

## Asst. Prof. SELÇUK HİMMETOĞLU

### Personal Information

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### International Researcher IDs

ORCID: 0000-0002-8635-703X

Publons / Web Of Science ResearcherID: N-9273-2018

Yoksis Researcher ID: 182844

### Education Information

Doctorate, Loughborough University, Mühendislik Fakültesi, Makina Ve İmalat Mühendisliği, United Kingdom 2003 - 2008

Postgraduate, Middle East Technical University, Faculty Of Engineering, Makina Mühendisliği, Turkey 1996 - 2000

Undergraduate, Middle East Technical University, Faculty Of Engineering, Makina Mühendisliği, Turkey 1992 - 1996

### Foreign Languages

English, C1 Advanced

### Research Areas

Mechanical Engineering, Machine Theory and Dynamics, Modeling and Simulation of Dynamic Systems, Engineering and Technology

### Academic Titles / Tasks

Assistant Professor, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, 2009 - Continues

### Advising Theses

Himmetoğlu S., Seat Design for Neck Protection in Autonomous Car Crashes, Doctorate, S.Yavuz(Student), 2024

Himmetoğlu S., Occupant Protection by Seats at High Speed Impacts, Postgraduate, B.Toprak(Student), 2024

Himmetoğlu S., Dynamic characterisation of human neck for impact applications, Postgraduate, B.EMRE(Student), 2023

Himmetoğlu S., A DUMMY HEAD AND NECK MODEL FOR BOTH FRONTAL AND REAR IMPACTS, Postgraduate, Y.DEMİRER(Student), 2022

Himmetoğlu S., AN INVESTIGATION OF COMPATIBILITY FOR THE PASSENGER CAR FLEET IN HEAD-ON FRONTAL COLLISIONS, Postgraduate, G.ŞAHİN(Student), 2022

Himmetoğlu S., ADAPTIVE CAR SEAT CONTROL FOR WHIPLASH MITIGATION, Doctorate, A.GÜNEŞ(Student), 2022

Himmetoğlu S., Development of a metric system to evaluate the performance of passenger cars in frontal crash tests, Postgraduate, E.KAMIŞLI(Student), 2021

Himmetoğlu S., Smart car seat design for safety and comfort, Postgraduate, C.KARABEYOĞLU(Student), 2019

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

- I. **Semiactive Car-Seat System for Rear-End Collisions**  
Kaya A. G., Himmetoğlu S.  
Machines, vol.12, no.8, pp.1-29, 2024 (SCI-Expanded)
- II. **Development of a Restraint System for Rear-Facing Car Seats**  
Yavuz S., Himmetoğlu S.  
Machines, vol.11, no.12, pp.1-30, 2023 (SCI-Expanded)
- III. **Car seat design to improve rear-impact protection**  
HİMMETOĞLU S., Acar M., Bouazza-Marouf K., Taylor A. J.  
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART D-JOURNAL OF AUTOMOBILE ENGINEERING, vol.225, pp.441-459, 2011 (SCI-Expanded)
- IV. **A multi-body human model for rear-impact simulation**  
HİMMETOĞLU S., Acar M., Bouazza-Marouf K., Taylor A.  
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART D-JOURNAL OF AUTOMOBILE ENGINEERING, vol.223, pp.623-638, 2009 (SCI-Expanded)
- V. **Energy-Absorbing Car Seat Designs for Reducing Whiplash**  
HİMMETOĞLU S., Acar M., Bouazza-Marouf K., Taylor A. J.  
TRAFFIC INJURY PREVENTION, vol.9, no.6, pp.583-591, 2008 (SCI-Expanded)
- VI. **A multi-body head-and-neck model for simulation of rear impact in cars**  
HİMMETOĞLU S., Acar M., Taylor A. J., Bouazza-Marouf K.  
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART D-JOURNAL OF AUTOMOBILE ENGINEERING, vol.221, pp.527-541, 2007 (SCI-Expanded)

