

Mahdi Tavakoli

<https://orcid.org/0000-0002-7427-6961>

Websites & Social Links

Research website (<http://www.ece.ualberta.ca/~mtavakol>)

Telerobotic and Biorobotic Systems Group website (<http://www.ece.ualberta.ca/~tbs>)

Robotics for Combating COVID-19 website (<http://www.ece.ualberta.ca/~tbs/pmwiki/index.php?n=Community.RoboticsForCOVID-19>)

Keywords

Robotics and Telerobotics, Haptics and Teleoperation Control, Surgical and Therapeutic Robotics, Image-Guided Surgery

Other IDs

Scopus Author ID: 8668966400 (<http://www.scopus.com/inward/authorDetails.url?authorID=8668966400&partnerID=MN8TOARS>)

Loop profile: 873554 (http://loop.frontiersin.org/people/873554/overview?referrer=orcid_profile)

Biography

Mahdi Tavakoli is a Professor in the Department of Electrical and Computer Engineering, University of Alberta, Canada. He received his BSc and MSc degrees in Electrical Engineering from Ferdowsi University and K.N. Toosi University, Iran, in 1996 and 1999, respectively. He received his PhD degree in Electrical and Computer Engineering from the University of Western Ontario, Canada, in 2005. In 2006, he was a post-doctoral researcher at Canadian Surgical Technologies and Advanced Robotics (CSTAR), Canada. In 2007-2008, he was an NSERC Post-Doctoral Fellow at Harvard University, USA. Dr. Tavakoli's research interests broadly involve the areas of robotics and systems control. Specifically, his research focuses on haptics and teleoperation control, medical robotics, and image-guided surgery. Dr. Tavakoli is the lead author of Haptics for Teleoperated Surgical Robotic Systems (World Scientific, 2008). He is a Senior Member of IEEE and an Associate Editor for IEEE/ASME Transactions on Mechatronics, Journal of Medical Robotics Research, and Mechatronics.

Lab website: <http://www.ece.ualberta.ca/~tbs>

Works (231 of 231)

A Model-Based Multi-Point Tissue Manipulation for Enhancing Breast Brachytherapy*IEEE Transactions on Medical Robotics and Bionics*

2022-11 | journal-article

DOI: 10.1109/tmrb.2022.3214439

Part of ISSN: 2576-3202

Source: Mahdi Tavakoli**Dual-User Haptic Teleoperation of Complementary Motions of a Redundant Wheeled Mobile Manipulator Considering Task Priority***IEEE Transactions on Systems, Man, and Cybernetics: Systems*

2022-10 | journal-article

DOI: 10.1109/TSMC.2022.3144009

Source: Crossref**Examination of effectiveness of kinaesthetic haptic feedback for motor imagery-based brain-computer interface training***Brain-Computer Interfaces*

2022-09-01 | journal-article

DOI: 10.1080/2326263X.2022.2114225

Source: Crossref**Accurate Tissue Deformation Modeling Using a Kalman Filter and ADMM-Based Projective Dynamics***IEEE/ASME Transactions on Mechatronics*

2022-08 | journal-article

DOI: 10.1109/TMECH.2022.3174510

Source: Crossref**Intelligent assistance for older adults via an admittance-controlled wheeled mobile manipulator with task-dependent end-effectors***Mechatronics*

2022-08 | journal-article

DOI: 10.1016/j.mechatronics.2022.102821

Source: Crossref

A Domain-Adapted Machine Learning Approach for Visual Evaluation and Interpretation of Robot-Assisted Surgery Skills

IEEE Robotics and Automation Letters

2022-07 | journal-article

DOI: 10.1109/LRA.2022.3186769

Source:Crossref

Haptic Feedback and Force-Based Teleoperation in Surgical Robotics

Proceedings of the IEEE

2022-07 | journal-article

DOI: 10.1109/JPROC.2022.3180052

Source:Crossref

Impedance Learning-Based Adaptive Control for Human–Robot Interaction

IEEE Transactions on Control Systems Technology

2022-07 | journal-article

DOI: 10.1109/TCST.2021.3107483

Source:Crossref

Impedance Variation and Learning Strategies in Human–Robot Interaction

IEEE Transactions on Cybernetics

2022-07 | journal-article

DOI: 10.1109/TCYB.2020.3043798

Source:Crossref

Large-scale metal additive manufacturing: a holistic review of the state of the art and challenges

International Materials Reviews

2022-05-19 | journal-article

DOI: 10.1080/09506608.2021.1971427

Source:Crossref

**Dual Mode *tele*HRI Control System
with a Hybrid Admittance-Force Controller for Ultrasound
Imaging**

Sensors

2022-05 | journal-article

DOI: 10.3390/s22114025

Source:Multidisciplinary Digital Publishing Institute

**Surgical Procedure Understanding, Evaluation, and
Interpretation: A Dictionary Factorization Approach**

IEEE Transactions on Medical Robotics and Bionics

2022-05 | journal-article

DOI: 10.1109/TMRB.2022.3170210

Source:Crossref

**A Systematic Review of Industrial Exoskeletons for Injury
Prevention: Efficacy Evaluation Metrics, Target Tasks, and
Supported Body Postures**

