

## Assoc. Prof. Volkan Sezer

### Personal Information

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### Education Information

Doctorate, İstanbul Teknik Üniversitesi, Elektrik-Elektronik Fakültesi, Kontrol Ve Otomasyon Mühendisliği Bölümü, Turkey 2010 - 2014

Post Graduate, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Mekatronik Müh., Turkey 2005 - 2008

Under Graduate, Yıldız Teknik Üniversitesi, Elektrik-Elektronik Fakültesi, Elektronik Ve Haberleşme Mühendisliği Bölümü, Turkey 2001 - 2005

### Dissertations

Doctorate, A novel obstacle avoidance approach for nonholonomic ground vehicle autonomy, İstanbul Teknik Üniversitesi, Elektrik-Elektronik Fakültesi, Kontrol Ve Otomasyon Mühendisliği Bölümü, 2012

Post Graduate, Modeling and optimal power management of a parallel hybrid electric vehicle, İstanbul Teknik Üniversitesi, 2008

### Research Areas

Technical Sciences, Information Systems, Communication and Control Engineering, Control and System Engineering, Robotics and Mechatronics Systems

### Academic Titles / Tasks

Associate Professor, Istanbul Technical University, Elektrik-Elektronik, Kontrol Ve Otomasyon Mühendisliği, 2019 - Continues

Assistant Professor, Istanbul Technical University, Kontrol Ve Otomasyon Mühendisliği Bölümü, 2018 - 2019

Assistant Professor, İstanbul Teknik Üniversitesi, Elektrik-Elektronik Fakültesi, Kontrol Ve Otomasyon Mühendisliği Bölümü, 2015 - 2018

Lecturer PhD, İstanbul Teknik Üniversitesi, Makine Fakültesi, Makine Mühendisliği Bölümü, 2013 - 2015

Lecturer PhD, İstanbul Teknik Üniversitesi, Elektrik-Elektronik Fakültesi, Kontrol Ve Otomasyon Mühendisliği Bölümü, 2013 - 2013

Research Assistant, İstanbul Teknik Üniversitesi, Makine Fakültesi, Makine Mühendisliği Bölümü, 2011 - 2013

### Professional Experience

Deputy Head of Department, İstanbul Teknik Üniversitesi, Kontrol Ve Otomasyon Müh., 2017 - Continues

Fakülte Yönetim Kurulu Üyesi, İstanbul Teknik Üniversitesi, Fen Bilimleri Enstitüsü, Mekatronik Mühendisliği (Dr), 2015 - Continues

## Courses

Servo Motors, Under Graduate, 2016 - 2017

OTOMATİK KONTROL SİSTEMLERİ, Under Graduate, 2016 - 2017

## Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- I. **Driving shaft lifetime enhancement by hybrid electrification**  
SEZER V.  
Proceedings Of The Institution Of Mechanical Engineers Part D-Journal Of Automobile Engineering, vol.233, no.3, pp.572-584, 2019 (Journal Indexed in SCI)
- II. **Design and implementation of a new speed planner for semiautonomous systems**  
Demir M., Sezer V.  
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.26, no.2, pp.693-706, 2018 (Journal Indexed in SCI)
- III. **Intelligent decision making for overtaking maneuver using mixed observable Markov decision process**  
Sezer V.  
JOURNAL OF INTELLIGENT TRANSPORTATION SYSTEMS, vol.22, no.3, pp.201-217, 2018 (Journal Indexed in SCI)
- IV. **Combined fuzzy approach for online speed planning and control with real vehicle implementation**  
Sezer V.  
INTERNATIONAL JOURNAL OF VEHICLE DESIGN, vol.68, no.4, pp.329-345, 2015 (Journal Indexed in SCI)
- V. **A novel obstacle avoidance algorithm: "Follow the Gap Method"**  
Sezer V., Gökaşan M.  
ROBOTICS AND AUTONOMOUS SYSTEMS, vol.60, no.9, pp.1123-1134, 2012 (Journal Indexed in SCI)
- VI. **A Novel ECMS and Combined Cost Map Approach for High-Efficiency Series Hybrid Electric Vehicles**  
Sezer V., GOKASAN M., Bogosyan S.  
IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, vol.60, no.8, pp.3557-3570, 2011 (Journal Indexed in SCI)
- VII. **Framework for development of driver adaptive warning and assistance systems that will be triggered by a driver inattention monitor**  
Aytekin B., DINC MEN E., GUEVENC B. A., Altuğ E., GUEVENC L., Danis S., Acarman T., SEZER V., ARARAT O., Oencue S.  
INTERNATIONAL JOURNAL OF VEHICLE DESIGN, vol.52, pp.20-37, 2010 (Journal Indexed in SCI)
- VIII. **Propulsion system design of a hybrid electric vehicle**  
Uygan I. M. C., HARTAVI A. E., GUEVENC L., Sezer V., Acarman T.  
INTERNATIONAL JOURNAL OF VEHICLE DESIGN, vol.52, pp.96-118, 2010 (Journal Indexed in SCI)

