gultekin G. K., SARANLI A.  
MICROPROCESSORS AND MICROSYSTEMS, vol.37, no.3, pp.270-286, 2013 (SCI-Expanded)
- VIII. **Threshold Optimization for Tracking a Nonmaneuvering Target**  
Aslan M. S., SARANLI A.  
IEEE TRANSACTIONS ON AEROSPACE AND ELECTRONIC SYSTEMS, vol.47, no.4, pp.2844-2859, 2011 (SCI-Expanded)
- IX. **A tracker-aware detector threshold optimization formulation for tracking maneuvering targets in clutter**  
Aslan M. S., SARANLI A.  
SIGNAL PROCESSING, vol.91, no.9, pp.2213-2221, 2011 (SCI-Expanded)
- X. **Study on Q-RAM and Feasible Directions Based Methods for Resource Management in Phased Array Radar Systems**  
Irci A., SARANLI A., BAYKAL B.  
IEEE TRANSACTIONS ON AEROSPACE AND ELECTRONIC SYSTEMS, vol.46, no.4, pp.1848-1864, 2010 (SCI-

Expanded)

- XI. **Tracker-aware adaptive detection: An efficient closed-form solution for the Neyman-Pearson case**  
Aslan M. S., SARANLI A., BAYKAL B.  
DIGITAL SIGNAL PROCESSING, vol.20, no.5, pp.1468-1481, 2010 (SCI-Expanded)
- XII. **On output independence and complementariness in rank-based multiple classifier decision systems**  
Saranli A., Demirekler M.  
PATTERN RECOGNITION, vol.34, no.12, pp.2319-2330, 2001 (SCI-Expanded)
- XIII. **A statistical unified framework for rank-based multiple classifier decision combination**  
Saranli A., Demirekler M.  
PATTERN RECOGNITION, vol.34, no.4, pp.865-884, 2001 (SCI-Expanded)
- XIV. **Complexity reduction in radial basis function (RBF) networks by using radial B-spline functions**  
Saranli A., Baykal B.  
NEUROCOMPUTING, vol.18, pp.183-194, 1998 (SCI-Expanded)

### **Refereed Congress / Symposium Publications in Proceedings**

- I. **A COGNITIVE CAMERA SYSTEM FOR INCREASING FACE RECOGNITION PERFORMANCE IN BACKLIT CONDITIONS**  
Gültekin G. K., Ergül M., Hakyemez A. D., Saranlı A., Alatan A. A., Üstün İ. E.  
Counterterrorism, Crime Fighting, Forensics, and Surveillance Technologies VI 2022, Berlin, Germany, 5 - 06 September 2022, vol.12275
- II. **Eksik Tahrikli Bir Sistemin Periyodik Yörünge Çevresinde Kontrolü**  
Duyul A. D., Saranlı A., Ankaralı M. M.  
Eksik Tahrikli Bir Sistemin Periyodik Yörünge Çevresinde Kontrolü, İstanbul, Turkey, 12 - 14 April 2018, pp.113-114
- III. **Lineer Bir Sistemin Eş Zamanlı Sistem Belirleme ve Durum Kestirimi**  
Gölbol F., Ankaralı M. M., Saranlı A.  
Türkiye Robotbilim Konferansı Programı, İstanbul, Turkey, 12 - 14 April 2018, pp.243-244
- IV. **RG-Trees: Trajectory-Free Feedback Motion Planning Using Sparse Random Reference Governor Trees**  
GÖLBOL F., ANKARALI M. M., SARANLI A.  
25th IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Madrid, Spain, 1 - 05 October 2018, pp.6506-6511
- V. **A Real-Time Inertial Motion Blur Metric: Application to Frame Triggering Based Motion Blur Minimization**  
Mutlu M., SARANLI A., SARANLI U.  
IEEE International Conference on Robotics and Automation (ICRA), Hong Kong, PEOPLES R CHINA, 31 May - 07 June 2014, pp.671-676
- VI. **A Real-Time Inertial Motion Blur Metric**  
Mutlu M., SARANLI A., SARANLI U.  
22nd IEEE Signal Processing and Communications Applications Conference (SIU), Trabzon, Turkey, 23 - 25 April 2014, pp.2225-2228
- VII. **A comparative evaluation of adaptive and non-adaptive Sliding Mode, LQR & PID control for platform stabilization**  
Akgul E., MUTLU M., SARANLI A., YAZICIOĞLU Y.  
2012 IEEE International Conference on Control Applications, CCA 2012, Dubrovnik, Croatia, 3 - 05 October 2012, pp.1547-1552
- VIII. **A Comparative Evaluation of Adaptive and Non-adaptive Sliding Mode, LQR & PID Control for Platform Stabilization**  
Akgul E., MUTLU M., SARANLI A., YAZICIOĞLU Y.

