

Mohammadreza Sehhati



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Position:	Associate Professor at Isfahan University of Medical Sciences
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Profile

Ph.D. degree in biomedical engineering with experience in Bioinformatics, Machine Learning, Information Systems, Medical Image Processing, and Programming.

Education

- **2010-2015:** Ph.D. in Biomedical Engineering, [Isfahan University of Medical Sciences](#), Isfahan, Iran.
 - *Thesis Title:* Seeking an appropriate feature extraction method for breast cancer recurrence prediction based on microarray gene expression data
- **2003-2006:** M.Sc. in Biomedical Engineering from [University of Tehran](#), Tehran, Iran.
 - *Thesis Title:* Design and implementation of software infrastructures for an standard hospital information system based on HL7 protocol
- **1999-2003:** B.Sc. in Biomedical Engineering from [Shahed University](#), Tehran, Iran.
 - *Thesis Title:* Design and manufacturing of a Holter-Monitoring device prototype

Teaching Experience

- **Isfahan University of Medical Sciences (2011-now):**
 - Pattern Recognition
 - Machine Learning
 - Data Structure and Algorithm
 - Mathematics in Medicine
 - Transcriptomic
 - Modeling of Physiological Systems
 - Programming (R, MATLAB)
- **University of Isfahan (2015-2016)**
 - Biophysics,
 - Principles of Radiology and Radiotherapy
- **Sepahan Institute of Higher Education (2013-2016):**
 - Biomedical Instrumentation,
 - Principles of Rehabilitation and Devices
 - Programming with C++,
 - Application of Microcontrollers (AVR),
 - Biophysics,
 - Digital Image Processing,
- **Islamic Azad University of Khomeinishahr (2011-2013):**
 - Principles of Radiology and Radiotherapy,
 - Principles of Rehabilitation and Devices,
 - Digital Image Processing,

- Signals and Systems,
- Laboratory of Electrical Measurement
- **Shahed University (2007-2008):**
 - Laboratory of Electrical Measurement,
 - Laboratory of Pulsing Technique

Work Experience

Associate professor at Isfahan University of Medical Sciences

Dept. of Bioinformatics, School of Advanced Technologies in Medicine, Isfahan, Iran, 2015-now.

The Green Science Institute (GSI)

Dept. of R&D, Image Processing Group, Tehran, Iran, 2005-2010.

- *Job title:* System Design, Algorithm Development, Programming.

Safe Soft Company

Dept. of Software Development, Tehran, Iran, 2008.

- *Job title:* Project Manager.

Relevant Responsibilities and Achievements

- **Deputy Head** of Bioelectric & Biomedical Engineering Department, 2019-2020.
- **Director** of sessions for providing standards for more than 15 biomedical devices which were published by the Iranian National Standards Organization
- **Management** of communication and power engineering educational group, Sepahan institute of higher education, 2012-2013.
- **Director** of informatics team and **member of administration team** of 17th Iranian Conference on Biomedical Engineering, Isfahan University of Medical Sciences, 2010.
 - Design of full electronic process of registration, paper's upload and judgment, etc.
- **Management** of Bio-Instrument Laboratory, University of Tehran, 2006-2008.
 - Installation of *POWERLAB* instruments and design of laboratory program.

Research Projects

- **Bioinformatics** research projects (NGS analysis, gene networks, DNA microarrays analysis, ...)
- Several **diverse research project** (in the field of image processing and control) funded by Research Center of Intelligent Processing of Signals (Tehran, Iran).
- Design and manufacturing of a research **instrument for measurement of the reaction time** funded by University of Social Welfare and Rehabilitation Sciences (Tehran, Iran).
- Study on standard **protocols of communication in clinical information systems** as M.Sc. seminar.
- Investigation of present **rehabilitation technologies** in the world, funded by Social Welfare organization.

Key Skills

- **Special skills:**

- Bioinformatics (Data mining, Microarray gene expression analysis, Network analysis, NGS analysis and variant calling),
- Medical Image Processing (Algorithm design and software development),
- Hospital Information System design/development/evaluation,
- Design and manufacturing of electronic circuits for biological signal measurement.
- **Computer skills:**
 - Programming (R, C++, MatLab, Linux bash, Python), Web (PHP, HTML, XML), Database (MySQL).
- **Languages:**
 - English (MHLE certificate), Persian (Native), Arabic (Beginner).