## Articles Published in Other Journals

- I. **Motion Planning and Control with Randomized Payloads on Real Robot Using Deep Reinforcement Learning**  
Demir A., Sezer V.  
INTERNATIONAL JOURNAL OF SEMANTIC COMPUTING, vol.13, no.4, pp.541-563, 2019 (Journal Indexed in ESCI)
- II. **A NOVEL DATA ASSOCIATION TECHNIQUE TO IMPROVE RUN-TIME EFFICIENCY OF SLAM ALGORITHMS**  
YENGİN Z. U., SEZER V.  
Eskişehir Technical University Journal of Science and and Technology a- Applied Sciences and Engineering (Online), vol.20, no.2, pp.179-194, 2019 (Refereed Journals of Other Institutions)
- III. **Design of a Semi-Autonomous Electric Wheelchair Controlled by Head Movements**  
Sezer V.  
Gazi Üniversitesi Fen Bilimleri Dergisi Part C: Tasarım ve Teknoloji, vol.6, pp.221-232, 2018 (International)

Refereed University Journal)

**IV. Follow the Gap with Dynamic Window Approach**

Özdemir A., Sezer V.

INTERNATIONAL JOURNAL OF SEMANTIC COMPUTING, vol.12, no.1, pp.43-57, 2018 (Journal Indexed in ESCI)

**V. Metrobüs Şaft Torkunun Sınırlandırılmasına Yönelik Hibrit Güç Aktarma Yapısı ve Güç Yönetim Sistemi Tasarımı**

SEZER V.

Gümüşhane Üniversitesi Fen Bilimleri Enstitüsü Dergisi, vol.8, pp.84-95, 2018 (Refereed Journals of Other Institutions)

## Books & Book Chapters

**I. Unmanned Ground Vehicle Otonobil: Design, Preception and Decision Alorithms**

SEZER V., BOYRAZ P., ERCAN Z., dikilitaş ç., heceoğlu h., ÖNER A., ÖKE GÜNEL G., GÖKAŞAN M.

in: Smart Mobile In Vehicle Systems Next Generation Advancements, Gerhard Schmidt,Hüseyin Abut,Kazuya Takeda,John H.L. Hansen, Editor, Springer, 2014

**II. Real-World Data Collection with "UYANIK"**

ABUT h., ERDOĞAN h., ERÇİL F. A. , ÇÜRÜKLÜ b., KOMAN h. c. , TAŞ f., ARGÜNŞAH a. ö. , COŞAR s., AKAN b., KARABALKAN h., et al.

in: In Vehicle Corpus and Signal Processing for Driver Behavior, Kazuya Takeda,Hakan Erdoğan,John Hansen,Hüseyin Abut, Editor, Springer, 2009

## Refereed Congress / Symposium Publications in Proceedings

**I. Motion Planning And Control with Randomized Payloads Using Deep Reinforcement Learning**

Demir A., Sezer V.

