

Curriculum Vitae (CV)

Sahar Rezaei, Ph.D

Assistant Professor, Department of Nuclear Medicine

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Professional Profile

Dr. Sahar Rezaei is an Assistant Professor of Medical Physics at Tabriz University of Medical Sciences with a Ph.D. from Tehran University of Medical Sciences. Her research focuses on **artificial intelligence in medicine, molecular and quantitative imaging, image reconstruction, and neurodegenerative diseases.**

She has been recognized as a **top-ranked student** at all academic levels and is a **member of the National Elites Foundation** and the **Exceptional Talents Development Center** of TUMS. Dr. Rezaei's interests lie in developing imaging methods that integrate computational modeling, quantitative analysis, and machine learning for advancing diagnostic precision.

Education

Ph.D. in Medical Physics, Tehran University of Medical Sciences, Tehran, Iran — **2020**

M.Sc. in Medical Physics, Tehran University of Medical Sciences, Tehran, Iran — **2014**

B.Sc. in Physics, Urmia University, Urmia, Iran — **2008**

Academic Theses

- **Ph.D. Thesis:**

Comparative study of different image reconstruction methods and their impact on combined correction of partial volume effect and motion artifact for quantification of PET/CT image in lung tumor.

- **Master's Dissertation:**

Simulation of Gd-based Nanoparamagnetic Particles Mediated Magnetic Field Enhancement Inside Homogenous Tissue in External Magnetic Field.

Publications

1. Jabbari M, Mortezaazadeh T, Motamedi A, Samadi S, **Rezaei S***, Gharepapagh E. Influence of reconstruction methods on regional wall motion abnormalities during gated SPECT myocardial perfusion imaging. *Journal of Nuclear Medicine Technology*. 2026.
2. Jalili J, Ahmadi Y, Karbasi M, Vaseghi S, Baastani Khajeh M, **Rezaei S**, Gharepapagh E, Motamedi A.
The consequences of percutaneous transhepatic biliary drainage (PTBD) in patients with tumoral obstructive jaundice: A retrospective study and review of literature. *European Journal of Radiology Open*. 2025.
3. Jalili J, Amiri A, Rasi Hashemi S,Z, **Rezaei S**, Mikaeeli MR, Karbasi M, Vaseghi S.
Multidisciplinary management of tracheal paraganglioma with angiographic embolization and surgical excision: A case report and review of literature. *Medicine (Baltimore)*. 2025.
4. **Rezaei S**, Asadifar F, Motamedi A, Kamran MS, Parsa F, Samimi H, Ghannadikhoh P, Zahmatyar M, Hosseinzadeh SA, Arabi H.
Future of Alzheimer's detection: Advancing diagnostic accuracy through the integration of qEEG and artificial intelligence. *NeuroImage*. 2025.
5. Valizadeh P, Jannatdoust P, J. Ghadimi D, Tahamtan M, Darrimiani K, Shahsavarhaghghi S, **Rezaei S**, Aarabi MH, Cattarinussi G, Sambataro F, Nosari G, Delvecchio G.
The association between C-reactive protein and neuroimaging findings in mood disorders: A review of structural and diffusion MRI studies. *Journal of Affective Disorders*. 2025.
6. **Rezaei S**, Hamedani Z, Ahmadi K, Ghanadikhah P, Motamedi A, Yousefi H, Rajabi AH, Abbasi H.
Role of machine learning in molecular pathology for breast cancer: A review on gene expression profiling and RNA sequencing application. *Critical Reviews in Oncology/Hematology*. 2025.