Publications

Journals:

- H Roohafza, E Mousavi, R Omid, M Sadeghi, **M Sehhati**, A Vaez. Machine Learning Helps in Prediction of Tobacco Smoking in Adolescents. *International Journal of Preventive Medicine*. 2025 Apr 1;16:27.
- S Ayalvari, M Kaedi, **M Sehhati**. A modified multiple-criteria decision-making approach based on a protein-protein interaction network to diagnose latent tuberculosis. *BMC Medical Informatics and Decision Making*. 2024 Oct 30;24(1):319.
- L Pinilla, N Esmaili, G Labarca, M Martinez-Garcia, G Torres, E Gracia-Lavedan, O Mínguez, D Martínez, J Abad, MJ Masdeu, O Mediano, C Muñoz, V Cabriada, J Duran-Cantolla, M Mayos, R Coloma, J María Montserrat, M Peña, WH Hu, L Messineo, **M Sehhati**, A Wellman, S Redline, S Sands, F Barbé, M Sánchez-De-a Torre, A Azarbarzin, “Hypoxic burden to guide CPAP treatment allocation in patients with obstructive sleep apnoea: a post hoc study of the ISAACC trial”, *European Respiratory Journal*, 2023, 62 (6)
- N Esmaili, G Labarca, WH Hu, D Vena, L Messineo, L Gell, M Hajipour, L Taranto-Montemurro, S A Sands, S Redline, A Wellman, **M Sehhati**, A Azarbarzin, “Hypoxic burden based on automatically identified desaturations is associated with adverse health outcomes”, *Annals of the American Thoracic Society*, 2023, 20 (11), 1633-1641
- E Mousavi, A Hassanzadeh Keshteli, **M Sehhati**, A Vaez, P Adibi, “Exploring new subgroups for irritable bowel syndrome using a machine learning algorithm”, *Scientific Reports*, 2023, 13 (1), 18483
- E Mousavi, AH Keshteli, **M Sehhati**, A Vaez, P Adibi, “Re-investigation of functional gastrointestinal disorders utilizing a machine learning approach”, *BMC Medical Informatics and Decision Making*, 2023, 23 (1), 167
- E Mousavi, **M Sehhati**, “A generalized multi-aspect distance metric for mixed-type data clustering”, *Pattern Recognition*, 2023, 138: 109353
- Z Nouri, A Sarmadi, S Narrei, **M Sehhati**, MA Tabatabaiefar, “Whole exome sequencing identified a novel LAMA2 frameshift variant causing merosin-deficient congenital muscular dystrophy in a patient with cardiomyopathy, and autism-like behavior”, *Neuromuscular Disorders*, 2022, 32(9):776-784.

- **M Sehhati**, MA Tabatabaiefar, AH Gholami, M Sattari, "Using classification and Kmeans methods to predict breast cancer recurrence in gene expression data", *Journal of Medical Signals & Sensors*, 2022, 12(2), 122-126.
- AA Arani, **M Sehhati**, MA Tabatabaiefar, "Predicting deleterious missense genetic variants via integrative supervised nonnegative matrix tri-factorization", *Scientific Reports*, 2021, 11(1):1-13.
- N. Tavasoli, K. Rezaee, M. Momenzadeh, **M. Sehhati**, "An ensemble soft weighted gene selection-based approach and cancer classification using modified metaheuristic learning", *Journal of Computational Design and Engineering*, 2021, 8(4):1172-1189.
- A. Amousoltani Arani, **M. Sehhati**, M.A. Tabatabaiefar, "Genetic variant effect prediction by supervised nonnegative matrix tri-factorization", *Molecular Omics*, 2021, <http://dx.doi.org/10.1039/D1MO00038A>
- M. Shahhosseini, Newsha Molavi, MA. Tabatabaiefar, **M. Sehhati**, "Optimization of annotation and interpretation step of next generation sequencing data analysis for non-syndromic autosomal recessive hearing loss disease", *Journal of Health and Biomedical Informatics*, 2020, Accepted.
- M. Momenzadeh, H. Rabbani, **M. Sehhati**, "Using Hidden Markov Model to Predict Recurrence of Breast Cancer Based on Sequential Patterns in Gene Expression Profiles", *journal of biomedical informatics* 2020, Accepted.
- H. Mohammadi, M.A. Tabatabaiefar, **M. Sehhati**, "Selection of Optimal Bioinformatic Tools and Proper Reference for Reducing the Alignment Error in Targeted Sequencing Data", *Journal of Medical Signals & Sensors* 2020, Accepted.
- M. Rafati, M. Rafati-Rahimzadeh, H. Moladoust, **M. Sehhati**, "Vascular deformation in human atherosclerotic carotid artery evaluated by 2D analysis of ultrasonography", *Vascular* 2020, 1708538119890163
- A. Shirani, **M. Sehhati**, "Design and implementation of a customizable automatic vehicle location system in ambulances and emergency vehicle systems", *Journal of medical signals and sensors* 2019, 9 (3), 165
- M Momenzadeh, **M. Sehhati**, H. Rabbani, "A novel feature selection method for microarray data classification based on hidden Markov model", *journal of biomedical informatics* 2019, 95, 103213
- E Saghapour, M Sehhati, "Physicochemical Position-Dependent Properties in the Protein Secondary Structures", *Iranian biomedical journal* 2019, 23 (4), 253
- F. Safaei Firouzabadi, A. Vard, **M. Sehhati**, M Mohebian, "An Optimized Framework for Cancer Prediction Using Immunosignature", *Journal of medical signals and sensors* 2018, 8(3):161-170.
- A. Shanei, A. Sazgarnia, E. Dolat, L. Hojaji-Najafabadi, **M. Sehhati**, M Baradaran-Ghahfarokhi, "Microwave hyperthermia in the presence of gold nanoparticles: Preliminary results", *Journal of Radiobiology* 2018; 5(1).
- A. Shanei, A. Sazgarnia, E. Dolat, L. Hojaji-Najafabadi, **M. Sehhati**, M. Baradaran-Ghahfarokhi, "Dual Function of Gold Nanoparticles in Synergism with Mitoxantrone and Microwave Hyperthermia Against Melanoma Cells", *Asian Pac J Cancer Prev.* 2017; 18(11): 2911-2917.
- E. Saghapour, S. Kermani, **M. Sehhati**, "A novel feature ranking method for prediction of cancer stages using proteomics data", *PLoS ONE* 2017; 12(9): e0184203.
- E. Saghapour, **M. Sehhati**, "Prediction of metastasis in advanced colorectal carcinomas using CGH data", *Journal of Theoretical Biology* 2017, 429:116-123.