IEEE International Conference on Control Applications (CCA) Part of 6th IEEE Multi-Conference on Systems and Control (IEEE MSC), Dubrovnik, Croatia, 3 - 05 October 2012, pp.1547-1552

- IX. **ACOUSTIC SURFACE PERCEPTION FOR IMPROVED MOBILITY OF LEGGED ROBOTS**  
Ozkul M. C., SARANLI A., YAZICIOĞLU Y.  
ASME International Design Engineering Technical Conferences/Computers Information in Engineering Conference, Illinois, United States Of America, 12 - 15 August 2012, pp.75-76
- X. **MODELING HALF-CIRCULAR COMPLIANT LEG BY USING SIMMECHANICS**  
Ogucu M. O., SARANLI A., YAZICIOĞLU Y.  
15th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines, Maryland, United States Of America, 23 - 26 July 2012, pp.231-238
- XI. **A DYNAMIC MODEL OF RUNNING WITH A HALF-CIRCULAR COMPLIANT LEG**  
Ankarali M. M., SAYGINER E., YAZICIOĞLU Y., SARANLI A., SARANLI U.  
15th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines, Maryland, United States Of America, 23 - 26 July 2012, pp.425-432
- XII. **Control of Underactuated Planar Hexapedal Pronking Through a Dynamically Embedded SLIP Monopod**  
Ankarali M. M., Saranli U., SARANLI A.  
IEEE International Conference on Robotics and Automation (ICRA), Alaska, United States Of America, 3 - 08 May 2010, pp.4721-4727
- XIII. **TASK ORIENTED KINEMATIC ANALYSIS FOR A LEGGED ROBOT WITH HALF-CIRCULAR LEG MORPHOLOGY**  
Sayginer E., Akbey T., YAZICIOĞLU Y., SARANLI A.  
IEEE International Conference on Robotics and Automation, Kobe, Japan, 12 - 17 May 2009, pp.1771-1772
- XIV. **An Optimal Radar Detector Threshold Adaptation for Maneuvering Targets in Clutter**  
Aslan M. S., SARANLI A.  
IEEE 17th Signal Processing and Communications Applications Conference, Antalya, Turkey, 9 - 11 April 2009, pp.882-883
- XV. **Performance Comparison of Target Tracking Algorithms in Underwater Environment**  
Ege E., SARANLI A.  
IEEE 16th Signal Processing and Communications Applications Conference, Aydın, Turkey, 20 - 22 April 2008, pp.577-580
- XVI. **Resource allocation modelling using methods of feasible directions in phased array radar systems**  
IRCI A., SARANLI A., BAYKAL B.  
2007 IET International Conference on Radar Systems, 15 - 18 October 2007
- XVII. **On optimal resource allocation in multifunction radar systems**  
Irci A., SARANLI A., BAYKAL B.  
2006 IEEE Radar Conference, Verona, Italy, 24 - 27 April 2006, pp.684-685
- XVIII. **A real-time optimal resource allocation approach in a radar system**  
Irci A., Saranli A., BAYKAL B.  
IEEE 14th Signal Processing and Communications Applications, Antalya, Turkey, 16 - 19 April 2006, pp.846-847
- XIX. **Scan-line quality inspection of strip materials using 1-D radial basis function network**  
Saranli A.  
1st International Conference on Computer Vision Theory and Applications, Setubal, Portugal, 25 - 28 February 2006, pp.19-26
- XX. **A unified view of rank-based decision combination**  
Saranli A., Demirekler M.  
15th International Conference on Pattern Recognition (ICPR-2000), Barcelona, Spain, 3 - 07 September 2000, pp.479-482
- XXI. **A study on improving decisions in closed set speaker identification**  
Demirekler M., Saranli A.  
1997 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP 97), Munich, Germany,

## Supported Projects

KALKAN S., UĞURLU H. İ., SARANLI A., Project Supported by Higher Education Institutions, İnsansız Hava ve Kara Araçları ile Gezinme, 2018 - 2019

SARANLI A., AKMANDOR N. Ü., Project Supported by Higher Education Institutions, Bir Tepki Tekerleği Tasarımı ile Bacaklı Bir Robotun Dinamik Hareketleri Sırasındaki Dengesinin Arttırılması, 2015 - 2015

SARANLI A., Project Supported by Higher Education Institutions, FEN BİLİMLERİ ENSTİTÜSÜ/LİSANSÜSTÜ TEZ PROJESİ, 2014 - 2014

## Patent

SARANLI A., ethod and Apparatus for Flat Patterned Media Inspection, Patent, CHAPTER H Electricity, Standard Registration, 2008

SARANLI A., Improved Inspection of TFT LCD Panels using On-Demand Automated Optical Inspection Sub-System,, Patent, CHAPTER H Electricity, Standard Registration, 2006

SARANLI A., igh Precision Gas-Bearing Split-Axis Stage for Transport and Constraint of Large Flat Flexible Media During Processing, Patent, CHAPTER F Mechanical engineering; Lighting; Heating; Weaponry; Destroyed Materials, Standard Registration, 2006

SARANLI A., ethod and Apparatus for High-Throughput Inspection of Large Patterned Media Using Dynamically Programmable Optical Spatial Filtering, Patent, CHAPTER H Electricity, Standard Registration, 2006

## Metrics

Publication: 37

Citation (WoS): 174

Citation (Scopus): 193

H-Index (WoS): 8

H-Index (Scopus): 9

## Non Academic Experience

Photon Dynamics Canada Inc.