7. Pourakbar N, Motamedi A, Pashapour M, Abdollahi M, Shariabiani S, Fazlollahi A, Abdollahi H, Rahmim A, **Rezaei S***.
Effectiveness of artificial intelligence models in predicting lung cancer recurrence: A gene biomarker-driven review. *Cancers*. 2025.
8. Moradi K, Moghaddam R, Sadeghi-Fasaii N, Khodadadmehrabi M, Pagheh AS, Mokhtari H, Safarpour H, Gharepapagh E, Amiri M, **Rezaei S**, Gharepapagh E, Ahmadi M, Montazeri M, Pazoki H and Ahmadpour E.
Toxoplasma gondii modulates immune responses and mitigates type 1 diabetes progression in a streptozotocin-induced rat model. *Cell Communication and Signaling*. 2025.
9. **Rezaei S**, Namvar L, Gharepapagh E.
A case of lung cancer unexpectedly detected with ^{99m}Tc (V)-DMSA whole-body/SPECT imaging. *World Journal of Nuclear Medicine*. 2025
10. Babaei MR, Karbasi M, Motamedi A, Gharepapagh E, **Rezaei S***.
Unexpected pain: Thoracolumbar disc herniation and its neuralgic shadows. *Clinical Case Reports*. 2025.
11. Gharepapagh E, Houshyar J, Farajbakhsh Mamaghanian F, Karbasi M, **Rezaei S***.
Diagnosis of bone metastasis due to medullary thyroid cancer with ^{99m}Tc-(V) DMSA SPECT imaging. *Clinical Case Reports*. 2024.
12. **Rezaei S**, Seyedmiraeei H, Gharepapagh E, Mohagheghzadeh F, Hasanzadeh Z, Karbasi M, Delavari S, Aarabi MH.
Effect of spaceflight experience on human brain structure, microstructure, and function: Systematic review of neuroimaging studies. *Iranian Journal of Psychiatry and Behavioral Sciences*. 2024.
13. Babaei MR, Gharepapagh E, Honarmand Alamdari A, Jalili J, Mohammadi A, Karbasi M, **Rezaei S***.
Radiofrequency ablation of osteoid osteoma at the base of the coracoid process: Report of two cases. *Clinical Case Reports*. 2024.
14. Karbasi M, Aletaha R, Ahangar-Sirous R, Honarmand Alamdari A, Gharepapagh E, **Rezaei S***.
A rare case report of heterotopic cesarean scar pregnancy in the 8th week of gestation managed successfully by exploratory laparotomy with dilation and curettage. *Clinical Case Reports*. 2024.
15. Alilou S, Valizadeh P, Kamali Zonouzi S, Salabat D, Jannatdoust P, Amanollahi M, Rashidi F, **Rezaei S**, Delavari S, Aarabi MH.
The association between C-reactive protein and human brain microstructure: A systematic review of diffusion imaging studies. *Brain Behavior and Immunity Integrative*. 2024.

16. **Rezaei S**, Farzanehfar S, Badrzadeh L, Assadi F, Vahidfar N, Sheikhzadeh P. Impact of attenuation correction, collimator, and iterative reconstruction protocols on ^{67}Ga SPECT/CT quantification. *Frontiers in Biomedical Technologies*. 2024.
17. Fooladi M, **Rezaei S**, Aghahosseini F, Salehi Y, Kasraie N, Sheikhzadeh P. Impact of region-of-interest delineation on stability and reproducibility of liver SNR measurements in ^{68}Ga -PSMA PET/CT. *World Journal of Nuclear Medicine*. 2023.
18. Rahimlou S, **Rezaei S**, Milanchian N, Gharepapagh E. Evaluation of radioiodine therapy in refractory hyperthyroidism. *Iranian South Medical Journal*. 2023.
19. **Rezaei S**, Gharepapagh E, Dabiri S, Heidari P, Aghanejad A. Theranostics in targeting fibroblast activation protein-bearing cells: Progress and challenges. *Life Sciences*. 2023.
20. **Rezaei S**, Gharepapagh E, Rashidi F, Cattarinussi G, Sanjari Moghaddam H, Di Camillo F, Schiena G, Sambataro F, Brambilla P, Delvecchio G. Machine learning applied to functional magnetic resonance imaging in anxiety disorders. *Journal of Affective Disorders*. 2023.
21. Ghafarian P, **Rezaei S***, Gharepapagh E, Sarkar S, Ay MR. Impact of various image reconstruction methods on joint compensation of respiratory motion and partial volume effects in whole-body ^{18}F -FDG PET/CT imaging in patients with non-small cell lung cancer. *Iranian South Medical Journal*. 2022.
22. Sanjari Moghaddam H, Mobarak Abadi M, Dolatshahi M, Bayani Ershadi S, Abbasi-Feijani F, **Rezaei S**, Cattarinussi G, Aarabi MH. Effects of prenatal methamphetamine exposure on the developing human brain: A systematic review of neuroimaging studies. *ACS Chemical Neuroscience*. 2021.
23. **Rezaei S**, Ghafarian P, Bakhshayesh-Karam M, Uribe CF, Rahmim A, Sarkar S, Ay MR. The impact of iterative reconstruction protocol, signal-to-background ratio and background activity on measurement of PET spatial resolution. *Japanese Journal of Radiology*. 2020.
24. **Rezaei S**, Ghafarian P, Jha AK, Rahmim A, Sarkar S, Ay MR. Joint compensation of motion and partial volume effects by iterative deconvolution incorporating wavelet-based denoising in oncologic PET/CT imaging. *Physica Medica*. 2019.
25. Fathi Kazerooni A, Mohseni M, **Rezaei S**, Bakhshandehpour G, Saligheh Rad H.

