



## Murat Demirel

**Nationality:** Turkish **Date of birth:** 26/04/1990 **Gender:** Male

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**Work:** İzmir Institute of Technology, Mechanical Engineering Department Rasim Alizade  
Mechatronics Laboratory, Office: Z31, 35430 İzmir (Türkiye)

### ABOUT ME

**Profiles:** [Orcid](#) | [Web of Science](#) | [Scopus](#) | [Google Scholar](#) | [Researchgate](#)

#### Academic Interests:

Mechanisms | Deployable Structures | Overconstrained Mechanisms | General-line symmetric Bricard Linkages | Altmann Linkages | Wren Platforms  
Robotics | Walking Machines | Walking Robots | Biped Robots | Parallel Robots | Cable-constrained Parallel Robots

### WORK EXPERIENCE

#### Research assistant in university

*İzmir Institute of Technology* [ 25/01/2016 – Current ]

City: İzmir

Country: Türkiye

Website: [iyte.edu.tr](http://iyte.edu.tr)

Name of unit or department: Mechanical Engineering - **Business or sector:** Professional, scientific and technical activities

Link: [me.iyte.edu.tr/research-assistants/#demirel](http://me.iyte.edu.tr/research-assistants/#demirel)

### EDUCATION AND TRAINING

#### Doctor of Philosophy - Ph.D. in Mechanical Engineering

*İzmir Institute of Technology* [ 04/09/2018 – Current ]

City: İzmir

Country: Türkiye

Website: [iyte.edu.tr](http://iyte.edu.tr)

Field(s) of study: Mechanisms | Deployable Structures | Overconstrained Mechanisms | General-line symmetric Bricard Linkages | Altmann Linkages | Wren Platforms

Final grade: 3.50 / 4.00 – Level in EQF: EQF level 8

NQF Level: 8 – Type of credits: ECTS – Number of credits: 125

Thesis: Design and Prototyping of Networks of General Line-Symmetric Bricard Linkages

Conducting research at [Rasim Alizade Mechatronics Laboratory](#) under supervision of [Prof. Gökhan Kiper](#)

#### Master of Science - M.Sc. in Mechanical Engineering - Erasmus+ Exchange Program

*Università degli Studi di Cassino e del Lazio Meridionale* [ 07/02/2017 – 31/07/2017 ]

City: Cassino, Frosinone

Country: Italy

Website: [unicas.it](http://unicas.it)

Field(s) of study: Mechanisms | Robotics | Biped Robots | Parallel Robots | Cable-constrained Parallel Robots | Walking Machines

Level in EQF: EQF level 7

NQF Level: 7 – Type of credits: ECTS – Number of credits: 33

Conducted research at [Laboratorio di Robotica e Meccatronica \(LARM\)](#) under supervision of [Prof. Marco Ceccarelli](#) and [Prof. Giuseppe Carbone](#)

### **Master of Science - M.Sc. in Mechanical Engineering**

*Izmir Institute of Technology* [ 09/09/2015 – 28/08/2018 ]

City: İzmir

Country: Türkiye

Website: [iyte.edu.tr](http://iyte.edu.tr)

Field(s) of study: Mechanisms | Robotics | Biped Robots | Parallel Robots | Cable-constrained Parallel Robots | Walking Machines

Final grade: 3.57 / 4.00 – Level in EQF: EQF level 7

NQF Level: 7 – Type of credits: ECTS – Number of credits: 213

Thesis: Design of Hybrid Cable-constrained Parallel Mechanisms for Walking Machines

Link: <https://hdl.handle.net/11147/6945>

Conducted research at [Rasim Alizade Mechatronics Laboratory](#) under supervision of [Prof. Gökhan Kiper](#)

### **Trainee**

*Aselsan Inc.* [ 11/08/2014 – 19/09/2014 ]

City: Ankara

Country: Türkiye

Website: [aselsan.com](http://aselsan.com)

**Department:** Unmanned Systems Department

**Project:** Control and GUI Design of a PTZ Camera as Real Time Windows Target (Matlab/Simulink)

- User control mode
- Blue object tracking mode (Kalman Filter and PI controller design)

