

# Alireza Abbasimoshaei

## Post Doc Research Assistant



### Summary

I'm currently a research assistant at the Technical University of Hamburg. I've designed, manufactured, and developed four robots. At Technical University of Hamburg, I've developed a haptic lab, written three books, and guided more than 40 projects. Moreover, I did gamification in robotics, design controllers for different robots including Universal Robots, sensor design, implementing cloud services for data transferring, and also design websites by java script for robots. Previously, I coached a team that won first place in the World Robotic Olympiad competitions in Iran (2018, 2019). I've worked on several projects in parallel with my studies and have published two patents, one sold to Firuzgar Hospital, six books (three international) and more than 30 papers in various conferences and journals. My interested research areas are Mechanical design, Control, Machine learning, Robotics, and Haptics. I have always tried to be detail-oriented and to build and maintain professional relationships and also open to new areas and languages.



### Education

- 2014-10 – 2019-07
  - **University of Tarbiyat Modares, Tehran, Iran**
  - Ph.D. Mechanical Engineering
  - Total GPA: 18.09/20 (4/4 WES format)
  - Design, Prototyping, and Control of a New Wrist and Finger Rehabilitation Robot
  - Exchange Researcher at Technical University of Braunschweig (TU-BS), Germany
- 2011-10 - 2014-08
  - **University of Tehran, Tehran, Iran**
  - M.S. Mechanical Engineering
  - Manufacturing, Design, and Analysis of an Ultrasound Robot with Variable Remote Center of Motion
  - Total GPA: 16.47/20 (3.50/4 WES format)
- 2006-10 - 2010-09
  - **Mazandaran University, Babol, Mazandaran, Iran**
  - B.S. Mechanical Engineering
  - Analysis of an Anti-slip Differential and a Harmonic Drive
  - Total GPA: 16.02/20 (3.42/4 WES format)
- 2002-10 - 2006-09
  - **NODET; National Organization for Development of Exceptional Talents, High School, Amol, Iran**
- 1998-10 - 2002-09
  - **NODET; National Organization for Development of Exceptional Talents, Middle School, Amol, Iran**



### Teaching Experience

- 2015–2018
  - **Software:** Labview, Matlab, Solidworks, and Sam - University of Tehran Robotics Engineering Center



### Personal Info

#### Address

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#### Date of Birth

1988-07-06

#### LinkedIn

<https://www.linkedin.com/in/alireza-abbasimoshaei-362174105/>

#### Google Scholar

<https://scholar.google.com/citations?hl=en&user=XwWURiUAAAAJ>



<https://orcid.org/0000-0003-3288-7892>

- 2015–2018 • **Robotics:** Mechanics, control, and programming for WRO (World Robotic Olympiad) - University of Tehran
- From 2013 • **Course (alone or joint):** Physics, Dynamic of machine, Dynamics, Haptics, Basics of Electronics, Measurement Technology, Advanced Design Methodology in Mechanics
- 2010 –2014 • **Course in a Charity organization:** Mathematics and physics- Kherghe Welfare Institute
- **Teaching Assistant**
  - 2007–2008 • Dynamics
  - 2010–2011 • Mathematics I and Differential Equation
  - 2013–2013 • Advanced Robotics and Haptics
  - From 2015 • Guiding more than 30 master and bachelor students with their theses



## Experience

- From 2019-10 • **Research Assistant**  
TU-Hamburg
  - Design, manufacturing and control in different projects
  - Guiding more than 30 projects
  - Publishing more than 15 papers, work in progress, and demos
  - Setup and establishment of a Robotic and Haptic laboratory in the university
  - Winning three small grants
  - Winning two big grants (I was the main member of one of them)
  - Filing a patent
  - Writing and Publishing Three International Books
  - Hosting EuroHaptics conference 2022
  - Running and coding Universal Robot
- 2018-08 - 2019-04 • **Researcher**  
TU-Braunschweig
  - Design, manufacturing a new rehabilitation robot for wrist and forearm
  - Control and Implementation of a learning algorithm for the robot
  - Writing a paper
- 2011-08 - 2018-06 • **Robotic and Mechanical Engineer**  
Boton and Kalaf Co
  - Removing vibration of gasoline gauges
  - Repair and Maintenance of the mechanical systems and robots
  - Design and manufacturing for changing the place of the products
  - Design and manufacturing a fixture for their operation to reduce the working load of the workers and decrease the production time by 50%
- 2011-06 - 2011-11 • **Counselor**  
Jahad Institute of University of Tehran
  - Counselling on How to develop the institute
  - Increase the number of students of the institute by 70%