Multi-parametric (ADC/PWI/T2-w) image fusion approach for accurate semi-automatic segmentation of tumorous regions in glioblastoma multiforme. *MAGMA*. 2015.

26. **Rezaei S**, Riahi Alam N.

Magnetic resonance simulation of nanoparticles on homogeneous tissue in the presence of external magnetic field. *Iranian Journal of Biomedical Engineering*. 2014.

Conference Presentations

1. Gharehpapagh E, **Rezaei S**, Dabiri S, Karbasi M.

Incidental detection of pulmonary carcinoid tumor during cardiac SPECT perfusion imaging: A case report. *38th Annual Congress of the European Association of Nuclear Medicine (EANM'25), Barcelona, Spain; 2025.*

2. Gharehpapagh E, **Rezaei S**, Karbasi M.

Left frontal lobe hypoperfusion and progressive speech impairment: A case study using SPECT imaging. *38th Annual Congress of the European Association of Nuclear Medicine (EANM'25), Barcelona, Spain; 2025.*

3. Noroozi M, Jamaati S, Sharifian P, Karbasi M, Gharehpapagh E, Karimian A, Arabi H, **Rezaei S**.

Added Value of Synthetic T1/T2-Weighted MR Images in the Segmentation and Staging of Meningioma. *32nd National and 10th International Iranian Conference on Biomedical Engineering (ICBME), IEEE, 2025.*

4. **Rezaei S**, Gharehpapagh E, Karbasi M, Arabi H

Deep learning based diagnosis and risk classification of coronary artery disease in SPECT myocardial perfusion. *2025 Society of Nuclear Medicine and Molecular Imaging Annual Meeting (SNMMI), New Orleans, Louisiana, USA; 2025.*

5. Gharehpapagh E, Sedghian S, **Rezaei S**.

Scintimammography as a complementary tool for distinguishing benign and malignant breast masses in young patients. *The 25th Annual Iranian Congress of Nuclear Medicine, Tehran, Iran; 2025.*

6. Gharehpapagh E, **Rezaei S**.

Skeletal metastasis detection in an asymptomatic patient with elevated serum alkaline phosphatase level. *37th Annual Congress of the European Association of Nuclear Medicine (EANM'24), Hamburg, Germany; 2024.*