Sensors

2022-04 | journal-article

DOI: 10.3390/s22072714

Source:Multidisciplinary Digital Publishing Institute

**Autonomous Locomotion Trajectory Shaping and
Nonlinear Control for Lower Limb Exoskeletons**

IEEE/ASME Transactions on Mechatronics

2022-04 | journal-article

DOI: 10.1109/TMECH.2022.3156168

Source:Crossref

**Autonomous Prostate Segmentation in 2D B-Mode
Ultrasound Images**

Applied Sciences

2022-03-15 | journal-article

DOI: 10.3390/app12062994

Source:Crossref

Discrete-Time Control Barrier Function: High-Order Case and Adaptive Case*IEEE Transactions on Cybernetics*

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DOI: 10.1109/TCYB.2022.3170607

Source:Crossref**Adaptive CPG-Based Gait Planning With Learning-Based Torque Estimation and Control for Exoskeletons***IEEE Robotics and Automation Letters*

2021-10 | journal-article

DOI: 10.1109/LRA.2021.3105996

Source:Crossref**Intelligent Locomotion Planning With Enhanced Postural Stability for Lower-Limb Exoskeletons***IEEE Robotics and Automation Letters*

2021-10 | journal-article

DOI: 10.1109/LRA.2021.3098915

Source:Crossref**Evaluating Community-Facing Virtual Modalities to Support Complex Neurological Populations During the COVID-19 Pandemic: Protocol for a Mixed Methods Study***JMIR Research Protocols*

2021-07-23 | journal-article

DOI: 10.2196/28267

Source:Crossref**Kinematic design of linkage-based haptic interfaces for medical applications: a review***Progress in Biomedical Engineering*

2021-04-01 | journal-article

DOI: 10.1088/2516-1091/abee66

Source:Crossref**Delay-Robust Nonlinear Control of Bounded-Input Telerobotic Systems With Synchronization Enhancement***IEEE Robotics and Automation Letters*

2021-04 | journal-article

DOI: 10.1109/LRA.2021.3061976

Source:Crossref

Evaluating Community-Facing Virtual Modalities to Support Complex Neurological Populations During the COVID-19 Pandemic: Protocol for a Mixed Methods Study (Preprint)

2021-02-26 | other

DOI: 10.2196/preprints.28267

Source:[Crossref](#)

Robotic Rehabilitation and Assistance for Individuals With Movement Disorders Based on a Kinematic Model of the Upper Limb

IEEE Transactions on Medical Robotics and Bionics

2021-02 | journal-article

DOI: 10.1109/TMRB.2021.3050512

Source:[Crossref](#)

Admittance-Controlled Robotic Assistant for Fibula Osteotomies in Mandible Reconstruction Surgery

Advanced Intelligent Systems

2021-01 | journal-article

DOI: 10.1002/aisy.202000158

Source:[Crossref](#)

Image-Guided Observer-Based Control for Needle Steering

IEEE Transactions on Control Systems Technology

2020-11 | journal-article

DOI: 10.1109/TCST.2019.2944117

Source:[Crossref](#)

Enhancement of Force Exertion Capability of a Mobile Manipulator by Kinematic Reconfiguration

IEEE Robotics and Automation Letters

2020-10 | journal-article

DOI: 10.1109/LRA.2020.3010218

Source:[Crossref](#)

**Robotics, Smart Wearable Technologies, and
Autonomous Intelligent Systems for Healthcare During
the COVID-19 Pandemic: An Analysis of the State of the
Art and Future Vision**

Advanced Intelligent Systems

2020-07-05 | journal-article

DOI: 10.1002/aisy.202000071

Source:Crossref

**Using Potential Field Function With a Velocity Field
Controller to Learn and Reproduce the Therapist's
Assistance in Robot-Assisted Rehabilitation**

IEEE/ASME Transactions on Mechatronics

2020-06 | journal-article

DOI: 10.1109/TMECH.2020.2981625

Source:Crossref

**Haptic Tele-Driving of Wheeled Mobile Robots Under
Nonideal Wheel Rolling, Kinematic Control and
Communication Time Delay**

*IEEE Transactions on Systems, Man, and Cybernetics:
Systems*

2020-01 | journal-article

DOI: 10.1109/TSMC.2017.2738670

Source:Crossref

**A feasibility study of eye gaze with biofeedback in a
human-robot interface**

Assistive Technology

2020 | journal-article

DOI: 10.1080/10400435.2020.1719557

EID: 2-s2.0-85079132703

Part of ISBN: 19493614 10400435

Source:Mahdi Tavakoli via Scopus - Elsevier

**Assist-as-needed policy for movement therapy using
telerobotics-mediated therapist supervision***Control Engineering Practice*

2020 | journal-article

DOI: 10.1016/j.conengprac.2020.104481

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*Part of ISBN: 09670661***Source:** Mahdi Tavakoli via Scopus - Elsevier**Dynamic Reconfiguration of Redundant Haptic Interfaces
for Rendering Soft and Hard Contacts***IEEE Transactions on Haptics*