## Software Skills

Microsoft Office (Word, Power point, Excel)



Latex



MATLAB



SolidWorks



Catia



AutoCAD



Sam



Adams



Silux



LabView



EV3 Mindstorm Programming



Dynamixel Motor R+Manager



Maple



Autodesk Inventor



ROS



Python



C/C++



- 2011-06 - **• Designer**  
2011-09 Jalice Company
  - Design a convertible table and chair
  - Increase the record of one product sales by 20%
- 2010-08 - **• Internship**  
2010-10 Sarma Sazan
  - Design and building cold storage room
- 2010-06 - **• Fixture Designer**  
2010-09 Nasim Felez Shomal Company
  - Design and Manufacturing a Fixture for welding operation
  - Reduce the working load of the workers and increase the speed of the works by 50% Writing two papers
- 2010-06 - **• ISO Department**  
2010-09 Ghonche Oil company
  - ISO 9001:2008 Implementation for Ghonche oil company
- 2009-10 - **• Design a gearbox for a motorcycle**  
2009-12 Jahanro Industrial Co
  - Design a gearbox for one kind of motorcycle
  - Improving the efficiency of their system by 20%
- 2009-06 - **• Design a new system for End Effector of milling machine**  
2009-09 Kalleh Company
  - Design a new system for End Effector of milling machine to produce circular shapes
  - Increase efficiency of system by 30%
- 2007-08 - **• Reparation and Maintenance**  
2007-10 Baharan Mazandaran
  - Reparation and Maintenance of mechanical equipment (meat production Company)



## Extra-Curricular Activities

- Receiving a certificate on a Professor Teaching course (I3 project) from Hamburg University of Technology
- Participation in the course of ISO 9001:2007 and get the TUV Rheinland (ISO/TS 9001:2007) certification
- Receiving a certification on the workshop on Teaching Assistant Training at Tehran University
- Finishing and getting the certificate of Teaching in Tarbiat Modares University
- Participation in the International Conference on Dynamics (2008), Mazandaran University, Babolsar, Iran
- Receiving a certificate on a training course on Fundamental Principles of Business Negotiation from mechanical Engineering department, Sharif University of Technology (2012)
- Basketball, 2001-2008, NODET basketball team
- Setar, Santoor (Iraninan music instrument)



## Selected Publications

- Abbasi-Moshaii, Majid Mohammadi Moghaddam, and Vahid Dehani Neiestanak, 2019, "Fuzzy Sliding Mode Control of a Wearable Rehabilitation Robot for Wrist and Finger " *Industrial Robot: An International Journal*, 2019.
- Abbasi-Moshaii and F. Najafi, "Design, Evaluation and Prototyping of a New Robotic Mechanism for Ultrasound Imaging" *Journal of Applied and Computational Mechanics*, vol. 48, pp. 70, 2017.
- Abbasi-Moshaii and F. Najafi, "A review of robotic mechanisms for ultrasound examinations," *Industrial Robot: An International Journal*, vol. 41, pp. 7-7, 2014.
- Alireza Abbasimoshaei, Marco Winkel, and Thorsten A. Kern. "Design, simulation and evaluation of two coding programming languages for an eye-tracking controlling

system for a three degrees of freedom robot useful for paralyzed people. " *e-Prime-Advances in Electrical Engineering, Electronics and Energy* (2022): 100065.

