

Assoc. Prof. MUSTAFA ŞİNASI AYAS

Personal Information

Office Phone: [+90 462 377 4280](tel:+904623774280)

Email: msayas@ktu.edu.tr

Web: <https://avesis.ktu.edu.tr//msayas>

International Researcher IDs

ScholarID: 6m8kb84AAAAJ

ORCID: 0000-0001-8113-4817

Publons / Web Of Science ResearcherID: AAG-5553-2019

ScopusID: 56352435800

Yoksis Researcher ID: 51603

Education Information

Doctorate, Karadeniz Technical University, Fen Bilimleri Enstitüsü, Elektik Ana Bilim Dalı, Turkey 2012 - 2017

Postgraduate, Karadeniz Technical University, Fen Bilimleri Enstitüsü, Elektik Ana Bilim Dalı, Turkey 2009 - 2012

Undergraduate, Hacettepe University, Mühendislik Fak., Elektrik-Elektronik Müh., Turkey 2005 - 2009

Foreign Languages

English, B2 Upper Intermediate

Dissertations

Doctorate, Paralel mekanizmalı ayak bileği rehabilitasyon robotu üzerinde kontrol stratejilerinin geliştirilmesi ve uygulanması, Karadeniz Technical University, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği Bölümü, 2017

Postgraduate, DOĞRUSAL SİSTEM SİMÜLASYONU VE KONTROLÜ İÇİN İNTERAKTİF SANAL LABORATUVAR, Karadeniz Technical University, Fen Bil. Ens., Elektrik Abd, 2012

Research Areas

Information Systems, Communication and Control Engineering, Control and System Engineering, Controllers, Status Observers and Estimation, Checker, Optimal Control, Engineering and Technology

Academic Titles / Tasks

Associate Professor, Karadeniz Technical University, Mühendislik Fakültesi, Elektrik-Elektronik, 2023 - Continues

Assistant Professor, Karadeniz Technical University, Mühendislik Fakültesi, Elektrik-Elektronik, 2018 - 2023

Assistant Professor, Karadeniz Technical University, Mühendislik Fakültesi, Elektrik-Elektronik, 2017 - 2018

Research Assistant, Karadeniz Technical University, Fen Bilimleri Enstitüsü, -, 2009 - 2017

Academic and Administrative Experience

Head of Department, Karadeniz Technical University, Mühendislik Fakültesi, Elektrik-Elektronik, 2020 - Continues