2020 | journal-article

DOI: 10.1109/TOH.2020.2988495

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*Part of ISBN: 23294051 19391412***Source:** Mahdi Tavakoli via Scopus - Elsevier**Effect of feedback and target size on eye gaze accuracy in
an off-screen task***Disability and Rehabilitation: Assistive Technology*

2020 | journal-article

DOI: 10.1080/17483107.2020.1729874

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*Part of ISBN: 17483115 17483107***Source:** Mahdi Tavakoli via Scopus - Elsevier**Intelligent Robotics Incorporating Machine Learning
Algorithms for Improving Functional Capacity Evaluation
and Occupational Rehabilitation***Journal of Occupational Rehabilitation*

2020 | journal-article

DOI: 10.1007/s10926-020-09888-w

EID: 2-s2.0-85083383242

*Part of ISBN: 15733688 10530487***Source:** Mahdi Tavakoli via Scopus - Elsevier

Learning and Reproduction of Therapist's Semi-Periodic Motions during Robotic Rehabilitation

Robotica

2020 | journal-article

DOI: 10.1017/S0263574719000651

EID: 2-s2.0-85065979319

Part of ISBN: 14698668 02635747

Source:Mahdi Tavakoli*via*Scopus - Elsevier

Task-space synchronisation of nonlinear teleoperation with time-varying delays and actuator saturation

International Journal of Control

2020 | journal-article

DOI: 10.1080/00207179.2018.1506158

EID: 2-s2.0-85051979667

Source:Mahdi Tavakoli*via*Scopus - Elsevier

Using a Redundant User Interface in Teleoperated Surgical Systems for Task Performance Enhancement

Robotica

2020 | journal-article

DOI: 10.1017/S0263574720000326

EID: 2-s2.0-85085919454

Part of ISBN: 14698668 02635747

Source:Mahdi Tavakoli*via*Scopus - Elsevier

A cooperative paradigm for task-space control of multilateral nonlinear teleoperation with bounded inputs and time-varying delays

Mechatronics

2019-10 | journal-article

DOI: 10.1016/j.mechatronics.2019.102255

Source:Crossref

An Integrator-Backstepping Control Approach for Three-Dimensional Needle Steering

IEEE/ASME Transactions on Mechatronics

2019-10 | journal-article

DOI: 10.1109/TMECH.2019.2930732

Source:Crossref

**A Therapist-Taught Robotic System for Assistance During
Gait Therapy Targeting Foot Drop**

IEEE Robotics and Automation Letters

2019-04 | journal-article

DOI: 10.1109/LRA.2018.2890674

Source:Crossref

**Application of a Redundant Haptic Interface in Enhancing
Soft-Tissue Stiffness Discrimination**

IEEE Robotics and Automation Letters

2019-04 | journal-article

DOI: 10.1109/LRA.2019.2893606

Source:Crossref

**Improving User Performance in Haptics-Based
Rehabilitation Exercises by Colocation of User's Visual
and Motor Axes via a Three-Dimensional Augmented-
Reality Display**

IEEE Robotics and Automation Letters

2019-04 | journal-article

DOI: 10.1109/LRA.2019.2891283

Source:Crossref

**A multilateral impedance-controlled system for haptics-
enabled surgical training and cooperation in beating-heart
surgery**

International Journal of Intelligent Robotics and Applications

2019 | journal-article

DOI: 10.1007/s41315-019-00099-y

EID: 2-s2.0-85075332034

Part of ISBN: 2366598X 23665971

Source:Mahdi Tavakoli via Scopus - Elsevier

**A robot with an augmented-reality display for functional
capacity evaluation and rehabilitation of injured workers**

IEEE International Conference on Rehabilitation Robotics

2019 | conference-paper

DOI: 10.1109/ICORR.2019.8779417

EID: 2-s2.0-85071164445

Part of ISBN: 19457901 19457898

Source:Mahdi Tavakoli via Scopus - Elsevier

A Therapist-Taught Robotic System for Assistance During Gait Therapy Targeting Foot Drop*IEEE Robotics and Automation Letters*

2019 | journal-article

DOI: 10.1109/LRA.2018.2890674Y

EID: 2-s2.0-85063312061

Part of ISBN: 23773766**Source:** Mahdi Tavakoli via Scopus - Elsevier**An Admittance-Controlled Robotic Assistant for Semi-Autonomous Breast Ultrasound Scanning***2019 International Symposium on Medical Robotics, ISMR 2019*

2019 | conference-paper

DOI: 10.1109/ISMR.2019.8710206

EID: 2-s2.0-85066310902

Source: Mahdi Tavakoli via Scopus - Elsevier**Control of a mechatronics-assisted system for surgeries using flexible tools***IEEE International Conference on Automation Science and Engineering*

2019 | conference-paper

DOI: 10.1109/COASE.2019.8843061

EID: 2-s2.0-85072988013

Part of ISBN: 21618089 21618070**Source:** Mahdi Tavakoli via Scopus - Elsevier**Controlled Synchronization of Nonlinear Teleoperation in Task-space with Time-varying Delays***International Journal of Control, Automation and Systems*