- Alireza Abbasimoshaei, Tom Rothe, Tobias Stein, and Thorsten A. Kern. "Design and impedance control of a hydraulic robot for paralyzed people" ICROM Conference 2020, Tehran, Iran.
- Abbasimoshaei, Alireza, Majid Mohammadimoghaddam, and Thorsten A. Kern. "Adaptive Fuzzy Sliding Mode Controller Design for a New Hand Rehabilitation Robot." International Conference on Human Haptic Sensing and Touch Enabled Computer Applications. Springer (Eurohaptics), Cham, 2020.
- Abbasi-Moshaii, Majid Mohammadi Moghaddam, and Vahid Dehani Neiestanak, 2022, "Adaptive Fuzzy Sliding Mode Control of a Wearable Rehabilitation Robot for Wrist and Finger " *ASME Journal*, accepted.
- A. Abbasi-Moshaii, M. Malekzadeh, J. Steil, "Design, Manufacturing, and Control of a New Wrist and Forearm Rehabilitation Robot", to be submitted.
- Alireza Abbasi-Moshaii, Majid Mohammadi Moghaddam, and Vahid Dehghani Neiestanak, 2019, " Analytical Model of Hand Phalanges Desired Trajectory for Rehabilitation and Design a Sliding Mode Controller Based on This Model " *Mechanical Engineering Journal of Tarbiat Modares University*, 2019.
- Vahid Dehghani Neiestanak, Majid Mohammadi Moghaddam, and Alireza Abbasi Moshaii, 2019, "Design of a Hand Tendon Injury Rehabilitation System Using a DOF Constrainer Mechanism" *Mechanical Engineering Journal of Tarbiat Modares University*, 2019.
- Alireza Abbasi Moshaii, Mehdi Tale Masouleh, Esmail Zarezadeh, and Kamran Farajzadeh, 2015, "Two Spherical Three Degrees of Freedom Parallel Robots 3-RCC and 3-RRS Static Analysis", *Excellence in Research and Innovation for Humanity*, vol. 9, No. 6, 2015.
- Alireza Abbasi Moshaii, and Farshid Najafi, 2015, "A New Center of Motion in Cabling Robots," *Excellence in Research and Innovation for Humanity*, vol. 9, No. 6. 2015.
- Alireza Abbasi Moshaii, Masood Soltan Rezaii, and Majid Mohammadi Moghaddam, 2015, " Robust Control of a Parallel 3-RRR Robotic Manipulator via  $\mu$ -Synthesis Method ", *Excellence in Research and Innovation for Humanity*, vol. 10, No. 16, 2016.
- Alireza Abbasi Moshaii, Ahmed Aly, and Thorsten A. Kern, 2022, Developing a VR training environment for fingers' rehabilitation, *Eurohaptics 2022, Hamburg, Germany*
- Alireza Abbasi, Altmann Jörn, and Hossain Liaquat. "Identifying the effects of co-authorship networks on the performance of scholars: A correlation and regression analysis of performance measures and social network analysis measures." *Journal of informetrics* 5.4 (2011): 594-607.



## Recommendations

- Prof. Dr. Ing. Thorsten Kern (Graduated from Darmstadt University of Technology), [T.a.kern@tuhh.de](mailto:T.a.kern@tuhh.de)
- Prof. Dr. rer. nat. Jochen Steil (Graduated from Bielefeld University), [j.steil@tu-braunschweig.de](mailto:j.steil@tu-braunschweig.de)
- Prof. Dr. Ing. Farshid Najafi (Graduated from University of Manitoba), [farshid\\_najafi@sfu.ca](mailto:farshid_najafi@sfu.ca)
- Prof. Dr. M. M. Moghaddam (Graduated from University of Toronto, Toronto, Canada), [m.moghadam@modares.ac.ir](mailto:m.moghadam@modares.ac.ir)
- Prof. Dr. H. Mohammadi Daniali (Graduated from McGill university, Quebec, Canada), [mohammadi@nit.ac.ir](mailto:mohammadi@nit.ac.ir)
- Prof. Dr. M. Nikkhah Bahrami (Graduated from University of Austin, Texas, USA and the father of vibration and Distinguished Professor of vibration in Iran), [mbahrami@ut.ac.ir](mailto:mbahrami@ut.ac.ir)
- Dr. M. Zaker Zadeh (Graduated from Sharif university, Tehran, Iran), [zakerzadeh@ut.ac.ir](mailto:zakerzadeh@ut.ac.ir)
- Dr. M. Haeri Yazdi (Graduated from University of Imperial College, London, England), [myazdi@ut.ac.ir](mailto:myazdi@ut.ac.ir)
- Dr. M. Ghasemi (Graduated from Isfahan University of Technology, Iran),