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **An adaptive fractional controller design for automatic voltage regulator system: sigmoid-based fractional-order PID controller**
Sahin A. K., ÇAVDAR B., AYAS M. Ş.
Neural Computing and Applications, vol.36, no.23, pp.14409-14431, 2024 (SCI-Expanded)
- II. **Gorilla troops optimization-based load frequency control in PV-thermal power system**
CAN Ö., AYAS M. Ş.
Neural Computing and Applications, vol.36, no.8, pp.4179-4193, 2024 (SCI-Expanded)
- III. **Automatic Generation Control of a Hybrid PV-Reheat Thermal Power System Using RIME Algorithm**
Ekinci S., CAN Ö., AYAS M. Ş., Izci D., Salman M., Rashdan M.
IEEE Access, vol.12, pp.26919-26930, 2024 (SCI-Expanded)
- IV. **Fractional High-Order Differential Feedback Controller Based on Meta-Heuristic Algorithms for Automatic Voltage Regulator**
CAN Ö., AYAS M. Ş.
Electric Power Components and Systems, 2024 (SCI-Expanded)
- V. **A reinforcement learning approach to Automatic Voltage Regulator system**
AYAS M. Ş., Sahin A. K.
Engineering Applications of Artificial Intelligence, vol.121, 2023 (SCI-Expanded)
- VI. **A novel bearing fault diagnosis method using deep residual learning network**
AYAS S., AYAS M. Ş.
MULTIMEDIA TOOLS AND APPLICATIONS, vol.81, no.16, pp.22407-22423, 2022 (SCI-Expanded)
- VII. **A modified densenet approach with nearmiss for anomaly detection in industrial control systems**
AYAS S., AYAS M. Ş.
MULTIMEDIA TOOLS AND APPLICATIONS, vol.81, no.16, pp.22573-22586, 2022 (SCI-Expanded)
- VIII. **Performance improvement of an AVR system by symbiotic organism search algorithm-based PID-F controller**
Ozgenç B., Ayas M. Ş., Altas İ. H.
NEURAL COMPUTING & APPLICATIONS, vol.34, no.10, pp.7899-7908, 2022 (SCI-Expanded)
- IX. **Survivability-Based Protection for Electric Motor Drive Systems-Part I: 3 Induction Motor Drives**
Saleh S. A. M., ÖZKOP E., AYAS M. Ş., Muttaqi K. M., Nahid-Mobarakeh B.
IEEE Transactions on Industry Applications, vol.58, pp.1797-1808, 2022 (SCI-Expanded)
- X. **FOPID controller with fractional filter for an automatic voltage**
Ayas M. Ş., Şahin E.
COMPUTERS & ELECTRICAL ENGINEERING, vol.90, 2021 (SCI-Expanded)
- XI. **Employing Fault Currents in the Reliability Analysis of Motor Drives**
Saleh S. A., Özkop E., Ayas M. Ş., Boileau T., Nahid-Mobarakeh B.
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS, vol.56, pp.4521-4531, 2020 (SCI-Expanded)
- XII. **High order differential feedback controller design and implementation for a Stewart platform**
AYAS M. Ş., ŞAHİN E., ALTAŞ İ. H.
JOURNAL OF VIBRATION AND CONTROL, vol.26, pp.976-988, 2020 (SCI-Expanded)
- XIII. **Fractional High-Order Differential Estimator and Feedback Controller Design for a Single-Input-Single-Output Affine Chaotic System**
Şahin E., Ayas M. Ş.
JOURNAL OF COMPUTATIONAL AND NONLINEAR DYNAMICS, vol.15, no.1, 2020 (SCI-Expanded)
- XIV. **Design of an optimized fractional high-order differential feedback controller for an AVR system**
AYAS M. Ş.
ELECTRICAL ENGINEERING, vol.101, no.4, pp.1221-1233, 2019 (SCI-Expanded)

- XV. **Designing and implementing a plug-in type repetitive controller for a redundantly actuated ankle rehabilitation robot**
AYAS M. Ş., ALTAŞ İ. H.
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART I-JOURNAL OF SYSTEMS AND CONTROL ENGINEERING, vol.232, no.5, pp.592-607, 2018 (SCI-Expanded)
- XVI. **Fractional order based trajectory tracking control of an ankle rehabilitation robot**
AYAS M. Ş., ALTAŞ İ. H., ŞAHİN E.
TRANSACTIONS OF THE INSTITUTE OF MEASUREMENT AND CONTROL, vol.40, no.2, pp.550-564, 2018 (SCI-Expanded)
- XVII. **Fuzzy logic based adaptive admittance control of a redundantly actuated ankle rehabilitation robot**
AYAS M. Ş., ALTAŞ İ. H.
CONTROL ENGINEERING PRACTICE, vol.59, pp.44-54, 2017 (SCI-Expanded)
- XVIII. **A Virtual Laboratory for System Simulation and Control With Undergraduate Curriculum**
AYAS M. Ş., ALTAŞ İ. H.
COMPUTER APPLICATIONS IN ENGINEERING EDUCATION, vol.24, no.1, pp.122-130, 2016 (SCI-Expanded)
- XIX. **Fast measurement of headlamps by means of a developed fuzzy luxmeter based on a fuzzy mapping algorithm**
AYAS M. Ş., ALTAŞ İ. H., ALCELIK T.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.24, no.4, pp.2627-2637, 2016 (SCI-Expanded)
- XX. **Fractional order control of conducting polymer artificial muscles**
Itik M., ŞAHİN E., AYAS M. Ş.
EXPERT SYSTEMS WITH APPLICATIONS, vol.42, no.21, pp.8212-8220, 2015 (SCI-Expanded)