2019 | journal-article

DOI: 10.1007/s12555-018-0120-z

EID: 2-s2.0-85069911232

Part of ISBN: 20054092 15986446**Source:** Mahdi Tavakoli via Scopus - Elsevier

Geometric control of 3D needle steering in soft-tissue*Automatica*

2019 | journal-article

DOI: 10.1016/j.automatica.2018.11.018

EID: 2-s2.0-85058245175

Part of ISBN: 00051098**Source:** Mahdi Tavakoli via Scopus - Elsevier**Semi-autonomous robot-assisted cooperative therapy exercises for a therapist's interaction with a patient***GlobalSIP 2019 - 7th IEEE Global Conference on Signal and Information Processing, Proceedings*

2019 | conference-paper

DOI: 10.1109/GlobalSIP45357.2019.8969143

EID: 2-s2.0-85079270550

Source: Mahdi Tavakoli via Scopus - Elsevier**Semi-autonomous surgical robot control for beating-heart surgery***IEEE International Conference on Automation Science and Engineering*

2019 | conference-paper

DOI: 10.1109/COASE.2019.8843275

EID: 2-s2.0-85072951179

Part of ISBN: 21618089 21618070**Source:** Mahdi Tavakoli via Scopus - Elsevier**Supporting play by applying haptic guidance along a surface learnt from single motion trajectories***IEEE International Conference on Rehabilitation Robotics*

2019 | conference-paper

DOI: 10.1109/ICORR.2019.8779391

EID: 2-s2.0-85071149053

Part of ISBN: 19457901 19457898**Source:** Mahdi Tavakoli via Scopus - Elsevier

Task-space position and containment control of redundant manipulators with bounded inputs

IEEE International Conference on Automation Science and Engineering

2019 | conference-paper

DOI: 10.1109/COASE.2019.8842863

EID: 2-s2.0-85072986264

Part of ISBN: 21618089 21618070

Source:Mahdi Tavakoli via Scopus - Elsevier

Visual-Haptic Colocation in Robotic Rehabilitation Exercises Using a 2D Augmented-Reality Display

2019 International Symposium on Medical Robotics, ISMR 2019

2019 | conference-paper

DOI: 10.1109/ISMR.2019.8710185

EID: 2-s2.0-85066311805

Source:Mahdi Tavakoli via Scopus - Elsevier

Ways to learn a therapist's patient-specific intervention:**Robotics-vs telerobotics-mediated hands-on teaching**

Proceedings - IEEE International Conference on Robotics and Automation

2019 | conference-paper

DOI: 10.1109/ICRA.2019.8793907

EID: 2-s2.0-85071457519

Part of ISBN: 10504729

Source:Mahdi Tavakoli via Scopus - Elsevier

Robotic-Assisted Needle Steering Around Anatomical Obstacles Using Notched Steerable Needles

IEEE Journal of Biomedical and Health Informatics

2018-11 | journal-article

DOI: 10.1109/JBHI.2017.2780192

Source:Crossref

Model-Based Needle Steering in Soft Tissue via Lateral Needle Actuation

IEEE Robotics and Automation Letters

2018-10 | journal-article

DOI: 10.1109/LRA.2018.2858001

Source:Crossref

**A Computational-Model-Based Study of Supervised
Haptics-Enabled Therapist-in-the-Loop Training for
Upper-Limb Poststroke Robotic Rehabilitation**

IEEE/ASME Transactions on Mechatronics

2018-04 | journal-article

DOI: 10.1109/TMECH.2018.2806918

Source:[Crossref](#)

**Position-Force Domain Passivity of the Human Arm in
Telerobotic Systems**

IEEE/ASME Transactions on Mechatronics

2018-04 | journal-article

DOI: 10.1109/TMECH.2018.2793877

Source:[Crossref](#)

**Intraoperative Tissue Young's Modulus Identification
During Needle Insertion Using a Laterally Actuated Needle**

IEEE Transactions on Instrumentation and Measurement

2018-02 | journal-article

DOI: 10.1109/TIM.2017.2774182

Source:[Crossref](#)

**Human–Machine Collaboration Modalities for Semi-
Automated Needle Insertion Into Soft Tissue**

IEEE Robotics and Automation Letters

2018-01 | journal-article

DOI: 10.1109/LRA.2017.2768123

Source:[Crossref](#)

**Surgeon-in-the-Loop 3-D Needle Steering Through
Ultrasound-Guided Feedback Control**

IEEE Robotics and Automation Letters

2018-01 | journal-article

DOI: 10.1109/LRA.2017.2768122

Source:[Crossref](#)

Applications of observers in medical robotics*At-Automatisierungstechnik*

2018 | journal-article

DOI: 10.1515/auto-2017-0062

EID: 2-s2.0-85044238244

Part of ISBN: 2196677X 01782312**Source:** Mahdi Tavakoli via Scopus - Elsevier**Beating-heart robotic surgery using bilateral impedance control: Theory and experiments***Biomedical Signal Processing and Control*

2018 | journal-article

DOI: 10.1016/j.bspc.2018.05.015

EID: 2-s2.0-85048557965

Part of ISBN: 17468108 17468094**Source:** Mahdi Tavakoli via Scopus - Elsevier**Bilateral Adaptive Control of Nonlinear Teleoperation Systems with Uncertain Dynamics and Dead-Zone***Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME*