### **Bachelor of Science - B.Sc. in Mechanical Engineering - Erasmus+ Exchange Program**

*Fachhochschule Südwestfalen* [ 13/03/2013 – 14/07/2013 ]

City: Soest, Regierungsbezirk Arnsberg

Country: Germany

Website: [fh-swf.de](http://fh-swf.de)

Level in EQF: EQF level 6

NQF Level: 6 – Type of credits: ECTS – Number of credits: 35

### **Trainee**

*IzTech Mechanical Workshop* [ 13/06/2011 – 22/07/2011 ]

City: İzmir

Country: Türkiye

Website: [iyte.edu.tr](http://iyte.edu.tr)

- Learned drill, lathe, welding and milling machines
- A trash bin and hammer were made

### **Bachelor of Science - B.Sc. in Mechanical Engineering**

*Izmir Institute of Technology* [ 02/09/2009 – 09/09/2015 ]

City: Urla, İzmir

Country: Türkiye

Website: [iyte.edu.tr](http://iyte.edu.tr)

Final grade: 2.84 / 4.00 – Level in EQF: EQF level 6

NQF Level: 6 – Type of credits: ECTS – Number of credits: 246

Thesis: Remotely Operated Agricultural Vehicle

### **High School Diploma - Sciences**

*Malatya Anatolian High School* [ 15/09/2003 – 15/06/2008 ]

City: Battalgazi, Malatya

Country: Türkiye

Website: [malatyaanadolulisesi.meb.k12.tr](http://malatyaanadolulisesi.meb.k12.tr)

Final grade: 86.28 / 100.00 – Level in EQF: EQF level 4  
NQF Level: 4

## PUBLICATIONS

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### [International Journal Paper: Design of a novel hybrid cable-constrained parallel leg mechanism for biped walking machines](#)

[2023]

Demirel M, Kiper G, Carbone G, Ceccarelli M. Design of a novel hybrid cable-constrained parallel leg mechanism for biped walking machines. Robotica. 2023;41(6):1778-1793. doi:10.1017/S0263574723000140

### [International Conference Paper: A critical review of deployable truss masts and proposal of a new mast: HiDAM](#)

[2023]

Cebeci Y, Demirel M, Kiper G (2023) A critical review of deployable truss masts and proposal of a new mast: HiDAM. In: Karakoc TH, Clainche SL, Chen X, Dalkiran A, Ercan AH (Ed), New Technologies and Developments in Unmanned Systems. ISUDEF 2022. Sustainable Aviation, Springer, 181-186.

### [International Conference Paper: Internship Experience for Learning the Operation of a CableDriven Robot for Rehabilitation Tasks](#)

[2019]

Carbone G., Cafolla D., Ceccarelli M., Aydinoglu O., Demirel M., "Internship Experience for Learning the Operation of a CableDriven Robot for Rehabilitation Tasks", in: New Trends in Educational Activity in the Field of Mechanism and Machine Theory (J.C. García-Prada and C. Castejón.Eds.) Springer, Cham, 2019, pp. 195 – 207. doi:10.1007/978-3-030-00108-7\_22

### [International Conference Paper: Design and simulation of a novel hybrid leg mechanism for walking machines](#)

[2018]

Demirel M, Carbone G, Ceccarelli M, Kiper G (2018) Design and simulation of a novel hybrid leg mechanism for walking machines. In: Doroftei I, Oprisan C, Pislă D, Lovasz EC (Eds), New Advances in Mechanism and Machine Science: Proceedings of the 12th IFToMM International Symposium on Science of Mechanisms and Machines (SYROM 2017), Springer, 283-290.

### [National Conference Paper: Katlanabilir mafsallı kafes direklerin katlanma oranlarını etkileyen faktörlerin incelenmesi ve yeni bir tasarım yönteminin araştırılması](#)

Cebeci Y, Demirel M, Kiper G (2021) Katlanabilir mafsallı kafes direklerin katlanma oranlarını etkileyen faktörlerin incelenmesi ve yeni bir tasarım yönteminin araştırılması. 20. Ulusal Makina Teorisi Sempozyumu (UMTS 2021), Diyarbakır, September 15-17, 2021, 17-23.