- M. Rafati, E. Havaee, H. Moladoust, **M. Sehhati**, "Appraisal of different ultrasonography indices in patients with carotid artery atherosclerosis", *EXCLI Journal* 2017; 16:727-741.
- M. Momenzadeh, **M. Sehhati**, A. Mehri Dehnavi, A. Talebi, H. Rabbani, "Automatic diagnosis of vulvovaginal candidiasis from Pap smear images", *Journal of Microscopy* 2017; 267: 299–308.
- **M. Sehhati**, M. Kayed, "Evaluation of Different Classification Models to Extract Gene Signatures for Breast Cancer Recurrence Using Microarray Data", *Journal of Isfahan Medical School* 2017; 35(419):98-103.
- A. Mehridehnavi, H. Zand, **M. Sehhati**, "Dimensionality reduction on topological features of the gene network constructed from microarray data for the prediction of breast cancer recurrence", *Journal of Isfahan Medical School* 2016; 33(359).
- **M. Sehhati**, A. Mehridehnavi, H. Rabbani, M. Pourhossein, "Stable gene signature selection for prediction of breast cancer recurrence using joint mutual information", *IEEE/ACM Transaction on Computational Biology and Bioinformatics* 2015; 12(6): 1440-1448.
- A. Mehridehnavi, **M.R. Sehhati**, H. Rabbani, "Hybrid method for prediction of metastasis in breast cancer patients using gene expression signals", *Journal of Medical Signals and Sensors* 2013; 3(2):79-87.
- **M.R. Sehhati**, A. Mehridehnavi, H. Rabbani, S.H. Javanmard, "Using protein interaction database and support vector machine to improve gene signatures for prediction of breast cancer recurrence", *Journal of Medical Signals and Sensors* 2013; 3(2):87-93.

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- **M.R. Sehati**, R.A. Zoroofi, H. Soltanian-zadeh, "A new method in design of an object-oriented and standard software substructure for Hospital Information Systems", *2nd International conference on Information and knowledge technology (IKT)*, Tehran, Amirkabir University, Tehran, Iran, 24-26 June 2005.
- V. Taimouri, **M.R. Sehati**, C. Locus, "Segmentation of MRI brain images using genetic algorithm for clustering of image data", *7th Conference on Intelligent Systems*, Khaje Nasireddin Toosi University, Tehran, Iran, 9-10 December 2005.
- **M.R. Sehati**, R.A. Zoroofi, H. Soltanian-zadeh, "Design and implementation of a standard radiology information management system under an extendable framework for develop healthcare information systems", *11th International Conference on Computer Science in Iran*, Institute for studies in theoretical physics and mathematics (IPM), Tehran, 24-26 January 2006.
- **M.R. Sehati**, V. Taimouri, C. Locus, "Human face detection based on matching with an optimized pattern using genetic algorithm", *14th International conference on Electrical Engineering in Iran*, Amirkabir University, Tehran, Iran, 2006.
- **M.R. Sehati**, H. Pourghassem, "Improvement of the Performance of an Automatic Object Tracking System in the Various Optical Conditions", *12th International Conference on Computer Science in Iran*, Shahid Beheshti University, Tehran, Iran, 20-22 February 2007.
- S.E. Mahmoodi, V. Taimouri, A.H. Simjour, S. F. Roohi, N. Asadi, M.R. Nazemzadeh, **M.R. Sehhati**, A. Akhoundi Asl, G. Hossein Zadeh, H. Soltanian-Zadeh, "Web based visualization and processing software for 2D and 3D datasets", *The 13th Iranian Conference on Biomedical Engineering*, Sharif University of Technology, Tehran, Iran, 21-22 Feb, 2007.

References

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