- **Seyed Mohamad-Bagher Malaek, and Alireza Abbasi.** "Near-optimal terrain collision avoidance trajectories using elevation maps." *IEEE Transactions on Aerospace and Electronic Systems* 47, no. 4 (2011): 2490-2501.
- Mohammad Esmailpour-Jahromi, Ali Ahmadi, E. Lunn John, Alireza Abbasi, Kazem Poustini, and Mehdi Joudi. "Variation in grain weight among Iranian wheat cultivars: the importance of stem carbohydrate reserves in determining final grain weight under source limited conditions." *Australian Journal of Crop Science* 6, no. 11 (2012): 1508-1515.
- **Mahtab Mohtasham Khani, Sahand Vahidnia, and Alireza Abbasi.** "A deep learning-based method for forecasting gold price with respect to pandemics." *SN Computer Science* 2, no. 4 (2021): 335.
- **Rostam Mehdi Gholami, and Alireza Abbasi.** "A framework for identifying the appropriate quantitative indicators to objectively optimize the building energy consumption considering sustainability and resilience aspects." *Journal of Building Engineering* 44 (2021): 102974.
- Shaghayegh Nasiri, Alireza Abbasi Moshaii, and Mehdi Tale Masouleh, 2015, Static Analysis of Two Spherical Three Degrees of Freedom Parallel Robots 3-RRR and 3-RSR, *The 4th RDME conference*, Wadia College campus, Pune, India
- Alireza Abbasi Moshaii, and Farshid Najafi, 2015, A New Center of Motion in Cabling Robots, *The 13th International Conference on Mechanical and Mechatronics Engineering conference*, Dubai, UAE
- Alireza Abbasi Moshaii, Mehdi Tale Masouleh, Esmail Zarezadeh, and Kamran Farajzadeh, 2015, Two Spherical Three Degrees of Freedom Parallel Robots 3-RCC and 3-RRS Static Analysis, *The 13th International Conference on Mechanical and Mechatronics Engineering conference*, Dubai, UAE
- **Alireza Abbasi Moshaii, Mehdi Tale Masouleh, Esmail Zarezadeh, and Kamran Farajzadeh, 2015, Static Analysis of a 3-RRS and a 3-RSR Spherical Parallel Robots, The 3rd International Conference on Robotics and Mechatronics (ICRoM 2015), Tehran, Iran**
- A. Abbasi-Moshaii and F. Najafi, 2014, Using of Remote Sonography Robots to Use in Underprivileged Areas, *The 5<sup>th</sup> Pishgaman Pishraft (pioneers of advancement) Conference*, Shahid Beheshti University, Thehran, Iran) (In Persian)
- **Vahid Dehghan Niestanak, Alireza Abbasi Moshaii and Majid Mohammadi Moghaddam, 2017, A New Under Actuation Mechanism of Hand Tendon Injury Rehabilitation, The 5th International Conference on Robotics and Mechatronics (ICROM2017), Tehran, Iran**
- Alireza Abbasi Moshaii, Masood Soltan Rezaii, and Majid Mohammadi Moghaddam, 2015, Robust Control of a Parallel 3-RRR Robotic Manipulator via  $\mu$ -Synthesis Method, *The 18th International Conference on Mechatronics and control Engineering*, Paris, France
- Alireza Abbasi Moshaii, 2018, Design of a hand and finger rehabilitation system, *The 3th International Conference on Mechanics and electrical Engineering*, Tehran, Iran



## Languages

- English (C2)
- German (B2)
- Arabic (A2)
- Persian (Mother Language)