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

- I. **Correlation of Upper Neck Loading with Crash Pulse Characteristics in Rear Impacts**  
Himmetoğlu S., Acik O. N.  
Transport Means, Kaunas, Lithuania, 2 - 04 October 2024, pp.270-275
- II. **Extraction of Loading and Unloading Stiffnesses in 100% Overlap Frontal Crashes**  
Himmetoğlu S., Sakarya A. Y.  
Transport Means, Kaunas, Lithuania, 2 - 04 October 2024, pp.41-46
- III. **A crash-energy distribution technique for seats to improve neck protection in rear-end impacts**  
Himmetoğlu S.  
CONAT 2024 International Congress of Automotive and Transport Engineering, Brasov, Romania, 6 - 08 November 2024, pp.178-188
- IV. **Inverse kinematics analysis of a 2-DOF spherical parallel manipulator**  
Himmetoğlu S.  
21. Ulusal Makina Teorisi Sempozyumu (UMTS 2023), Edirne, Turkey, 13 - 15 September 2023, pp.225-231
- V. **The Effect of Seatback Angle on Whiplash Risk in Rear-end Collisions**  
HİMMETOĞLU S.  
27th International Scientific Conference on Transport Means 2023, Hybrid, Palanga, Lithuania, 4 - 06 October 2023, vol.1, pp.266-270
- VI. **Introduction of a Car Seat with Robust Performance against Whiplash in Rear Impacts**  
HİMMETOĞLU S.

27th International Scientific Conference on Transport Means 2023, Hybrid, Palanga, Lithuania, 4 - 06 October 2023, vol.1, pp.110-115

**VII. Estimation of Occupant Compartment Intrusion in Full-Width Rigid Barrier Impacts**

HİMMETOĞLU S.

27th International Scientific Conference on Transport Means 2023, Hybrid, Palanga, Lithuania, 4 - 06 October 2023, vol.1, pp.13-18

**VIII. An Evaluation of Front and Rear Seat Safety: Improvements and Critical Points**

HİMMETOĞLU S.

27th International Scientific Conference on Transport Means 2023, Hybrid, Palanga, Lithuania, 4 - 06 October 2023, vol.1, pp.62-67

**IX. A Survey Study of Autonomous Vehicle Moral Dilemma: A Turkish Perspective**

HİMMETOĞLU S., ZENGİN E., Orkmez F., Tekeli A.

27th International Scientific Conference on Transport Means 2023, Hybrid, Palanga, Lithuania, 4 - 06 October 2023, vol.1, pp.214-219

**X. Development of a mathematical tool to measure crash severity in frontal impacts**

Himmetoğlu S., Dugan G.

26th International Scientific Conference Transport Means 2022, Kaunas, Lithuania, 5 - 07 October 2022, pp.254-259

**XI. Introduction of a protection system for rear-facing seats in autonomous car crashes**

Himmetoğlu S.

26th International Scientific Conference Transport Means 2022, Kaunas, Lithuania, 5 - 07 October 2022, pp.104-109

**XII. Acceptance of autonomous vehicles in Turkey**

Himmetoğlu S., Zengin E. N., Özkök O., Kara B. S.

26th International Scientific Conference Transport Means 2022, 05 October 2022, pp.134-139

**XIII. Integration of muscle tone into a multi-body head-and-neck model for crash applications**

Himmetoğlu S.

26th International Scientific Conference Transport Means 2022, Kaunas, Lithuania, 5 - 07 October 2022, pp.27-32

**XIV. Occupant protection in seats with fixed recliners in rear-end collisions**

Himmetoğlu S.

19th International Conference on Machine Design and Production (UMTIK 2022), Nevşehir, Turkey, 31 August - 03 September 2022, pp.97-109

**XV. A dynamic characterisation of full-overlap low-speed rear impacts**

Himmetoğlu S., Beyhan C., Zengin E. N.

19th International Conference on Machine Design and Production (UMTIK 2022), Nevşehir, Turkey, 31 August - 03 September 2022, pp.41-52

**XVI. Female Modelling and Protection in Road-Traffic Accidents**

Himmetoğlu S., Şen F., Özer F. T.

26th International Scientific Conference Transport Means 2022, Kaunas, Virtual, Lithuania, 5 - 07 October 2022, vol.2022-October, pp.308-313

**XVII. An Analysis of Head-on Frontal Collisions by Modelling Crash Tests**

HİMMETOĞLU S.

25th International Scientific Conference Transport Means 2021, Kaunas, Virtual, Lithuania, 6 - 08 October 2021, vol.2021-October, pp.86-91

**XVIII. Validation of a Multi-Body Human Model for Efficient Rear Impact Simulations**

HİMMETOĞLU S.

25th International Scientific Conference Transport Means 2021, Kaunas, Virtual, Lithuania, 6 - 08 October 2021, vol.2021-October, pp.35-40

**XIX. Validation of a simple multi-body head-and-neck model for efficient rear impact simulations**

HİMMETOĞLU S., Balci T., Aydoğan M.