3rd IEEE International Conference on Robotic Computing (IRC), Naples, Italy, 25 - 27 February 2019, pp.32-37

**II. Design and Implementation of Autonomous Parallel and Vertical Parking Mobile Vehicle**

kızıl a., koçak s., KUTLUCAN A. C. , doğan c., SEZER V.

6th International Conference on Control Engineering Information Technology, 25 - 27 October 2018

**III. Design and Control of a Tennis Ball Collector Robot**

çabuk v. u. , şavkan a. k. , kahraman r., karaduman f., kırıl o., SEZER V.

6th International Conference on Control Engineering Information Technology, 25 - 27 October 2018

**IV. Intersection Navigation Under Dynamic Constraints Using Deep Reinforcement Learning**

demir a., SEZER V.

6th International Conference on Control Engineering Information Technology, 25 - 17 October 2018

**V. Design, Implementation and Control of Dual Axis Self Balancing Inverted Pendulum using Reaction Wheels**

TÜRKMEN A., Korkut M. Y. , ERDEM M., GÖNÜL Ö., SEZER V.

ELECO 2017 10th International Conference on Electrical and Electronics Engineering, 30 November - 02 December 2017

**VI. Design and Experimental Validation of a Low Cost Autonomous Vehicle Testbed**

Erdem M., Demir A., Sezer V.

International Conference on Advances in Automotive Technologies, İstanbul, Turkey, 7 - 11 October 2017, pp.174-178

**VII. Yangın Söndüren Otonom Robot Tasarımı Ve Gerçeklemesi**

CANBAY D. E. , YOLAL e., ŞAHAN ö. f. , TERZİOĞLU i., SEZER V.

Otomatik Kontrol Ulusal Toplantısı TOK 2017, Turkey, 21 - 23 September 2017

**VIII. Kazanç Değiştirmeli Doğrusal Karesel Gauss (LQG) Düzenleyici ile Küre Üzerinde Dengede Duran**

## **Gövde Kontrolü**

ERDOĞAN a. c. , PAZARBAŞI a. h. , BOSTAN e. a. , DEMİR m. d. , SEZER V.