7. Gharehpapagh E, **Rezaei S**.
A case report of fibrous dysplasia detected by Tc-99m MDP bone scintigraphy. *37th Annual Congress of the European Association of Nuclear Medicine (EANM'24), Hamburg, Germany; 2024.*
8. **Rezaei S**, Gharehpapagh E, Dabiri Sh.
Feasibility of [^{99m}Tc] Tc-FAPI-SPECT Imaging for Detection of Primary Tumors, Lymph Node, and Distant Metastasis in Various Cancers. *36th Annual Congress of the European Association of Nuclear Medicine (EANM'23), Vienna, Austria; 2023.*
9. **Rezaei S**, Gharehpapagh E.
SPECT Imaging Predictors of Social Anxiety Disorder Treatment Response: A New Way Forward. *36th Annual Congress of the European Association of Nuclear Medicine (EANM'23), Vienna, Austria; 2023.*
10. **Rezaei S**, Gharehpapagh E.
Dosimetric evaluation of ¹⁷⁷Lu-PSMA-617 therapy: Feasibility of Single Time Point Imaging Protocol. *Protocol 36th Annual Congress of the European Association of Nuclear Medicine (EANM'23), Vienna, Austria; 2023.*
11. Gharehpapagh E, **Rezaei S**, Namvar L.
Accidentally Detected Lung Masses as Carcinoma in ^{99m}Tc (V)-DMSA SPECT imaging. *36th Annual Congress of the European Association of Nuclear Medicine (EANM'23), Vienna, Austria; 2023.*
12. Gharehpapagh E, **Rezaei S**.
Hyperparathyroidism Jaw Tumor Syndrome: A Case Report. *36th Annual Congress of the European Association of Nuclear Medicine (EANM'23), Vienna, Austria; 2023.* (e-Poster)
13. Gharehpapagh E, **Rezaei S**.
Evaluation of ¹⁷⁷Lu-PSMA-617 Therapy with STP Dosimetry Method in Patients with Metastatic Castration-Resistant Prostate Cancer. *2nd Tabriz Virtual Patient Safety and Medical Education International Congress (TVPM), Tabriz, Iran; 2023.*
14. Gharehpapagh E, **Rezaei S**.
Correlation of MRI, CT and Radionuclide Bone Scan in Detection of Skeletal Metastasis in Patients with Known Metastatic Cancer. *1st International and the 21st congress of Iranian Society of Medical Oncology and Hematology (ISMOH), Tabriz, Iran; 2022.*
15. **Rezaei S**, Gharehpapagh E, Sheikhzadeh P.
Joint evaluation of impact of various collimators and iterative reconstruction protocols on ⁶⁷Ga SPECT/CT quantification. *35th Annual Congress of the European Association of Nuclear Medicine (EANM'22), Barcelona, Spain; 2022.*

16. **Rezaei S**, Ghafarian P, Bakhshayesh Karam M, Rahmim A, Sarkar S, Ay MR.
Joint compensation of motion and partial volume effects in oncologic PET/CT imaging. *Iranian Nuclear Medicine Annual Congress, Tehran, Iran; 2019*.
17. Ghafarian P, **Rezaei S**, Bakhshayesh Karam M, Uribe CF, Rahmim A, Rahimi A, Sarkar S, Ay MR.
Impact of imaging context and duration as well as reconstruction algorithms on measured PET spatial resolutions. *Iranian Nuclear Medicine Annual Congress, Tehran, Iran; 2019*.
18. **Rezaei S**, Nader Riyahi-Alam, Ostovari M.
Gd-based nanoparticles mediated magnetic field enhancement inside homogeneous tissue: simulation using finite element method. *World Congress on Medical Physics and Biomedical Engineering, Toronto, Canada; 2015*.
19. **Rezaei S**, Saligheh Rad H.
A review study on the efficacy of quantitative DCE-MRI in breast lesion diagnosis. *30th Iranian Congress of Radiology, Tehran, Iran; 2014*.
20. **Rezaei S**, Saligheh Rad H.
A review study on the efficacy of quantitative DCE-MRI in adnexal lesion diagnosis. *30th Iranian Congress of Radiology, Tehran, Iran; 2014*.
21. **Rezaei S**, Riyahi-Alam N, Ostovari M.
Simulation of Gd-based nanoparamagnetic particles mediated magnetic field enhancement inside homogeneous tissue in external magnetic field using finite element method. *International Conference on Superconductivity and Magnetism, Antalya, Turkey; 2014*.
22. **Rezaei S**, Nader Riyahi-Alam.
Simulation of nanoparticles mediated magnetic field inside homogeneous tissue in external magnetic field and comparison with VSM experimental results. *World Molecular Imaging Congress, Seoul, South Korea; 2014*.
23. **Rezaei S**, Riyahi-Alam N.
Magnetic resonance simulation of nanoparticles on homogeneous tissue in the presence of external magnetic field. *Iranian Conference of Bioelectromagnetics, Tehran, Iran; 2013*

Thesis Supervision & Advising

1. **Rezaei, S.** (Supervisor)
Deep Learning Framework for Diagnostic Enhancement of Real-Time TMJ MRI via Noise Reduction and Motion Artifact Suppression, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2026*.