2018 | journal-article

DOI: 10.1115/1.4040666

EID: 2-s2.0-85051194981

Part of ISBN: 15289028 00220434**Source:** Mahdi Tavakoli via Scopus - Elsevier**Development of an Assistive Robotic System with Virtual Assistance to Enhance Play for Children with Disabilities: A Preliminary Study***Journal of Medical and Biological Engineering*

2018 | journal-article

DOI: 10.1007/s40846-017-0305-6

EID: 2-s2.0-85043333859

Part of ISBN: 21994757 16090985**Source:** Mahdi Tavakoli via Scopus - Elsevier

Generating forbidden region virtual fixtures by classification of movement intention based on event-related desynchronization

2017 IEEE Global Conference on Signal and Information Processing, GlobalSIP 2017 - Proceedings

2018 | conference-paper

DOI: 10.1109/GlobalSIP.2017.8308676

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Source: Mahdi Tavakoli via Scopus - Elsevier

Haptic Tele-cooperation of Multiple Robots

5th RSI International Conference on Robotics and Mechatronics, IcRoM 2017

2018 | conference-paper

DOI: 10.1109/ICRoM.2017.8466205

EID: 2-s2.0-85054509535

Source: Mahdi Tavakoli via Scopus - Elsevier

Hybrid analog/digital control of bilateral teleoperation systems

Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME

2018 | journal-article

DOI: 10.1115/1.4040440

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Source: Mahdi Tavakoli via Scopus - Elsevier

Impedance control of non-linear multi-DOF teleoperation systems with time delay: Absolute stability

IET Control Theory and Applications

2018 | journal-article

DOI: 10.1049/iet-cta.2017.1253

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Source: Mahdi Tavakoli via Scopus - Elsevier

Improving User Performance in Haptics-Based Rehabilitation Exercises by Colocation of User's Visual and Motor Axes via a Three-Dimensional Augmented-Reality Display

IEEE Robotics and Automation Letters

2018 | journal-article

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Source: Mahdi Tavakoli via Scopus - Elsevier

Kinesthetic teaching of a therapist's behavior to a rehabilitation robot

2018 International Symposium on Medical Robotics, ISMR 2018

2018 | conference-paper

DOI: 10.1109/ISMR.2018.8333285

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Manipulability of teleoperated surgical robots with application in design of master/slave manipulators

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DOI: 10.1109/ISMR.2018.8333307

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Source: Mahdi Tavakoli via Scopus - Elsevier

Multi-lateral Nonlinear Time-Delayed Teleoperation in a Multi-agent Systems Framework

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2018 | conference-paper

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Patient-Robot-therapist collaboration using resistive impedance controlled tele-robotic systems subjected to time delays

Journal of Mechanisms and Robotics

2018 | journal-article

DOI: 10.1115/1.4040961

EID: 2-s2.0-85053228737

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Source: Mahdi Tavakoli via Scopus - Elsevier

Preliminary testing by adults of a haptics-assisted robot platform designed for children with physical impairments to access play

Assistive Technology

2018 | journal-article

DOI: 10.1080/10400435.2017.1318974

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Preliminary Testing of a Telerobotic Haptic System and Analysis of Visual Attention during a Playful Activity

Proceedings of the IEEE RAS and EMBS International Conference on Biomedical Robotics and Biomechatronics

2018 | conference-paper

DOI: 10.1109/BIOROB.2018.8487612

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Part of ISBN: 21551774

Source: Mahdi Tavakoli via Scopus - Elsevier

Section focused on new horizons in telerobotics for real-life applications

Advanced Robotics

2018 | journal-article

DOI: 10.1080/01691864.2018.1503631

EID: 2-s2.0-85051182317

Part of ISBN: 15685535 01691864

Source: Mahdi Tavakoli via Scopus - Elsevier

Towards robot-assisted anchor deployment in beating-heart mitral valve surgery

International Journal of Medical Robotics and Computer Assisted Surgery

2018 | journal-article

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Source: Mahdi Tavakoli via Scopus - Elsevier

Ultrasound image guidance and robot impedance control for beating-heart surgery

Control Engineering Practice

2018 | journal-article

DOI: 10.1016/j.conengprac.2018.08.017

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Usability testing of a developed assistive robotic system with virtual assistance for individuals with cerebral palsy: a case study

Disability and Rehabilitation: Assistive Technology

2018 | journal-article

DOI: 10.1080/17483107.2017.1344884

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A data-driven soft sensor for needle deflection in heterogeneous tissue using just-in-time modelling

Medical and Biological Engineering and Computing

2017 | journal-article

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**A Descriptor Approach to Robust Leader-Following
Output Consensus of Uncertain Multi-Agent Systems with
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IEEE Transactions on Automatic Control

2017 | journal-article

DOI: 10.1109/TAC.2016.2643444

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Part of ISBN: 00189286

Source: Mahdi Tavakoli via Scopus - Elsevier

**A grasp-based passivity signature for haptics-enabled
human-robot interaction: Application to design of a new
safety mechanism for robotic rehabilitation**

