



Schedule



Thursday, December 22, 2022

8:00 – 9:00



Opening

9:00 – 10:30

Room: Ahmadi Roshan



Keynote Speakers

Dr. Abbas Erfanian & Dr. Nasser Fatouraee

10:30 – 11:00



Catering

11:00 – 12:30

Room: 12

Session 1

Biomechanics 1 (Biofluid Mechanics)

Chairs: Nasser Fatouraee, Mahdi Navidbakhsh

11:00 – 12:30

Room: 13

Session 2

Bioelectrics 1 (Biological Signal Processing 1)

Chairs: Ali Khadem, Mohammad Bagher Shamsollahi

11:00 – 12:30

Room: 14

Session 3

Biomaterials

Chairs: Mohammad Taghi Khorasani, Khatiboleslam Sadrnezhad

11:00 – 12:30

Room: Classrooms Floor Corridor

Session 4



Biomechanics Posters



Chairs: Nabiollah Abolfathi, Khalil Alipour




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|---|--|
| 11:00 – 13:00 | Room: Ahmadi Roshan |
|  | Career Round Table Talent Search - Introduction of the General Department of Medical Equipment and Technical Officer - Medical Equipment in Hospitals - Entrepreneurship and Production of Medical Equipment Dr. Sanghari - M.Sc. Alaeddin - Dr. Mohammadi - M.Sc. Shirkavand |
| 12:30 – 14:00 | |
|  | Lunch |
| 13:30 – 15:30 | Room: 14 |
| Workshop 1 | Familiarity with Technology Trade Brokerage Services Dr. Rezaei |
| 13:30 – 15:30 | Room: Showra |
| Workshop 2 | Introducing the Support and Opportunities of the Medical Image and Signal Processing Research Center of Isfahan University of Medical Sciences from Inter-University Activities and Introducing the Remote Health Monitoring System Dr. Rabbani - Dr. Vafaei - M.Sc. Shirani |
| 13:30 – 15:30 | Room: Library |
| Challenge | The Challenge of Detecting Brain Plaques in MRI Images |
| 14:00 – 15:30 | Room: Ahmadi Roshan |
|  | Invited Speakers Dr. Mohammad Abdolahad & Dr. Mohammad Reza Raoufi |
| 14:00 – 15:30 | Room: 12 |
| Session 5 | Biomechanics 2 Chairs: Nabiollah Abolfathi, Bahman Vahidi |




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| 14:00 – 15:30 | Room: 13 |
| Session 6 | Bioelectrics 2 (Biological Signal Processing 2) Chairs: Mehran Jahed, Mohammad Bagher Shamsollahi |
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| 15:30 – 16:00 | |
|  | Catering |
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| 16:00 – 17:30 | Room: Classrooms Floor Corridor |
| Session 7 | Bioelectrics Posters 1 (Biological Signal & Image Processing) Chairs: Ali Khadem, Rasool Mahdavifar |
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| 16:00 – 18:00 | Room: Ahmadi Roshan |
| Festival | Festival of Innovation and Inventions of Medical Technologies |
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| 16:00 – 18:00 | Room: Showra |
| Workshop 3 | Practical Introduction to the Orthopedic Implants Dr. Goli Malekabadi |
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| 18:00 – 19:00 | Room: Showra |
|  | Meeting The Annual Assembly and Monthly Meeting of the Iranian Society for Biomedical Engineering |



Friday, December 23, 2022

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|---|---|
| 8:30 – 10:00 | Room: Classrooms Floor Corridor |
| Session 8 | Bioelectrics Posters 2 Chairs: Mohammad Ali Ahmadi-Pajouh, Majid Badieirostami |
| 8:30 – 10:00 | Rooms: 12, 13 |
| Session 9 | Biomaterials & Tissue Engineering Posters Chairs: Elaheh Jooybar, Fatemeh Yazdian |
| 8:30 – 10:30 | Room: Showra |
| Workshop 4 | Medical Equipment Production Requirements (Risk Class - Technical File - CE) Dr. Taki |
| 9:00 – 9:45 | Room: Ahmadi Roshan |
|  | Invited Speaker Dr. Iman Borazjani |
| 10:00 – 10:30 | |
|  | Catering |
| 10:30 – 12:00 | Room: Ahmadi Roshan |
|  | Invited Speakers Dr. Mehdi Hasani Sadrabadi & Dr. Aidin Taghilou |
| 10:30 – 12:00 | Room: 12 |
| Session 10 | Biomechanics 3 (Hard & Soft Tissue) Chairs: Malikeh Nabaei, Mehdi Shafieian |
| 10:30 – 12:00 | Room: 13 |
| Session 11 | Bioelectrics 3 (Biological Image Processing) Chairs: Emad Fatemizadeh, Amir Hossein Foruzan |