Otomatik Kontrol Ulusal Toplantısı TOK 2017, Turkey, 21 - 23 September 2017

- IX. Reaksiyon Tekerleri ile Kendini İki Eksende Dengeleyebilen Ters Sarkaç Tasarımı, Üretimi ve Kontrolü**  
TÜRKMEN A., KORKUT M. Y. , ERDEM M., GÖNÜL Ö., SEZER V.  
Otomatik Kontrol Ulusal Toplantısı TOK 2017, Turkey, 21 - 23 September 2017
- X. Improved Follow the Gap Method for Obstacle Avoidance**  
Demir M., Sezer V.  
IEEE International Conference on Advanced Intelligent Mechatronics (AIM), Munich, Germany, 3 - 07 July 2017, pp.1435-1440
- XI. A Hybrid Obstacle Avoidance Method: Follow the gap with dynamic window approach**  
Özdemir A., Sezer V.  
1st IEEE International Conference on Robotic Computing (IRC), Taichung, Taiwan, 10 - 12 April 2017, pp.257-262
- XII. Head gesture recognition via dynamic time warping and threshold optimization**  
MAVUŞ U., Sezer V.  
2017 IEEE Conference on Cognitive and Computational Aspects of Situation Management, CogSIMA 2017, Georgia, United States Of America, 27 - 31 March 2017
- XIII. Taşıt Grubu Kontrolü Konesnüs Tabanlı Yaklaşım**  
BEKE A., SARAĞLU M., KADEM G., CEBE O., GÖKAY R., SEZER V.  
Otomatik Kontrol Ulusal Toplantısı TOK 2016, Eskişehir, Turkey, 29 September - 01 October 2016, pp.249-254
- XIV. Takipçi Robot Tasarımı ve Kontrolü**  
GÜZEL M., ONGUN M. A. , KUMURKAN H. H. , BEKAROĞLU Y. T. , ÇİÇEK S., SEZER V.  
Otomatik Kontrol Ulusal Toplantısı TOK 2016, Eskişehir, Turkey, 29 September - 01 October 2016, pp.766-771
- XV. Otonom Tohum Ekici Prototip Tarım Aracı Tasarımı**  
ARTUNÇ T. C. , HAVUÇÇUOĞLU F. S. , ASLAN F., AKGÜN N., SEZER V.  
Otomatik Kontrol Ulusal Toplantısı TOK 2016, Eskişehir, Turkey, 29 September - 01 October 2016, pp.141-146
- XVI. Towards Autonomous Navigation of Unsignalized Intersections under Uncertainty of Human Driver Intent**  
Sezer V., Bandyopadhyay T., Rus D., FRAZZOLİ E., Hsu D.  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Hamburg, Germany, 28 September - 02 October 2015, pp.3578-3585
- XVII. 3 Eksenli Kafa İzleyici İle Araç İçi Sürüş Hissiyatı Sağlayarak Uzaktan Yönetilebilen Ve Otomatik Düşman Tanıma Yeteneğine Sahip Yarı Otonom Tank Tasarımı**  
ERSİN g., ÖZTÜRK m., HALUK ç., SEZER V.  
Otomatik Kontrol Ulusal Toplantısı TOK 2015, Turkey, 10 - 12 September 2015
- XVIII. Kitap Dizinleyen Kütüphane Asistanı Geliştirilmesi**  
MAHMUT D., ZENGİN N., HAKAN B., ERDEM A., SEZER V.  
Otomatik Kontrol Ulusal Toplantısı TOK 2015, Turkey, 10 - 12 September 2015
- XIX. Otonom Sürüş ve Nişan Alma Kabiliyetli Paletli Kara Aracı Tasarımı**  
GELBAL Ş. Y. , BODUR K., ALTINPINAR O. V. , ŞAHİN K., HOT M., SEZER V.  
Otomatik Kontrol Ulusal Toplantısı TOK 2015, Turkey, 10 - 12 September 2015
- XX. Otonom Kara Taşıtı: Otonobil**  
SEZER V., GÖKAŞAN M.  
1. Karayolu Akıllı Ulaşım Sistemleri Kongre ve Sergisi, Turkey, 26 - 18 May 2014
- XXI. A New Fuzzy Speed Control Strategy Considering Lateral Vehicle Dynamics**  
Sezer V., Ercan Z., Heceoglu H., Gökaşan M., Bogosyan S.  
15th International IEEE Conference on Intelligent Transportation Systems (ITSC), Alaska, United States Of America, 16 - 19 September 2012, pp.19-24
- XXII. A new fuzzy speed planning method for safe navigation**  
Sezer V., Ercan Z., Heceoglu H., Bogosyan S., Gökaşan M.