International Journal of Robotics Research

2017 | journal-article

DOI: 10.1177/0278364916689139

EID: 2-s2.0-85044041115

Part of ISBN: 17413176 02783649

Source: Mahdi Tavakoli via Scopus - Elsevier

**A Hand-Held Assistant for Semiautomated Percutaneous
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IEEE Transactions on Biomedical Engineering

2017 | journal-article

DOI: 10.1109/TBME.2016.2565690

EID: 2-s2.0-85013480635

Part of ISBN: 15582531 00189294

Source: Mahdi Tavakoli via Scopus - Elsevier

**A novel adaptive order/parameter identification method
for variable order systems application in viscoelastic soft
tissue modeling**

Chaos, Solitons and Fractals

2017 | journal-article

DOI: 10.1016/j.chaos.2017.04.005

EID: 2-s2.0-85018402006

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Source: Mahdi Tavakoli via Scopus - Elsevier

**A Passivity-Based Approach for Stable Patient-Robot
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Modulated Time-Domain Passivity Control**

IEEE Transactions on Control Systems Technology

2017 | journal-article

DOI: 10.1109/TCST.2016.2594584

EID: 2-s2.0-84982239001

Part of ISBN: 10636536

Source: Mahdi Tavakoli via Scopus - Elsevier

**An adaptive order/state estimator for linear systems with
non-integer time-varying order**

Automatica

2017 | journal-article

DOI: 10.1016/j.automatica.2017.06.042

EID: 2-s2.0-85021960084

Part of ISBN: 00051098

Source: Mahdi Tavakoli via Scopus - Elsevier

**Assistive technology design and preliminary testing of a
robot platform based on movement intention using low-
cost brain computer interface**

*2017 IEEE International Conference on Systems, Man, and
Cybernetics, SMC 2017*

2017 | conference-paper

DOI: 10.1109/SMC.2017.8122954

EID: 2-s2.0-85044373876

Source: Mahdi Tavakoli via Scopus - Elsevier

**Brachytherapy needle steering guidance using image
overlay**

*Handbook of Research on Biomimetics and Biomedical
Robotics*

2017 | book

Part of DOI: 10.4018/978-1-5225-2993-4.ch008

EID: 2-s2.0-85045739762

Source: Mahdi Tavakoli via Scopus - Elsevier

Cooperative modalities in robotic tele-rehabilitation using nonlinear bilateral impedance control*Control Engineering Practice*

2017 | journal-article

DOI: 10.1016/j.conengprac.2017.07.002

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*Part of ISBN: 09670661***Source:** Mahdi Tavakoli via Scopus - Elsevier**Deflection modeling for a needle actuated by lateral force and axial rotation during insertion in soft phantom tissue***Mechatronics*

2017 | journal-article

DOI: 10.1016/j.mechatronics.2017.10.008

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*Part of ISBN: 09574158***Source:** Mahdi Tavakoli via Scopus - Elsevier**Feedback-linearization-based 3D needle steering in a Frenet-Serret frame using a reduced order bicycle model***Proceedings of the American Control Conference*

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DOI: 10.23919/ACC.2017.7963155

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*Part of ISBN: 07431619***Source:** Mahdi Tavakoli via Scopus - Elsevier**FPAA-based control of bilateral teleoperation systems for enhanced user task performance***Presence: Teleoperators and Virtual Environments*

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DOI: 10.1162/PRES_a_00293

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*Part of ISBN: 15313263 10547460***Source:** Mahdi Tavakoli via Scopus - Elsevier

**Intraoperative factors associated with stranded source
placement accuracy in low-dose-rate prostate
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Brachytherapy

2017 | journal-article

DOI: 10.1016/j.brachy.2017.01.007

EID: 2-s2.0-85012013950

Part of ISBN: 18731449 15384721

Source:Mahdi Tavakoli via Scopus - Elsevier

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Control Engineering Practice

2017 | journal-article

DOI: 10.1016/j.conengprac.2017.03.004

EID: 2-s2.0-85015676567

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Source:Mahdi Tavakoli via Scopus - Elsevier

**Kinematic Bilateral Teledriving of Wheeled Mobile Robots
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IEEE Transactions on Industrial Electronics

2017 | journal-article

DOI: 10.1109/TIE.2016.2619320

EID: 2-s2.0-85015073246

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Source:Mahdi Tavakoli via Scopus - Elsevier

**Learning and robotic imitation of therapist's motion and
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2017 | conference-paper

DOI: 10.1109/SMC.2017.8122951

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Non-integer variable order dynamic modeling and identification of soft tissue deformation*Proceedings of the American Control Conference*

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DOI: 10.23919/ACC.2017.7963054

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Part of ISBN: 07431619**Source:** Mahdi Tavakoli via Scopus - Elsevier**Nonlinear Disturbance Observers: Design and Applications to Euler-Lagrange Systems***IEEE Control Systems*

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Part of ISBN: 1066033X**Source:** Mahdi Tavakoli via Scopus - Elsevier**Nonlinear workspace mapping for telerobotic assistance of upper limb in patients with severe movement disorders***2017 IEEE International Conference on Systems, Man, and Cybernetics, SMC 2017*

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DOI: 10.1109/SMC.2017.8122956