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| 11:00 – 13:00 | Room: Showra |
| Workshop 5 | Medical Equipment Production Requirements (PMS - GMP - ISO) Dr. Taki |
| 12:00 – 13:30 | |
|  | Lunch |
| 13:30 – 15:00 | Room: Ahmadi Roshan |
|  | Invited Speakers Dr. Gholamali Hoseinzade - Dr. Sajad Shafiei |
| 13:30 – 15:00 | Room: Showra |
| Workshop 6 | How to have a successful Start-Up in Biomedical Engineering? Firouze Tabibzade |
| 13:30 – 15:00 | Room: 12 |
| Session 12 | Biomechanics 4 (Rehabilitation & Biorobotics) Chairs: Khalil Alipour, Farzam Farahmand |
| 13:30 – 15:00 | Room: 13 |
| Session 13 | Bioelectrics 4 Chairs: Fariba Bahrami, Mohammad Pooyan |
| 13:30 – 15:00 | Room: 14 |
| Session 14 | Tissue Engineering Chairs: Mohammad Moeini, Fatemeh Yazdian |
| 15:00 – 15:30 | |
|  | Catering |
| 15:30 – 17:00 | Room: Ahmadi Roshan |
|  | Closing |



Session 1

Biomechanics 1 (Biofluid Mechanics)

Thursday, December 22 11:00 - 12:30

Room: 12

Chairs: Nasser Fatouraee, Mahdi Navidbakhsh

| Time | Title |
|-------|---|
| 11:00 | Dielectrophoretic Separation of RBCs from Platelets: A Parametric Study |
| 11:15 | Numerical Analysis of Dual-Phase Lag Effects on Thermal Response During Focused Ultrasound |
| 11:30 | Investigation of the Asymmetry of Input Channel Geometry on Mixing Quality in Microfluidic Devices Using Numerical Simulation |
| 11:45 | Optical Flow Meter Based on Liquid Crystal Using a Copper Piece to Hold the Liquid Crystal |
| 12:00 | Flow-Induced Effect of Matrix Fiber Orientation on Endothelial Vasculogenesis |
| 12:15 | Develop a Numerical Model of the Glymphatic System to Investigate the Flow Patterns and Transport Processes |



Session 2

Bioelectrics 1 (Biological Signal Processing 1)

Thursday, December 22 11:00 - 12:30

Room: 13

Chairs: Ali Khadem, Mohammad Bagher Shamsollahi

| Time | Title |
|-------|---|
| 11:00 | Compensatory Role of the Amygdala During Motor Timing and Selection in Parkinson's Disease |
| 11:20 | PTSD Diagnosis Using Deep Transfer Learning: An EEG Study |
| 11:40 | Effects of Beta-Band Binaural Beat Stimulation on Speech Production |
| 12:00 | Coupled Hidden Markov Models for Estimating Multivariate Transfer Entropy in Neural Mass Models: A Simulation Study |
| 12:20 | EEG Artifact Removal Based on Brain Dipoles' Regions Using ICA and DIPFIT in Motor Imagery Tasks |



Session 3

Biomaterials

Thursday, December 22 11:00 - 12:30

Room: 14

Chairs: Mohammad taghi Khorasani, Sayed Khatiboleslam Sadrnezhad

| Time | Title |
|-------|---|
| 11:00 | Evaluating the Potential of Ellipsoidal Particles for Inhalation Therapy in Comparison to Spherical Particles |
| 11:20 | Design and Fabrication of Self-Doped PANI-Coated Nanofibers for Biomedical Engineering Applications |
| 11:40 | Fabrication of Wound Dressing Patches Based on "PVA-Gelatin" Reinforced by Zeolitic Imidazole Framework-8 (Zif-8) Nanoparticles |
| 12:00 | Prediction of Aqueous Solubility of Drug Molecules by Embedding Spatial Conformers Using Graph Neural Networks |