Articles Published in Other Journals

- I. **A Brief Review on Attack Design and Detection Strategies for Networked Cyber-Physical Systems**
AYAS M. Ş.
Turkish Journal of Engineering, vol.5, no.1, pp.1-7, 2021 (Scopus)
- II. **Effects of objective function in PID controller design for an AVR system**
Burnaz S. A. N., AYAS M. Ş.
International Journal of Applied Mathematics Electronics and Computers, vol.8, no.4, pp.245-255, 2020 (Peer-Reviewed Journal)
- III. **Design of Evolutionary Algorithm Based PID Controller with filter for an Automatic Voltage Regulator**
ÖZGENÇ B., AYAS M. Ş., ALTAŞ İ. H.
Karadeniz Fen Bilimleri Dergisi, vol.10, no.1, pp.74-90, 2020 (Peer-Reviewed Journal)
- IV. **Optimally Tuned PID Controller Design for an AVR System: A Comparison Study**
Özgenç B., Ayas M. Ş., Altaş İ. H.
International Journal of Multidisciplinary Studies and Innovative Technologies, vol.3, no.2, pp.157-161, 2019 (Peer-Reviewed Journal)
- V. **Bir Katamaran için Sinüs-Kosinüs Algoritması Tabanlı PID Denetleyici**
ŞAHİN Ö. S., AYAS M. Ş.
International Journal of Multidisciplinary Studies and Innovative Technologies, vol.3, no.2, pp.145-150, 2019 (Peer-Reviewed Journal)
- VI. **Performance Analysis of Error-Based and User-Defined Objective Functions for a Particle Swarm Optimization Tuned PID Controller with Derivative Filter**
ŞAHİN E., AYAS M. Ş.
Afyon Kocatepe Üniversitesi Fen ve Mühendislik Bilimleri Dergisi, vol.19, pp.682-689, 2019 (Peer-Reviewed Journal)

- VII. **Parameter effect analysis of particle swarm optimization algorithm in PID controller design**
AYAS M. Ş., ŞAHİN E.
International Journal of Optimization and Control: Theories and Applications, vol.9, no.2, pp.165-175, 2019
(Scopus)