EID: 2-s2.0-85044391443

Source: Mahdi Tavakoli via Scopus - Elsevier**Position and velocity synchronization in bilateral teleoperation in presence of stochastic disturbances in control inputs***2017 IEEE International Conference on Systems, Man, and Cybernetics, SMC 2017*

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DOI: 10.1109/SMC.2017.8122945

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Quantifying ¹²⁵I placement accuracy in prostate brachytherapy using postimplant transrectal ultrasound images

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2017 | journal-article

DOI: 10.1016/j.brachy.2016.11.015

EID: 2-s2.0-85011262984

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Source:Mahdi Tavakoli via Scopus - Elsevier

Robotic assistance for children with cerebral palsy based on learning from tele-cooperative demonstration

International Journal of Intelligent Robotics and Applications

2017 | journal-article

DOI: 10.1007/s41315-016-0006-2

EID: 2-s2.0-85029909591

Part of ISBN: 2366598X 23665971

Source:Mahdi Tavakoli via Scopus - Elsevier

Robotic learning from demonstration of therapist's time-varying assistance to a patient in trajectory-following tasks

IEEE International Conference on Rehabilitation Robotics

2017 | conference-paper

DOI: 10.1109/ICORR.2017.8009361

EID: 2-s2.0-85034809171

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Source:Mahdi Tavakoli via Scopus - Elsevier

Semi-Automated Needle Steering in Biological Tissue Using an Ultrasound-Based Deflection Predictor

Annals of Biomedical Engineering

2017 | journal-article

DOI: 10.1007/s10439-016-1736-x

EID: 2-s2.0-84988433498

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EID: 2-s2.0-85017120033

*Part of ISBN: 09670661***Source:** Mahdi Tavakoli via Scopus - Elsevier**Stable Nonlinear Trilateral Impedance Control for Dual-User Haptic Teleoperation Systems with Communication Delays***Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME*

2017 | journal-article

DOI: 10.1115/1.4037125

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*Part of ISBN: 15289028 00220434***Source:** Mahdi Tavakoli via Scopus - Elsevier**Tele-echography of moving organs using an Impedance-controlled telerobotic system***Mechatronics*

2017 | journal-article

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*Part of ISBN: 09574158***Source:** Mahdi Tavakoli via Scopus - Elsevier**Physiological Organ Motion Prediction and Compensation Based on Multirate, Delayed, and Unregistered Measurements in Robot-Assisted Surgery and Therapy***IEEE/ASME Transactions on Mechatronics*

2016-04 | journal-article

DOI: 10.1109/TMECH.2015.2482391

Source: Crossref

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2016 | journal-article

DOI: 10.1109/JSTSP.2016.2532847

EID: 2-s2.0-84982740541

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Source:Mahdi Tavakoli via Scopus - Elsevier

A Real-Time Estimator for Needle Deflection During Insertion Into Soft Tissue Based on Adaptive Modeling of Needle-Tissue Interactions

IEEE/ASME Transactions on Mechatronics

2016 | journal-article

DOI: 10.1109/TMECH.2016.2598701

EID: 2-s2.0-84996848272

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Source:Mahdi Tavakoli via Scopus - Elsevier

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2016 | journal-article

DOI: 10.1109/TMECH.2016.2549505

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Source:Mahdi Tavakoli via Scopus - Elsevier

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IEEE Robotics and Automation Letters

2016 | journal-article

DOI: 10.1109/LRA.2016.2527065

EID: 2-s2.0-85058585287

Part of ISBN: 23773766

Source:Mahdi Tavakoli via Scopus - Elsevier

An efficient metaheuristic optimization approach to the problem of PID tuning for automatic voltage regulator systems

IEEE/ASME International Conference on Advanced Intelligent Mechatronics, AIM

2016 | conference-paper

DOI: 10.1109/AIM.2016.7577012

EID: 2-s2.0-84992391752

Source: Mahdi Tavakoli via Scopus - Elsevier

An integrator-backstepping control approach for out-of-plane needle deflection minimization

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DOI: 10.1109/AIM.2016.7576998

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Characterization of Upper-Limb Pathological Tremors: Application to Design of an Augmented Haptic Rehabilitation System

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Source: Mahdi Tavakoli via Scopus - Elsevier

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DOI: 10.1109/AIM.2016.7576933

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Source: Mahdi Tavakoli via Scopus - Elsevier

Estimating needle tip deflection in biological tissue from a single transverse ultrasound image: application to brachytherapy

International Journal of Computer Assisted Radiology and Surgery

2016 | journal-article

DOI: 10.1007/s11548-015-1329-4

EID: 2-s2.0-84948666880

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Source: Mahdi Tavakoli via Scopus - Elsevier

Generalized Predictive Control of a Surgical Robot for Beating-Heart Surgery under Delayed and Slowly-Sampled Ultrasound Image Data

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DOI: 10.1109/LRA.2016.2530859

EID: 2-s2.0-85058585377

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Source: Mahdi Tavakoli via Scopus - Elsevier

Introducing notched flexible needles with increased deflection curvature in soft tissue