Session 4

Biomechanics Posters

Thursday, December 22 11:00 - 12:30

Room: Classrooms Floor Corridor

Chairs: Nabiollah Abolfathi, Khalil Alipour

| Time | Title |
|-------|---|
| 11:00 | Numerical Study of Particle Focusing and Concentration Under the Effect of Acoustic Waves in a Microchannel |
| 11:10 | IMU-Based Estimation of the Knee Contact Force Using Artificial Neural Networks |
| 11:20 | Stress Distribution in Femoral Stems for Revision Total Knee Arthroplasty with Three Different Materials: A Comparative Finite Element Study |
| 11:30 | Fully Automated Centrifugal Microfluidic Disc for Qualitative Evaluation of Rheumatoid Factor (RF) Utilizing Portable and Low-Cost Centrifugal Device |
| 11:40 | Airflow Dynamics in a Mouse Respiratory Airways Using LSFM Images |
| 11:50 | Three-Dimensional Finite Element Analysis of a Complete Segment in the Lumbar Region (L3-L4) Under the Influence of Cage with Titanium and Peek Materials |
| 12:00 | Mathematical Modeling of the Effect of Angiostatin on the Density of the Circular Tumor-Induced Microvascular Network |
| 12:10 | Advancing the Commercialization and Development of Biomedical Engineering Entrepreneurship (Biotechnology Sector) |



Session 5

Biomechanics 2

Thursday, December 22 14:00 - 15:30

Room: 12

Chairs: Nabiollah Abolfathi, Bahman Vahidi

| Time | Title |
|-------|---|
| 14:00 | Biomechanical Analysis of A Mini Force-Closed Cemented Hip Stem for Juvenile Arthritis Patients |
| 14:20 | Measurements of the Lumbar Spine Anatomical Parameters for Use in Musculoskeletal Modeling |
| 14:40 | Kinematic Modularity Analysis of Walking-Based and In-Place Tasks |
| 15:00 | Merging Analysis of Muscle Synergies for Cerebral Palsy Gait |



Session 6

Bioelectrics 2 (Biological Signal Processing 2)

Thursday, December 22 14:00 - 15:30

Room: 13

Chairs: Mehran Jahed, Mohammad Bagher Shamsollahi

| Time | Title |
|-------|---|
| 14:00 | Seizure Prediction in Epileptic Patients Using EEG and Anomaly Detection |
| 14:20 | Respiratory Events Estimation from PPG Signals Using Peak Detection Algorithm |
| 14:40 | Classification of Motor and Mental Imagery EEG Signals in BCI Systems Based on Signal-To-Image Conversion |
| 15:00 | Microstate Resting State EEG Analysis for Evaluating the Effect of Electrical Vestibular Stimulation in Parkinson's Disease |
| 15:20 | Blood Pressure Measurement Using a Gaussian Curve Fitting Algorithm |



Session 7

Bioelectrics Posters 1 (Biological Signal & Image Processing)

Thursday, December 22 16:00 - 17:30

Room: Classrooms Floor Corridor

Chairs: Ali Khadem, Rasool Mahdavifar

| Time | Title |
|-------|--|
| 16:00 | Automatic Classification of Human Intestinal Parasite Types Based on Convolutional Neural Network and Simulated Annealing Algorithm |
| 16:07 | Evaluation of Brain Cortical Connectivity in Drug Abusers Using EEG Data |
| 16:14 | Heartbeat Evoked Potential Assessment in Moderate and Severe Obstructive Sleep Apnea Patients |
| 16:21 | Breast Cancer Automatic Diagnosis from Thermal Images Using Convolutional Neural Networks |
| 16:28 | A Hilbert-Based Coherence Factor for Photoacoustic Imaging |
| 16:35 | Classification of Healthy People and Schizophrenics Using Time-Frequency Domain Features Extracted from Electroencephalogram Signals |
| 16:42 | Physiological Indicators of the Relation Between Autistic Traits and Empathy: Evidence from Electrocardiogram and Skin Conductance Signals |
| 16:49 | A Deep Learning-Based Pipeline for Multi-Class Motor Imagery Problems with Small Portion of Labeled Datasets |
| 16:56 | Feature Extraction with Using S Transform for Classification of Chronic Obstructive Pulmonary Disease |
| 17:03 | Robust Human Movement Prediction by Completion-Generative Adversarial Networks with Huber Loss |
| 17:10 | Investigation of a Herbal Source for Synthesizing the Contrast Agents of Magnetic Resonance Imaging |
| 17:17 | Deep Learning-Based Diagnosis of <i>Dirofilaria Immitis</i> Microfilariae in Dog Blood |