24th International Scientific Conference on Transport Means 2020, Kaunas, Lithuania, 30 September - 02 October

2020, pp.273-277

- XX. **Vehicle structure related design criteria and restraint performance for vans in full-width frontal impacts**  
HİMMETOĞLU S., Yildirim U., Ozturk T.  
24th International Scientific Conference on Transport Means 2020, Kaunas, Lithuania, 30 September - 02 October 2020, pp.16-21
- XXI. **Neck protection in autonomous car crashes**  
Yavuz S., HİMMETOĞLU S.  
24th International Scientific Conference on Transport Means 2020, Kaunas, Lithuania, 30 September - 02 October 2020, pp.147-152
- XXII. **Design criteria for the safety of passenger cars in frontal impacts**  
Himmetoğlu S., Ünal H., Sak Y. G.  
23rd International Scientific Conference on Transport Means 2019, Palanga, Lithuania, 2 - 04 October 2019, pp.1496-1503
- XXIII. **Safety issues in fully autonomous cars: A Turkish perspective**  
Himmetoğlu S., Kılıç L. O.  
23rd International Scientific Conference on Transport Means 2019, Palanga, Lithuania, 2 - 04 October 2019, pp.131-134
- XXIV. **Derivation of stiffnesses for comparison of vehicle performance in frontal impacts**  
HİMMETOĞLU S.  
18th International Conference on Machine Design and Production - UMTIK 2018, Eskişehir, Turkey, 3 - 06 July 2018, pp.61-79
- XXV. **Derivation of crush force versus deformation behaviour of vehicles at different impact speeds**  
HİMMETOĞLU S., YILMAZ K. B., YILDIRIM B., TEKİN a.  
22nd International Scientific on Conference Transport Means 2018, Trakai, Lithuania, 3 - 05 October 2018, pp.49-56
- XXVI. **The effects of load cell wall design in the assessment of shape compatibility in vehicle collisions**  
HİMMETOĞLU S.  
22nd International Scientific on Conference Transport Means 2018, Trakai, Lithuania, 3 - 05 October 2018, pp.84-91
- XXVII. **Verification of Poisson hypothesis in vehicle crashes using a semi-analytical method (Taşıt çarpışmalarında Poisson hipotezinin yarı-analitik yöntemle doğrulanması)**  
Himmetoğlu S.  
18. Ulusal Makina Teorisi Sempozyumu (UMTS 2017), Trabzon, Turkey, 5 - 07 July 2017
- XXVIII. **Passive-seat design to reduce whiplash in rear impacts**  
HİMMETOĞLU S.  
3rd International Conference on Engineering and Natural Science (ICENS 2017), Budapest, Hungary, 3 - 07 May 2017
- XXIX. **An adaptive car-seat to mitigate whiplash in rear impacts**  
HİMMETOĞLU S.  
21st International Scientific on Conference Transport Means 2017, Juodkrante, Lithuania, 20 - 22 September 2017, pp.32-38
- XXX. **An analysis of load incompatibility in central in-line collisions of vehicles using lumped-mass modelling**  
HİMMETOĞLU S.  
17th International Conference on Machine Design and Production (UMTIK 2016), Bursa, Turkey, 12 - 15 July 2016
- XXXI. **An evaluation of passive head-restraints with different stiffness and energy dissipation properties for whiplash mitigation**  
HİMMETOĞLU S.  
7th International Expert Symposium on Accident Research (ESAR 2016), Hannover, Germany, 9 - 10 June 2016
- XXXII. **Rear impact whiplash test design by using a Maxwell-element based energy-absorber**

HİMMETOĞLU S.

2nd International Conference on Engineering and Natural Science (ICENS 2016), Sarajevo, Bosnia And Herzegovina, 24 - 28 May 2016

**XXXIII. Crash-adaptive seat-and-head-restraint systems for rear-impact whiplash mitigation**

Himmetoğlu S., Acar M.

International Crashworthiness Conference (ICRASH 2010), Washington, United States Of America, 22 - 24 September 2010

**XXXIV. The influence of crash pulse shape on seat-occupant response in rear impacts**

HİMMETOĞLU S.

4th International Expert Symposium on Accident Research (ESAR), Hannover, Germany, 16 - 18 September 2010

**XXXV. Design and manufacturing of a whiplash-mitigating car-seat demonstrator**

HİMMETOĞLU S., Acar M.

14th International Conference on Machine Design and Production (UMTIK 2010, Güzelyurt, Cyprus (Kkct), 29 June - 02 July 2010

**XXXVI. WHIPLASH PROTECTION BY ENERGY ABSORBING CAR-SEAT CONCEPTS**

HİMMETOĞLU S., Acar M., Bouazza-Marouf K., Taylor A. J.