- Alireza Abbasi Moshaii, 2018, Design of a robust controller for a parallel 3-RRR robot, *The 3th International Conference on Mechanics and electrical Engineering*, Tehran, Iran
- Alireza Abbasi Moshaii, Tim Siefke, and Thorsten A. Kern, 2022, Developing and control of a novel finger rehabilitation mechanism, *11th Conference on Wireless Mobile Communication and Healthcare, Vila Real, Portugal*
- M. Hosseini, D. D. Ganji, M. Abdollahzadeh, B. SalimBahrani, M. Valizadeh, A. Abbasi & S. Bishehsari, 2011, ANALYSIS ON MHD FLOW OF VISCO-ELASTIC FLUID OF THE TYPE WAL TERS LIQUID BAND HEAT TRANSFER OVER A NON-ISOTHERMAL STRETCHING SHEET WITH HOMOTOPY ANALYSIS METHOD, *International journal of nonlinear dynamics in engineering and sciences*, 3: 73-93
- Alireza Abbasi Moshaii, Farshid Najafi, 2012, New development for ultrasound sonography wrist part, *The 1th International Conference on Sonography, Tehran, Iran*
- **Alireza Abbasi Moshaii, Fynn Knudsen, and Thorsten. A. Kern, 2022, Application of Eye-Tracking for a 3-DOF Robot Assisted Medical System, *The 10th International Conference on Robotics and Mechatronics (ICRoM 2022)*, Tehran, Iran**
- **Jose Pedro Borges, Alireza Abbasi Moshaii, and Thorsten A. Kern, 2022, Impedance Control and Remote Operation of Robotic Wrist Therapy Systems, *Eurohaptics 2022, Hamburg, Germany***
- Alireza Abbasi Moshaii, and Thorsten A. Kern, 2022, Engineering Haptic Devices, WIP Section of *Eurohaptics 2022, Hamburg, Germany*
- Alireza Abbasi Moshaii, Jose Pedro Borges, and Thorsten A. Kern, 2022, Developing a new tele rehabilitation wrist and forearm therapy system with haptic feedback, *Demo section of Eurohaptics 2022, Hamburg, Germany*
- Alireza Abbasi Moshaii, Sleiman Jebbawy, and Thorsten A. Kern, 2022, Mobile Application as a Replacement for the Therapist's Wrist Rehabilitation Robot, *Demo Section of Eurohaptics 2022, Hamburg, Germany*
- Alireza Abbasi Moshaii, and Ahmed Aly, and Thorsten A. Kern, 2022, Developing a VR training environment for hand and fingers rehabilitation with haptic feedback, *Demo Section of Eurohaptics 2022, Hamburg, Germany*
- Alireza Abbasi Moshaii, Tobias Stein, and Thorsten A. Kern, 2022, Design a wrist movement robot for paralyzed patients by hydraulic actuator, *Demo Section of Eurohaptics 2022, Hamburg, Germany*
- Alireza Abbasi Moshaii, Tim Siefke, Philipp Tenbenrik, and Thorsten A. Kern, 2022, Developing a new mechanism, suitable for hand and finger rehabilitation, *Demo Section of Eurohaptics 2022, Hamburg, Germany*
- Alireza Abbasi Moshaii, Erick Lamprecht, and Thorsten A. Kern, 2022, Developing a complete new wrist rehabilitation game with haptic feedback, *Demo Section of Eurohaptics 2022, Hamburg, Germany*

- Alireza Abbasi Moshaii, Adithya Kumar Chinnakkonda Ravi, and Thorsten A. Kern, 2022, Intelligent wrist and forearm therapy system with Impedance control and Bio-impedance measurement using Tomography and haptic feedback, *Demo Section of Eurohaptics 2022, Hamburg, Germany*
- Alireza Abbasi Moshaei, and Thorsten A. Kern, 2023, Exploring Hard and Soft Texture Perception by Force-Haptic Discrimination, *Worldhaptics 2023, Delft, Netherland*
- Alhussein Mohamed Hazem Osman, Alireza Abbasi Moshaei, and Thorsten A. Kern, 2023, Surface Detection by an Artificial Finger Using Vibrotactile Recognition, *Worldhaptics 2023, Delft, Netherland*
- Marwan Amr Elsayed Ibrahim Elkholy, Alireza Abbasimoshaei, and Thorsten A. Kern, 2022, Smart Blind Stick, *Demo Section of Worldhaptics 2023, Delft, Netherland*
- Ahmed Aboelela, Alireza Abbasimoshaei, and Thorsten A. Kern, 2023, Universal Haptic Driving Seat for Retrofit Applications, *Demo Section of Worldhaptics 2023, Delft, Netherland*
- Alireza Abbasi Moshaei, Dominik Laatz, and Thorsten A. Kern, 2023, Developing a new focal vibration and heat therapy system, *BMT 2023, Duisburg, Germany*
- Ornella Tortorici, Alireza Abbasi Moshaei, Arndt Schilling, and Thorsten A. Kern, 2023, Design of a Flexible mechatronic system for mechanical impedance measurement of the wrist as one step towards robotic rehabilitation, *BMT 2023, Duisburg, Germany*