Session 8

Bioelectrics Posters 2

Friday, December 23 8:30 - 10:00

Room: Classrooms Floor Corridor

Chairs: Mohammad Ali Ahmadi-Pajouh, Majid Badieirostami

| Time | Title |
|------|---|
| 8:30 | Designing and Manufacturing a Device Based on the Internet of Things for Monitoring Vital Signs |
| 8:38 | Computational Feasibility of Estimation of Membrane Potential Changes of Spherical Cells Based on Low Frequency Impedance Measurement |
| 8:46 | QuickHap: A Quick Heuristic Algorithm for the Single Individual Haplotype Reconstruction Problem |
| 8:54 | Low Temperature and Afferent Nerve Damage Affect Pain Sensation: A Simulation Study |
| 9:02 | Stress Detection Using PPG Signal and Combined Deep CNN-MLP Network |
| 9:10 | How to Correct Goldman-Hodgkin-Katz Ion Channel Models to Include Gating Nonlinearity Based on Available Hodgkin-Huxley Models |
| 9:18 | Which Policy is Used by the CNS to Control Human Standing Posture: Intermittent or Impulsive Control? |
| 9:26 | Antiepileptic Capacity of c-tDCS: A Computational Modeling Study |
| 9:34 | Employing Deep Learning and Discrete Wavelet Transform Approach to Classify Motor Imagery Based Brain Computer Interface System |
| 9:42 | An Optimal Data-Driven Method for Controlling Epileptic Seizures |



Session 9

Biomaterials & Tissue Engineering Posters

Friday, December 23 8:30 - 10:00

Rooms: 12, 13

Chairs: Elaheh Jooybar, Fatemeh Yazdian

| Time | Title |
|------|--|
| 8:30 | Investigating the Cytotoxicity of Montmorillonite Nanoparticles as a Carrier for Oral Drug Delivery Systems |
| 8:37 | Optimizing the Parameters of Microencapsulation Device with Vibrational Nozzle for Fabricating Alginate Microgels |
| 8:44 | Isolation of Crud Fucoidan from Brown Algae: Structural Characterization and Its Effect on Cell Migration of Mesenchymal Stem Cells |
| 8:51 | Designing and Fabrication of a 3D-Bioprinted Artificial Cornea for Corneal Transplantation |
| 8:58 | An Experimental and Numerical Study of Microfluidic Preparation of Chitosan Nanoparticle |
| 9:05 | Fabrication and Characterization of Poly(lactic Acid) Nanobiocomposite Scaffolds Containing LDH and ZIF-8 Drug Carrier |
| 9:12 | The Effect of Using Montmorillonite on Sustained Release of Curcumin from a Nanocarrier |
| 9:19 | Fabrication of MIL-100 (Fe) Metal-Organic Framework Nanocarrier for the Controlled Release of Paclitaxel Against MCF-7 Breast Cancer Cells |
| 9:26 | Curcumin Loaded Biopolymers: Antimicrobial Evaluation and Optimization |
| 9:33 | Development of Chitosan and Hyaluronic Acid-Based Self-Healing Composite Hydrogel as Bone Scaffold |
| 9:40 | Evaluation of the Mesenchymal Stem Cells Osteogenic Differentiation Cultured on Poly Sorbitol Sebacate Scaffold Under Shear Stress in Bioreactor |
| 9:47 | Fabrication of a Biocompatible Electroconductive Scaffold Based on Ascorbic Acid-Doped Polyaniline for Bone Tissue Engineering |



Session 10

Biomechanics 3 (Hard & Soft Tissue)