IEEE/ASME International Conference on Advanced Intelligent Mechatronics, AIM

2016 | conference-paper

DOI: 10.1109/AIM.2016.7576931

EID: 2-s2.0-84992422394

Source: Mahdi Tavakoli via Scopus - Elsevier

Kinematic bilateral teleoperation of wheeled mobile robots subject to longitudinal slippage

IET Control Theory and Applications

2016 | journal-article

DOI: 10.1049/iet-cta.2015.0229

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DOI: 10.1109/LRA.2016.2528301

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*Part of ISBN: 23773766***Source:** Mahdi Tavakoli via Scopus - Elsevier**Multiactuator Haptic Feedback on the Wrist for Needle Steering Guidance in Brachytherapy***IEEE Robotics and Automation Letters*

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*Part of ISBN: 23773766***Source:** Mahdi Tavakoli via Scopus - Elsevier**Needle path control during insertion in soft tissue using a force-sensor-based deflection estimator***IEEE/ASME International Conference on Advanced Intelligent Mechatronics, AIM*

2016 | conference-paper

DOI: 10.1109/AIM.2016.7576929

EID: 2-s2.0-84992390853

Source: Mahdi Tavakoli via Scopus - Elsevier**Nonlinear trilateral teleoperation stability analysis subjected to time-varying delays***Control Engineering Practice*

2016 | journal-article

DOI: 10.1016/j.conengprac.2016.08.004

EID: 2-s2.0-84985011844

*Part of ISBN: 09670661***Source:** Mahdi Tavakoli via Scopus - Elsevier

Partial estimation of needle tip orientation in generalized coordinates in ultrasound image-guided needle insertion

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DOI: 10.1109/AIM.2016.7576999

EID: 2-s2.0-84992407837

Source: Mahdi Tavakoli via Scopus - Elsevier

Real-time needle shape prediction in soft-tissue based on image segmentation and particle filtering

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2016 | conference-paper

DOI: 10.1109/AIM.2016.7576934

EID: 2-s2.0-84992313525

Source: Mahdi Tavakoli via Scopus - Elsevier

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2016 | journal-article

DOI: 10.1109/TMECH.2016.2551725

EID: 2-s2.0-84978708672

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Source: Mahdi Tavakoli via Scopus - Elsevier

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DOI: 10.1109/LRA.2016.2528293

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Source: Mahdi Tavakoli via Scopus - Elsevier

**Stable kinematic teleoperation of wheeled mobile robots
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Mechatronics

2016 | journal-article

DOI: 10.1016/j.mechatronics.2016.05.005

EID: 2-s2.0-84973562564

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Source:Mahdi Tavakoli via Scopus - Elsevier

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2016 | journal-article

DOI: 10.1109/JBHI.2015.2477829

EID: 2-s2.0-85017111939

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Source:Mahdi Tavakoli via Scopus - Elsevier

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Part of ISBN: 23773766

Source:Mahdi Tavakoli via Scopus - Elsevier

**User's task performance in two-handed complementary-
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*Proceedings - IEEE International Conference on Robotics and
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EID: 2-s2.0-84977470926

Part of ISBN: 10504729

Source:Mahdi Tavakoli via Scopus - Elsevier

**Bilateral teleoperation system stability with non-passive
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Control Engineering Practice

2015-07 | journal-article

DOI: 10.1016/j.conengprac.2015.03.004

Source:Crossref

**3D shape visualization of curved needles in tissue from
2D ultrasound images using RANSAC**

*Proceedings - IEEE International Conference on Robotics and
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DOI: 10.1109/ICRA.2015.7139855

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Source:Mahdi TavakoliviaScopus - Elsevier

**A comparison of US-versus MR-based 3-D prostate
shapes using radial basis function interpolation and
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IEEE Journal of Biomedical and Health Informatics

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DOI: 10.1109/JBHI.2014.2324975

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Source:Mahdi TavakoliviaScopus - Elsevier

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DOI: 10.1109/ICRA.2015.7139499

EID: 2-s2.0-84938224652

Part of ISBN: 10504729

Source:Mahdi TavakoliviaScopus - Elsevier

A new passivity-based control technique for safe patient-robot interaction in haptics-enabled rehabilitation systems

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DOI: 10.1109/IROS.2015.7354025

EID: 2-s2.0-84958231369

Part of ISBN: 21530866 21530858

Source: Mahdi Tavakoli via Scopus - Elsevier

A virtual sensor for needle deflection estimation during soft-tissue needle insertion

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Digital versus analog control of bilateral teleoperation systems: A task performance comparison

Control Engineering Practice

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Source: Mahdi Tavakoli via Scopus - Elsevier

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Robotica

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DOI: 10.1017/S026357471400068X

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A method for passivity analysis of multilateral haptic systems

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Absolute stability of a class of trilateral haptic systems

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2014 | journal-article

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Multilateral haptic system stability analysis: The effect of activity or passivity of terminations via a series-shunt approach

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2014 | journal-article

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Part of ISBN: 17518652 17518644

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DOI: 10.1049/iet-cta.2013.0908

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DOI: 10.3182/20130902-3-CN-3020.00069

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DOI: 10.1109/TOH.2012.73

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2013 | conference-paper

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