## Researches and Selected Academic Projects

- 2023 • **Colaboration with Laura Adima Company, Grewus Company, and Hamburg University of Music and Theater**
- 2023 • **Developing a new big data set for recording the acceleration perception of 10 material surfaces to be used by artificial intelligence available in TUHH library**
- 2022 • **Developing a telemanipulation robotic system with haptic feedback for rehabilitation**
- 2022 • **Developing a mobile application with haptic feedback instead of a robotic system**
- 2022 • **Filing a patent entitled: Rehabilitation apparatus for wrist and forearm therapy WO 2022/048906 A1**
- 2022 • **A member of hosting and editorial board of Eurohaptics conference 2022**
- 2021 • **Developing two new haptic hand and finger rehabilitation games in Virtual Reality**

- 2019 • **Creating and controlling a novel robot (a novel mechanism) for wrist and forearm rehabilitation**
- 2020 • **Working with different companies for their projects such as Aerobus**
- 2018 • Design, manufacturing and control of a new hand rehabilitation robot with new control system as Ph.D. thesis (Ph.D. project, Supervisor Prof. Dr. Majid Mohammadi Moghaddam)
- 2017 • **Creating and controlling a novel Robot with Cabling Systems (a novel mechanism) for wrist and finger rehabilitation**
- 2017 • **Filing a patent entitled: A system creating variable remote center of motion in robotic wrist of sonography robot with international classification of A61B 8/00;A61B 34/30**
- 2015 • **Manufacturing a 3-RRR mechanism that can be used for moving an object to different angles in laparoscopy surgery, electro surgery, fetal heart monitoring, etc.**
- 2014 • **Creating two novel methods in Cabling Systems (a novel mechanism) to create a variable Remote Center of motion and a paper is being accomplished on them**
- 2014 • Manufacturing, Design and Analysis of an Ultrasound Robot with Variable Remote – center – of - motion (M.SC. project, Supervisor Prof. Dr. Farshid Najafi and Prof. Dr. Mansour NikkhahBahrami)
- 2014 • Assistant in a master thesis done by Shaghayegh Nasiri: Static analysis of two spherical three-degree of freedom parallel robots 3-RRR and 3-RSR (M.S. project, Supervisor Dr. Tale Masoule and Dr. Farhad Sheikh Samani)
- 2012 • Research on numerical methods in vibration's systems (graduate project of nonlinear systems' vibrations course)
- 2010 • Analysis of an Anti-slip Differential and a Harmonic Drive (B.Sc. project, Supervisor Prof. Dr. Morteza Dardel)
- 2007 • Kinematic Analysis of a 4 linkage mechanism by three methods (Undergraduate project of Machine Dynamics course)
- 2007 • Assistant in manufacturing an electrical automobile
- 2013-2023 • Writing six books (three Persian and three international): Dynamics, Vibration, Machine Dynamics, Haptics: Science, Technology, Applications, Machine Dynamics, and Engineering haptic devices





## Supervised projects for students

- **Hand rehabilitation system**

- Developing a new mechanism with one actuator for finger rehabilitation
- Developing a new exoskeleton for wrist rehabilitation with the future of being start up
- Developing an eye-tracking system for moving hand of paralyzed people by hydraulic actuators
- Developing a tele manipulation system for wrist and forearm rehabilitation and sending and receiving haptic feedback the future of being start up
- Cooperation with Gottingen University for testing the tele rehabilitation system between physiotherapist and patient and collect data of improvement and system safety
- Developing a mobile application for doing tele rehabilitation and send data to patients
- Developing a filter system for tele rehabilitation and haptic systems
- Developing and impedance controller for tele rehabilitation systems
- Developing a new smart robot for doing rehabilitation exercises