Refereed Congress / Symposium Publications in Proceedings

- I. **Design and Implementation of a Quadrotor Test-Bench for Control Algorithm Analysis**
AKBUDAK B. S., YILDIRIM M., CİHAT Ş., AYAS M. Ş.
2024 Innovations in Intelligent Systems and Applications Conference (ASYU), Ankara, Turkey, 16 October 2024
- II. **Analysis of CNN-LSTM Model Performance Under Targeted Adversarial Attacks in Water Treatment System**
Kara E., Ayas M. Ş., Ayas S.
2024 47th International Conference on Telecommunications and Signal Processing (TSP), 10 - 12 July 2024, pp.1-5
- III. **A Hybrid CNN-LSTM Framework for Unsupervised Anomaly Detection in Water Distribution Plant**
Şahin A. K., Çavdar B., Doğan R. Ö., Ayas S., Özgenç B., Ayas M. Ş.
Akıllı Sistemlerde Yenilikler ve Uygulamaları Konferansı (ASYU), Sivas, Turkey, 11 - 13 October 2023
- IV. **A Hybrid CNN-LSTM Framework for Unsupervised Anomaly Detection in Water Distribution Plant**
Şahin A. K., Çavdar B., Doğan R. Ö., Ayas S., Özgenç B., Ayas M. Ş.
Akıllı Sistemlerde Yenilikler ve Uygulamaları Konferansı (ASYU), Sivas, Turkey, 11 - 13 October 2023
- V. **Anomaly Detection in Predicted Water Treatment Data Using Hybrid CNN-LSTM Network Model**
Özgenç B., Ayas S., Doğan R. Ö., Çavdar B., Şahin A. K., Ayas M. Ş.
31. IEEE Sinyal İşleme ve İletişim Uygulamaları Kurultayı, İstanbul, Turkey, 5 - 08 July 2023
- VI. **RIME Algorithm Tuned Controller Design for AVR System OGR Sistemi i in RIME Algoritması Ayarlı Denetleyici Tasarımı**
CAN Ö., AYAS M. Ş.
2023 Innovations in Intelligent Systems and Applications Conference, ASYU 2023, Sivas, Turkey, 11 - 13 October 2023
- VII. **Projected Gradient Descent Adversarial Attack and Its Defense on a Fault Diagnosis System**
AYAS M. Ş., AYAS S., Djouadi S. M.
45th International Conference on Telecommunications and Signal Processing, Prague, Czech Republic, 13 July 2022
- VIII. **Employing Equilibrium Optimizer in Two-Area Load Frequency Control for a TIDFF Controller Design**
Gulicer A. K., AYAS M. Ş.
4th International Congress on Human-Computer Interaction, Optimization and Robotic Applications, HORA 2022, Ankara, Turkey, 9 - 11 June 2022
- IX. **Model Based Detection Scheme for Denial of Service Attack on Lane Keeping Assist System**
Kayser S., Heybetli F., AYAS M. Ş.
4th International Congress on Human-Computer Interaction, Optimization and Robotic Applications, HORA 2022, Ankara, Turkey, 9 - 11 June 2022
- X. **Metaheuristic algorithm based PI controller design for Linearized Quadruple-Tank Process**
Sahin A. K., Tas T., Bertug E., Ayas M. Ş.
3rd International Congress on Human-Computer Interaction, Optimization and Robotic Applications, HORA 2021, Ankara, Turkey, 11 - 13 June 2021
- XI. **Survivability-Based Protection for 3 phi Induction Motor Drives**
Saleh S. A., ÖZKOP E., AYAS M. Ş., Muttaqi K. M., Nahid-Mobarakeh B.
Annual Meeting of the IEEE-Industry-Applications-Society (IAS), Vancouver, Canada, 10 - 14 October 2021
- XII. **Analysis of False Data Injection Attack on Power System State Estimation**
Burnaz S. A. N., AYAS M. Ş.
International Conference on Advanced Technologies (ICAT'20), İstanbul, Turkey, 10 August 2020