Friday, December 23 10:30 - 12:00

Room: 12

Chairs: Malikeh Nabaei, Mehdi Shafieian

| Time | Title |
|-------|--|
| 10:30 | The Effect of the Shape and Material of the Radial Head Implant on the Elbow Joint Biomechanics |
| 10:45 | Patient-Specific Study of Post-Ischemic Cardiac Ventricular Remodeling: A Passive Simulation of Structural Changes in Myofiber Orientation and Stiffness |
| 11:00 | Biomechanical Analysis of Hip Replacement Stem Design: A Finite Element Analysis |
| 11:15 | Biomechanical Study of Fused Lumbar Spine Comparing Ti and PEEK as Connecting Rod Considering Bone Degeneracy Using FEA |
| 11:30 | The Role of Glial Cells in the Mechanical Behavior of Brain Tissue: A Mechanobiological Approach |
| 11:45 | Microstructured Droplet Based Porous Capacitive Pressure Sensor |



Session 11

Bioelectrics 3 (Biological Image Processing)

Friday, December 23 10:30 - 12:00

Room: 13

Chairs: Emad Fatemizadeh, Amir Hossein

| Time | Title |
|-------|---|
| 10:30 | Segmentation of Cerebral Ventricles Using Fuzzy Clustering Optimized by Harris Hawk Algorithm |
| 10:50 | Fault Detection of Piezoelectric Array Element Using Acoustic Field and Particle Swarm Optimization |
| 11:10 | Two Convolutional Neural Networks for the Rigid and Affine Registration of Two-Dimensional CT-MRI Images of the Human Brain |
| 11:30 | A New Method for Speckle Noise Reduction in Medical Ultrasound Images Using Wavelet and Non-Local Mean Filter |
| 11:50 | Use of Discrete Cosine-Based Stockwell Transform in the Binary Classification of Magnetic Resonance Images of Brain Tumor |



Session 12

Biomechanics 4 (Rehabilitation & Biorobotics)

Friday, December 23 13:30 - 15:00

Room: 12

Chairs: Khalil Alipour, Farzam Farahmand

| Time | Title |
|-------|--|
| 13:30 | Fuzzy-Based Gait Events Detection System During Level-Ground Walking Using Wearable Insole |
| 13:50 | Three-Dimensional Finite Element Modeling of the Shoe Sole to Investigate the Impact of Various Geometries on Foot Heel Stresses and Energy Absorption |
| 14:10 | Design and Construction of an Artificial Thumb Prosthetics Controlled by Index Finger |
| 14:30 | Inverse Kinematics Associated with the Degree of Freedoms and Constraints of Shoulder Models During the Middle Direct Punch |



Session 13

Bioelectrics 4

Friday, December 23 13:30 - 15:00

Room: 13

Chairs: Fariba Bahrami, Mohammad Pooyan

| Time | Title |
|-------|--|
| 13:30 | Dimensionality Reduction of Complex Neural Networks with Preserving Synchronization Pattern |
| 13:50 | A Personalized Deep Neural Network to Recognize Human Activities in Healthy Subjects |
| 14:10 | Synchronization and Chimera in a Network of Multistable Memristive Hindmarsh-Rose Models |
| 14:30 | Suggesting an Optimal Montage of Electrodes for Targeting the DLPFC Region in Electrical Brain Stimulation Studies |
| 14:50 | Optimal Frequency for Electrical Cell Impedance Sensing of Vero Cells |



Session 14

Tissue Engineering

Friday, December 23 13:30 - 15:00

Room: 14

Chairs: Mohammad Moeini, Fatemeh Yazdian

| Time | Title |
|-------|---|
| 13:30 | Preparation and Modification of Tilapia Fish Scales with Oxidized Xanthan Gum Loaded with Chloramphenicol for Application as Artificial Cornea |
| 13:50 | Preparation of Electroactive Non-Isocyanate Polyurethane Film as a Novel Smart Wound Dressing |
| 14:10 | Urethane Modified Mussel-Inspired Tissue Adhesive |
| 14:30 | Investigating the Effect of Shear Stress on the Differentiation Response of Mesenchymal Stem Cells in Multi-Layered Silk Fibroin Nanocomposite Scaffolds for Use in Bone-Cartilage Tissue Engineering |