- **Industrial robot**

- Developing a code for checking the barcode of goods by Universal robot for Olympus Company
- Developing a new method for testing rehabilitation robots by Universal robots, collecting data, and sending to the specialist in Gottingen Hospital
- Different projects on remote controlling and sending and receiving data for UR10

- **Leg prosthesis**

- Developing a new leg prosthesis for paralyzed people
- Developing a new method for designing the socket for leg prosthesis by photogrammetry

- **Smart Material**

- Analyzing and modeling of smart material for developing a new robot for surgery
- Using smart material for heating clothes and pain release
- Developing a new hand rehabilitation system with smart material without any traditional actuators

- **Haptic Sensors**

- Developing a new haptic system and robot for finding scratches on different surfaces such as Turbine surfaces which are hard for human
- Developing a new whisker haptic sensor and analyzing the data by learning algorithm
- Developing a new haptic sensor for automobile body in a cooperation with Grewus Company

- **Eye Tracking**

- Developing a head-mounted system for tracking the eye movement to provide inputs for a hydraulic system
- Developing an object-mounted system for tracking the eye movement and providing inputs for a mechanical system for paralyzed people
- Combining and comparing object-mounted and head-mounted eye-tracking systems

- **Virtual Reality**

- Developing a new rehabilitation game with haptic feedback by Omni and TouchX robot
- Developing a new rehabilitation game and environment with haptic feedback by Sense glove

For the complete list of projects, see:

<https://www.tuhh.de/imek/mitarbeiter/wissenschaftliche-mitarbeiter/alireza-abbasimoshaei-dr-ing.html>



## **Awards and Honors**

- 2023 • **Winning Hamburg innovation fund**
- 2023 • **Winning Hamburg Teaching Award for innovative hybrid lectures**
- 2023 • **Winning Culture Moves Europe fund**
- 2022 • **Winning I3 project funds**
- 2022 • **Being a member of the team won BMBF fund**
- 2022 • **Winning Social Innovation Award in Hamburg maker challenge competition**
- 2022 • **Winning the top 20 best design Award in Hamburg maker challenge competition**
- 2018 • **Winning the first place in Iranian WRO (World Robotic Olympiad) and getting the quota of Iran for WRO 2018 held in Thailand**
- 2017 • **Winning the second place in Iranian WRO (World Robotic Olympiad) and getting the quota of Iran for WRO 2017 held in Costa Rica**
- 2016 • **Winning the elite award from Iran's National Elites Foundation**
- 2015 • **Winning the elite award from Iran's National Elites Foundation**
- 2014 • **Ranked among top ten in national exam to enter Ph.D. program in the field of mechanical engineering in Iranian universities**
- 2014 • **Achievement the first rank in national exam to enter Ph.D. program in the field of mechanical engineering of Iranian universities among Tehran university students, 2014.**
- 2012 • **Ranked 137th among more than 12,000 participants in the national universities' entrance exam for M.Sc. degree**
- 2012 • **Ranked 17nd among more than 6,000 participants in entrance exam of Islamic Azad University of Tehran, for M.Sc. degree, Iran**



## **Service activities**

- 2022 • **Editorial board of the Eurohaptics 2022 conference**
- 2022 • **Member of Eurohaptics society**
- 2022 • **Student Volunteer Organisator of Eurohaptics 2022 conference**

- 2020 • Member of the Eurohaptics Society
- 2019 • Consulting in the development of a robotics center in the north region of Iran
- 2019 • Advising on the supervision of a World Robotic Olympiad (WRO) team in the north of Iran
- 2015 • Editorial board of the ICROM conference 2015
- 2015 • Student advisory board of the Advanced Machining and Machine Tools Conference
- 2015-2019 • Hosting and consulting as a member of high-qualified engineers in Iran Engineering Department
- 2013-2022 • Reviewer for the Industrial Robot, MDPI, and signal processing Journal
- 2012-2016 • Teaching mathematics and physics in a Charity organization



## **Hobbies**

- Sport
- Work with Robots
- Designing and creating different things by 3d printer
- Watch soccer and reading books

*Abbasmoshaei*  
*26.06.2023*