- XIII. **A Hybrid Optimization Approach to Design Optimally Tuned PID Controller for an AVR System**
ÖZGENÇ B., AYAS M. Ş., ALTAŞ İ. H.
2020 International Congress on Human-Computer Interaction, Optimization and Robotic Applications (HORA), Ankara, Turkey, 26 June 2020
- XIV. **PID Parameter Optimization By Using Ant Colony And Cuckoo Algorithms For Boost**
CİVELEK Ö., TÜYSÜZ M., AYAS M. Ş.
4th International Symposium on Innovative Approaches in Engineering and Natural Sciences, Samsun, Turkey, 22 - 24 November 2019, pp.246-252
- XV. **On attack design strategies for networked cyber-physical systems from perspective of control theory: A brief survey**
AYAS M. Ş.
5th International Conference on Engineering Sciences (ICES 2019), Ankara, Turkey, 19 September 2019
- XVI. **Performance of PSO based classical and fractional PID controllers for an unmanned surface vehicle**
Bir İnsansız Suüstü Aracı Denetiminde PSO Tabanlı Klasik ve Kesir Dereceli PID Denetleyicilerin Performansı
AYAS M. Ş., ŞAHİN E., ALTAŞ İ. H.
26th IEEE Signal Processing and Communications Applications Conference, SIU 2018, İzmir, Turkey, 2 - 05 May 2018, pp.1-4
- XVII. **Fractional Order RC^α Circuit Modelling of an Ultra-capacitor**
ŞAHİN E., AYAS M. Ş., ALTAŞ İ. H.
7th International Conference on Advanced Technologies (ICAT'18), Antalya, Turkey, 28 April - 01 May 2018, pp.292-296
- XVIII. **Performances of Multiple-Objective PSO Based PID and Fractional-Order PID Controllers**
AYAS M. Ş., ŞAHİN E., ALTAŞ İ. H.
7th International Conference on Advanced Technologies (ICAT'18), Antalya, Turkey, 28 April - 01 May 2018, pp.160-164
- XIX. **Performance of PSO Based Classical and Fractional PID Controllers for an Unmanned Surface Vehicle**
AYAS M. Ş., ŞAHİN E., ALTAŞ İ. H.
26th IEEE Signal Processing and Communications Applications Conference (SIU), İzmir, Turkey, 2 - 05 May 2018
- XX. **A Redundantly Actuated Ankle Rehabilitation Robot and Its Control Strategies**
AYAS M. Ş., ALTAŞ İ. H.
2016 IEEE Symposium Series on Computational Intelligence (SSCI 2016), ATİNA, Greece, 6 - 09 December 2016
- XXI. **Ayak Bileği Rehabilitasyon Robotu ve Adaptif Admitans Kontrol**
AYAS M. Ş., ALTAŞ İ. H.
XX. Biyomedikal Mühendisliği Ulusal Toplantısı, 3 - 05 November 2016
- XXII. **A Redundantly Actuated Ankle Rehabilitation Robot and Its Control Strategies**
AYAS M. Ş., ALTAŞ İ. H.
IEEE Symposium Series on Computational Intelligence (IEEE SSCI), Athens, Greece, 6 - 09 December 2016
- XXIII. **Undetectable Sensor and Actuator Attacks for Observer Based Controlled Cyber-Physical Systems**
AYAS M. Ş., Djouadi S. M.
IEEE Symposium Series on Computational Intelligence (IEEE SSCI), Athens, Greece, 6 - 09 December 2016
- XXIV. **An optimized fuzzy logic controller for a parallel mechanism rehabilitation robot**
AYAS M. Ş., ALTAŞ İ. H., ŞAHİN E.
IEEE International Conference on Fuzzy Systems, FUZZ-IEEE 2015, İstanbul, Turkey, 2 - 05 August 2015
- XXV. **Ayak Bileği Rehabilitasyonu için Geliştirilen Bir Paralel Robotun Yörünge Kontrolü**
AYAS M. Ş., ALTAŞ İ. H., ŞAHİN E.
Otomatik Kontrol Türk Milli Komitesi (TOK), Denizli, Turkey, 10 - 12 September 2015, pp.1109-1114
- XXVI. **Doğrusal Sistem Simülasyonu ve Denetimi için Geliştirilen Bir Sanal Laboratuvar**
AYAS M. Ş., ALTAŞ İ. H.
Otomatik Kontrol Türk Milli Komitesi (TOK), Denizli, Turkey, 10 - 12 September 2015, pp.931-936
- XXVII. **An Optimized Fuzzy Logic Controller For A Parallel Mechanism Rehabilitation Robot**