## PATENTS

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Kiper G, Demirel M, Cebeci Y (2019) Katlanabilir Direk Yapısı, TR 2019 22860 A3

Giuseppe C, Demirel M, Kiper G, Ceccarelli M (2017) Gamba Robotica a Struttura Ibrida (Robotic Leg With Hybrid Structure), n. 102017000124364 A1

## PROJECTS

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### **Design and Prototyping of Deployable Tent Mechanisms for Temporary Shelters – TÜBİTAK1005-123M090**

[ 01/04/2023 – Current ]

**Project Leader:** Dr. Gökhan Kiper

**Project Partners:** Murat Demirel, Tarık Kadak

**Job Definition:** Parametric modeling, optimization, and design of the mechanism. Nonlinear dynamic FEA studies (MSC Marc/Mentat). Prototyping and testing.

[Project Details](#)

### **Design of Deployable Mast Mechanisms with High Deployment Ratio for Positioning of Satellite Components (HiDAM) – TÜBİTAK-1005-120M812**

[ 01/02/2021 – 01/11/2022 ]

**Project Leader:** Dr. Gökhan Kiper

**Project Partners:** Yunus Cebeci, Murat Demirel

**Job Definition:** FEA by using MSC Patran, Nastran and Apex including modal, static, dynamic and PSD analyses. Final design of the prototype for structural optimization. Actuation system design (torsion springs). Tests of the prototype.

## [Project Details](#)

### **3D Printing Mechanisms – BAP 2017G\_IYTE69**

[ 01/01/2018 – 01/01/2019 ]

**Project Leader:** Dr. Gökhan Kiper

**Project Partners:** Dr. M. İ. Can Dede, Barış Taner, Cevahir Karagöz, [Murat Demirel](#)

**Job Definition:** 3D printing of metamaterial mechanisms.

## [Project Information](#)

### **Design of a Haptic System with Improved Performance via Developing its New Sub-Systems (HISS) – TÜBİTAK-1005-117M405**

[ 01/11/2017 – 01/04/2019 ]

**Project Leader:** Dr. M. İ. Can Dede

**Project Partners:** Dr. Gökhan Kiper, M. Görkem Karabulut, İbrahimcan Görgülü, M. Veysel Sekendiz, [Murat Demirel](#)

**Job Definition:** Design and tests of the capstan drive and static balancing systems of the haptic system.

## [Project Details](#)

### **Prototyping and Testing Hybrid Cable-Driven Parallel Mechanisms for Walking Machines – BAP 2016G\_IYTE42**

[ 01/12/2016 – 01/12/2017 ]

**Project Leader:** Dr. Gökhan Kiper

**Project Partner:** [Murat Demirel](#)

**Job Definition:** Design, prototype and test of [M.Sc. thesis](#) research (see [prototype video](#)).

## [Project Information](#)

### **Remotely Operated Agricultural Vehicle – TÜBİTAK-2209-B (2241-A)-1139B411402482**

[ 15/12/2014 – 15/12/2015 ]

**Description:** This project supported my graduation project (team of 6 people).

**Job Definition:** The control system design and programming parts of the project. The control system includes a microcontroller, four stepper motors and a radio controller.

## **REFEREED JOURNALS**

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### **IEEE/ASME transactions on mechatronics**

Link: [ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=3516](http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=3516)

### **International journal of advanced robotic systems**

Link: [journals.sagepub.com/home/arx](http://journals.sagepub.com/home/arx)

### **Robotica**

Link: [cambridge.org/core/journals/robotica](http://cambridge.org/core/journals/robotica)

## **NETWORKS AND MEMBERSHIPS**

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### **Turkish Machine Theory Association (MakTeD) - Secretary General**

[ 05/09/2019 – Current ]

Link: [makted.org.tr/en/about/executive-board/](http://makted.org.tr/en/about/executive-board/)

### **Turkish Machine Theory Association (MakTeD) - Member**

[ 28/07/2016 – Current ]

Link: [makted.org.tr/en/about/registered-members/](http://makted.org.tr/en/about/registered-members/)

### **International Federation for the Promotion of Mechanism and Machine Science (IFTOMM) - MO Türkiye Secretary General**

[ 05/09/2019 – Current ]