- 2012 IEEE International Conference on Vehicular Electronics and Safety, ICVES 2012, İstanbul, Turkey, 24 - 27 July 2012, pp.381-386
- XXIII. **Multi-sensor data fusion of DCM based orientation estimation for land vehicles**  
Ercan Z., Sezer V., Heceoglu H., Dikilitas C., Gökaşan M., Muğan A., BOĞOSYAN S.  
2011 IEEE International Conference on Mechatronics, ICM 2011, İstanbul, Turkey, 13 - 15 April 2011, pp.672-677
- XXIV. **Conversion of a conventional electric automobile into an unmanned ground vehicle (UGV)**  
Sezer V., Dikilitas C., Ercan Z., HECEOĞLU H., Oner A., APAK A., Gökaşan M., Muğan A.  
2011 IEEE International Conference on Mechatronics, ICM 2011, İstanbul, Turkey, 13 - 15 April 2011, pp.564-569
- XXV. **Design and Implementation of a Series Parallel Light Commercial Hybrid Electric Vehicle**  
SEZER V., ALİ ÖNDER b., DEMİRCİ m., UÇAROL h., KURAL e., EREN ö., VARLIK k., IRMAK k., YILDIRIM m., HARTAVI KARCI A. E. , et al.  
The 24th International Battery, Hybrid and Fuel-cell Electric Vehicle Symposium and Exhibition (EVS24), 13 - 16 May 2009
- XXVI. **Electric regenerative power assisted brake algorithm for a front and rear wheel drive parallel hybrid electric commercial van**  
Hartavi A. E. , Uygan I. M. , Sezer V., Güvenç L., ACARMAN T., Kiliç V., Yildirim M.  
Commercial Vehicle Engineering Congress and Exhibition, Rosemont, IL, United States Of America, 7 - 09 October 2008
- XXVII. **Maximizing overall efficiency strategy (MOES) for power split control of a parallel hybrid electric vehicle**  
Sezer V., Uygan I. M. C. , Hartavi A. E. , Güvenç L., Acarman T., KILIÇ V., Yildirim M.  
Commercial Vehicle Engineering Congress and Exhibition, Rosemont, IL, United States Of America, 7 - 09 October 2008
- XXVIII. **Signal interfacing for hybrid electric vehicular electronics and an implementation study**  
Hartavi A. E. , Uygan I. M. C. , Sezer V., ACARMAN T., Güvenç L., Kiliç V., Yildirim M.  
2008 IEEE International Conference on Vehicular Electronics and Safety, ICVES 2008, Columbus, OH, United States Of America, 22 - 24 September 2008, pp.151-156

## Supported Projects

- Sezer V., Demir A., Kumbasar T., Zengin R. S. , Project Supported by Higher Education Institutions, Servis Robotları İçin Otonom Sürüş Çözümlerinin Geliştirilmesi ve Uygulanması, 2018 - 2019
- Sezer V., Project Supported by Higher Education Institutions, TOWARDS AUTONOMOUS NAVIGATION OF UNSIGNALIZED INTERSECTIONS UNDER UNCERTAINTY OF HUMAN DRIVER INTENT, 2015 - 2018

## Scientific Refereeing

- TUBITAK Project, March 2018
- TUBITAK Project, March 2018
- TUBITAK Project, February 2018
- TUBITAK Project, February 2018
- TUBITAK Project, May 2015

## Scientific Consultations

- Tekhnelogos A.Ş.:. Scientific Consultancy, İstanbul Teknik Üniversitesi, Elektrik-Elektronik Fakültesi, Kontrol Ve Otomasyon Mühendisliği Bölümü, Turkey, 2017 - Continues
- Keating International:. Scientific Consultancy, İstanbul Teknik Üniversitesi, Elektrik-Elektronik Fakültesi, Kontrol Ve

Otomasyon Mühendisliği Bölümü, Turkey, 2017 - 2018

Tekhnologos A.Ş., Scientific Consultancy, İstanbul Teknik Üniversitesi, Elektrik-Elektronik Fakültesi, Kontrol Ve

Otomasyon Mühendisliği Bölümü, Turkey, 2015 - 2017

İstanbul Ulaşım A.Ş., Scientific Consultancy, İstanbul Teknik Üniversitesi, Turkey, 2004 - 2016

## **Edit Congress and Symposium Activities**

TÜRKİYE ROBOTBİLİM KONFERANSI (TORK), Session Moderator, İstanbul, Turkey, 2015

18. Bilgisayar Destekli Mühendislik ve Sistem Modelleme Konferansı, Invited Speaker, İstanbul, Turkey, 2014

## **Citations**

Total Citations (WOS):179

h-index (WOS):5