- AYAS M. Ş., ALTAŞ İ. H., ŞAHİN E.
IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), İstanbul, Turkey, 2 - 05 August 2015
- XXVIII. **A PSO Optimized Fractional-Order PID Controller Design for a PV Array with Non-inverting Buck-Boost Converter**
ŞAHİN E., AYAS M. Ş., ALTAŞ İ. H., Sharaf A. M.
International Conference on Smart Grid Engineering (SEGE'14), Oshawa, Canada, 11 - 13 August 2014, pp.1-5
- XXIX. **Optimized control of a parallel mechanism rehabilitation robot**
Ayas M. Ş., ŞAHİN E., Altas I. H.
IASTED International Conference on Robotics Applications, RA 2014, Zürich, Switzerland, 23 - 25 June 2014, pp.367-373
- XXX. **A PSO Optimized Fractional-Order PID Controller for a PV System with DC-DC Boost Converter**
ŞAHİN E., AYAS M. Ş., ALTAŞ İ. H.
16th International Power Electronics and Motion Control Conference and Exposition (PEMC), Antalya, Turkey, 21 - 24 September 2014, pp.477-481
- XXXI. **Trajectory Tracking Control Of A Stewart Platform**
AYAS M. Ş., ŞAHİN E., ALTAŞ İ. H.
16th International Power Electronics and Motion Control Conference and Exposition (PEMC), Antalya, Turkey, 21 - 24 September 2014, pp.720-724
- XXXII. **Design of a fuzzy logic controller for a 2-DOF robot manipulator**
AYAS M. Ş., DANAYİYEN Y., ALTAŞ İ. H.
Electronics, Computer and Computation (ICECCO), Ankara, Turkey, 7 - 09 November 2013, pp.265-268
- XXXIII. **DESIGN OF A FUZZY LOGIC CONTROLLER FOR A 2-DOF ROBOT MANIPULATOR**
AYAS M. Ş., DANAYİYEN Y., ALTAŞ İ. H.
10th International Conference on Electronics, Computer and Computation (ICECCO), Ankara, Turkey, 7 - 09 November 2013, pp.265-268
- XXXIV. **A Fuzzy Logic Controlled Model-Based Reflex Agent Simulator**
AYAS M. Ş., ALTAŞ İ. H.
9th International Conference on Electronics Computer and Computation (ICECCO 2012), Ankara, Turkey, 1 - 03 November 2012, pp.57-60
- XXXV. **Fırçasız Doğru Akım Motorunun Oransal İntegral ve Bulanık Mantık Denetleyicilerle Hız Kontrolü Karşılaştırılması**
AKYAZI Ö., AYAS M. Ş., ALTAŞ İ. H.
TOK'10 Otomatik Kontrol Türk Milli Komitesi Otomatik Kontrol Ulusal Toplantısı, Kocaeli, Turkey, 21 - 23 September 2010, pp.532-535
- XXXVI. **Kıyıcı Beslemeli Doğru Akım Motorunun Oransal İntegral, Bulanık Mantık ve Bulanık Mantık-Oransal İntegral Denetleyicilerle Hız Kontrolü Karşılaştırılması**
AKYAZI Ö., SESLİ E., AYAS M. Ş., AKPINAR A. S.
Akıllı Sistemlerde Yenilikler ve Uygulamaları Sempozyumu (ASYU), Kayseri, Turkey, 21 - 24 June 2010, pp.178-182
- XXXVII. **Design Of A Fuzzy Logic Controller For Light Tracking Servo Systems**
AYAS M. Ş., ALTAŞ İ. H.
International Symposium on INnovations in Intelligent SysTems and Applications, 21 - 24 June 2010

Supported Projects

Altaş İ. H., Ayas M. Ş., Baysal Y. A., Danayiyen Y., Özgenç B., TUBITAK Project, Grid/Load Integration of Photovoltaic Systems with shadow effect for Energy Continuity, 2023 - 2026

Ayas M. Ş., Ayas S., Özgenç B., Doğan R. Ö., Altaş İ. H., TUBITAK Project, Su Arıtma Ve Dağıtma Sistemlerindeki Aykırılık Tespit Modellerine Yönelik Optimum Kara Kutu Çekişmeli Saldırılarının Tasarlanması Ve Savunma Mekanizmasının Geliştirilmesi, 2022 - 2024

ALTAŞ İ. H., ŞAHİN E., AYAS M. Ş., Project Supported by Higher Education Institutions, Dalga Enerji Sistemlerinde Elektrik

Gücü Üzerindeki Düzensiz Dalga Etkilerinin Akıllı Kompanzasyon Yöntemleriyle Giderilmesi, 2014 - 2016
AYAS M. Ş., ALTAŞ İ. H., AKSOY A., Industrial Thesis Project, Göz Kamaştırmayan Araç Farı Projesi, 2011 - 2012
AYAS M. Ş., Project Supported by Other Official Institutions, Elektronik Vana İçeren Uzaktan Erişimli Su Sigortası, 2011 - 2012

Metrics

Publication: 64
Citation (WoS): 374
Citation (Scopus): 573
H-Index (WoS): 11
H-Index (Scopus): 13

Scholarships

2219 - Yurt Dışı Doktora Sonrası Araştırma Burs Programı, TÜBİTAK, 2021 - Continues
2214-A Yurt Dışı Doktora Sırası Araştırma Burs Programı, TÜBİTAK, 2015 - 2016
2211-C Öncelikli Alanlara Yönelik Doktora Burs Programı, TÜBİTAK, 2013 - 2015