Link: [iftomm-world.org/members/turkey/](http://iftomm-world.org/members/turkey/)

## International Federation for the Promotion of Mechanism and Machine Science (IFTOMM) - Member

[ 28/09/2016 – Current ]

Link: [iftomm-world.org/](http://iftomm-world.org/)

### CONFERENCES AND SEMINARS

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#### KS2024 - Workshop on Analytical Synthesis of Mechanisms

[ Elazığ, 29/01/2024 – 03/02/2024 ]

**Organizing Institutions:** Fırat University, METU, IZTECH, MakTeD

**Organizers:** Dr. Eres Söylemez, Dr. Orhan Çakar, Dr. Gökhan Kiper, Dr. Murat Şen, Sertaç Emre Kara, Gökhan Kurnaz, [Murat Demirel](#)

Link: [raml.iyte.edu.tr/ks-2024-mekanizmalarin-analitik-sentezi-calistayi](http://raml.iyte.edu.tr/ks-2024-mekanizmalarin-analitik-sentezi-calistayi)

#### KT2023 – Workshop on Design of Cam Mechanisms

[ Online, 06/02/2023 – 16/02/2023 ]

**Organizing Institutions:** MakTeD, METU, IZTECH

**Organizers:** Dr. Eres Söylemez, Dr. Gökhan Kiper, [Murat Demirel](#)

Link: [raml.iyte.edu.tr/kt-2023-kam-mekanizmalarinin-kinematik-tasarimi-calistayi](http://raml.iyte.edu.tr/kt-2023-kam-mekanizmalarinin-kinematik-tasarimi-calistayi)

#### KS2022 - Workshop on Function Synthesis of Mechanisms

[ Online, 07/02/2022 – 11/02/2022 ]

**Organizing Institutions:** MakTeD, METU, IZTECH

**Organizers:** Dr. Eres Söylemez, Dr. Gökhan Kiper, [Murat Demirel](#)

Link: [raml.iyte.edu.tr/ks-2022-mekanizmalarin-fonksiyon-sentezi-calistayi](http://raml.iyte.edu.tr/ks-2022-mekanizmalarin-fonksiyon-sentezi-calistayi)

#### ToRK2021 – 6. Turkish Robotics Conference

[ Online, 26/07/2021 – 28/07/2021 ]

**Organizing Institution:** IZTECH

**Organizers:** Dr. M. İ. Can Dede, Dr. Gökhan Kiper

**Conference Secretary:** [Murat Demirel](#)

Link: [tork2021.iyte.edu.tr](http://tork2021.iyte.edu.tr)

#### KS2020 - Workshop on Graphical Methods in Kinematic Synthesis

[ Online, 07/09/2020 – 11/09/2020 ]

**Organizing Institutions:** METU, IZTECH, MakTeD

**Organizers:** Dr. Eres Söylemez, Dr. Gökhan Kiper, Dr. Ulaş Yaman, [Murat Demirel](#)

Link: [ks2020.iyte.edu.tr](http://ks2020.iyte.edu.tr)

### DIGITAL SKILLS

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#### Multibody Dynamics Softwares

MSC Adams / MATLAB/Simulink and SimMechanics

#### Programming

MS Office, Excel programming (VBA) / Microcontroller: ARM STM32 / MATLAB/Simulink/Stateflow /Real-Time Windows Target/xPC Target / C Programming(Arduino, stm32) / STM32 CubeMX / STM32 CubeIDE / Python

#### Mathematical Programming Softwares

Geogebra (Dynamic Mathematics Software) / ACE Maple

#### FEA Softwares

MSC Nastran, Patran / MSC Apex / MSC Marc/Mentat

#### CAD Softwares

Solidworks / Catia

## Visual Editors

Adobe Illustrator / Adobe Animate / Adobe Premiere / Adobe Photoshop

## LANGUAGE SKILLS

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Mother tongue(s): **Turkish**

Other language(s):

**English**

**LISTENING B2 READING C1 WRITING C2**

**SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1**

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user*

## DRIVING LICENCE

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Driving Licence: B

## HOBBIES AND INTERESTS

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Playing oud

Playing piano

Swimming

Playing tennis

Playing ping pong

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*Last updated: February, 2024.*