10th ASME Biennial Conference on Engineering Systems Design and Analysis, İstanbul, Turkey, 12 - 24 July 2010, pp.311-320

**XXXVII. Reactive seat design for optimum whiplash mitigation at different crash severities**

Himmetoğlu S., Acar M., Bouazza Marouf K., Taylor A. J.

International IRCOBI Conference 2009, York, United Kingdom, 9 - 11 September 2009

**XXXVIII. Car seat design methodology for rear impact protection**

HİMMETOĞLU S., Acar M., Bouazza Marouf K., Taylor A. J.

13th International Conference on Machine Design and Production (UMTIK 2008), İstanbul, Turkey, 3 - 05 September 2008

**XXXIX. Investigation of different strategies for car seat design to reduce whiplash injuries**

HİMMETOĞLU S., Acar M., Taylor A. J., Bouazza Marouf K.

International Conference on Neck injuries in road traffic and prevention strategies, Munich, Germany, 5 - 06 November 2007

**XL. A multi-body head and neck model for low speed rear impact analysis**

HİMMETOĞLU S., Acar M., Taylor A. J., Bouazza Marouf K.

IFTToMM 12th World Congress in Mechanism and Machine Science, Besançon, France, 17 - 21 June 2007

**XLI. Rear impact human body and car seat models for whiplash injury mitigation**

HİMMETOĞLU S., Acar M., Taylor A. J., Bouazza Marouf K.

3rd Annual Injury Biomechanics Symposium - The Ohio State University, Columbus, United States Of America, 21 - 22 May 2007

**XLII. Removing force indeterminacy in a Hooke joint mechanism by increasing and modifying its joints without causing singularities**

HİMMETOĞLU S., Özgören M. K.

IFTToMM 11th World Congress in Mechanism and Machine Science, Tianjin, China, 1 - 04 April 2004

**XLIII. Force analysis of the Hooke joint**

HİMMETOĞLU S., Özgören M. K.

6th Biennial ASME Conference on Engineering Systems Design and Analysis (ESDA 2002), İstanbul, Turkey, 8 - 11 July 2002

**XLIV. Force analysis in manipulators having planar modules**

HİMMETOĞLU S., Özgören M. K.

9th International Conference on Machine Design and Production (UMTIK 2000, Ankara, Turkey, 13 - 15 September 2000

## Supported Projects

HİMMETOĞLU S., Project Supported by Higher Education Institutions, Boyun travmasını azaltmak için çeşitli sertlik ve enerji kaybı özelliklerine sahip pasif koltuk-başlıklarının değerlendirilmesi, 2016 - 2016

## Student Project

- Other, Design, manufacturing and control of a 3-DOF Agile Eye (spherical parallel manipulator), Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, Turkey, 2023 - 2024
- Other, Design, manufacturing and control of a 3RRR planar parallel robot, Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, Turkey, 2023 - 2024
- Other, Design, manufacturing and control of the Tripteron robot, Hacettepe University, Mühendislik Fakültesi, Makina Mühendisliği Bölümü, Turkey, 2023 - 2024
- R & D Project, Design and manufacturing of a foam impact test machine, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2022 - 2024
- Other, Design, manufacturing and control of a five bar planar parallel robot, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2023 - 2023
- Other, Design, manufacturing and control of a 3UPS-1S spatial parallel manipulator, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2022 - 2023
- R & D Project, Design, manufacturing and control of a pro-active head-restraint system for rear seats, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2022 - 2023
- R & D Project, Design, manufacturing and control of a Delta robot, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2022 - 2023
- R & D Project, Design, manufacturing and control of a two degree-of-freedom robotic eye, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2022 - 2023
- Other, Design, manufacturing and control of a Puma type robot, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2022 - 2023
- Other, Design and application of a rear-impact avoidance sensor system for cars, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2022 - 2022
- R & D Project, Design and manufacturing of an integrated child seat, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2022 - 2022
- Other, Design, manufacturing and control of a Scara robot, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2021 - 2022
- Infrastructure Project, Design and manufacturing of a five degree-of-freedom portable CMM (coordinate measuring machine), Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2021 - 2022
- Other, Design, manufacturing and control of a rotatable seat for autonomous vehicles, Hacettepe University, Mühendislik Fakültesi, Makine Mühendisliği Bölümü, Turkey, 2020 - 2021

## Metrics

- Publication: 50  
Citation (WoS): 38  
Citation (Scopus): 92  
H-Index (WoS): 4  
H-Index (Scopus): 4

## Invited Talks

Recent Developments in Vehicle Restraint System Design in the Era of Autonomous Driving, Conference, Diđer Kurumlar, Lithuania, September 2020