2. **Rezaei, S.** (Supervisor)
T1/T2 Signal Intensity Ratio on MRI as a Quantitative Imaging Biomarker for Glioma Grading, , *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
3. **Rezaei, S.** (Supervisor)
Classification of Suspicious Prostate Cancer Lesions Based on the PI-RADS System Using Deep Learning Models, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
4. **Rezaei, S.** (Supervisor)
Microstructural Alterations of Short Projection Fibers in Affective and Non-Affective Psychosis via Diffusion MRI (DMRI), *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
5. **Rezaei, S.** (Advisor)
Differentiating the causes of bile duct obstruction in cholangiographic images of patients with tumoral obstruction of bile ducts by artificial intelligence, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
6. **Rezaei, S.** (Advisor)
Evaluation of Response to Radioactive Iodine Therapy in Patients with Differentiated Thyroid Cancer After Thyroidectomy, *MD Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
7. **Rezaei, S.** (Supervisor)
Artificial Intelligence-based Diagnosis and Histological Grading of Invasive Breast Cancer, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
8. **Rezaei, S.** (Advisor)
Differentiation of benign and malignant causes of biliary strictures in MRCP using artificial intelligence, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
9. **Rezaei, S.** (Supervisor)
Classification of Uterine Fibroids Based on the FIGO System Using Ultrasound Imaging and Deep Learning Algorithms, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
10. **Rezaei, S.** (Advisor)
Magnetic Comparison of Color Doppler Ultrasound Parameters for functional and non-functional in Toxic Multinodular Goiter Diagnosed by SPECT Thyroid Scanning, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
11. **Rezaei, S.** (Advisor)
Evaluation of myocardial perfusion SPECT versus coronary angiography for ischemic stenosis detection in patients referred to nuclear medicine, *MD Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*

12. **Rezaei, S.** (Advisor)
Correlation of femoral trochlea morphology with anterior cruciate ligament injuries after reconstructive surgery, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
 13. **Rezaei, S.** (Supervisor)
Comparing various AI approaches in coronary artery disease diagnosis and risk classification in SPECT myocardial perfusion: a comparison between Radiomics study and Deep learning study, *MD Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
 14. **Rezaei, S.** (Supervisor)
Magnetic Investigation of sonoelastography of Achilles tendon in patients with diabetes, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
 15. **Rezaei, S.** (Advisor)
Correlation between the degree of Anterior Cruciate Ligament damage (intact, partial tear, complete tear) and trochlear dysplasia based on dejour classification, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
 16. **Rezaei, S.** (Advisor)
Determining the difference between benign and malignant ovarian masses in MRI by artificial intelligence, *Residency Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
 17. **Rezaei, S.** (Advisor)
Scintigraphical and Pathological Evaluation of ^{99m}Tc -Phytate and ^{99m}Tc -Antimony trisulfide Radiopharmaceuticals in Sentinel Lymph Node Scan in Surgical Candidates with Breast Cancer, *MD Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
 18. **Rezaei, S.** (Supervisor)
Deep Learning-Based Diagnosis and Risk Classification of Coronary Artery Disease in SPECT Myocardial Perfusion, *MD Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
 19. **Rezaei, S.** (Advisor)
Coronary Artery Disease Diagnosis and Risk Classification in SPECT Myocardial Perfusion: A Radiomics Study, *MD Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
 20. **Rezaei, S.** (Supervisor)
Coronary Artery Disease Diagnosis and Risk Classification in SPECT Myocardial Perfusion: A Radiomics Study, *M.Sc.Thesis, Tabriz University of Medical Sciences, Tabriz, Iran, 2024.*
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Research Projects & Grants

1. **Rezaei, S.** (Principal Investigator)
Development and External Validation of a Multimodal Deep Learning System Integrating Coronary Angiography, Myocardial Perfusion SPECT, and Clinical Data for Fractional Flow Reserve Prediction: A Multi-Center Study. *Research Grant, Cardiovascular Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
2. **Rezaei, S.** (Principal Investigator)
Development and Multicenter Validation of an Explainable Multimodal Deep Ensemble System for Automated Detection and Subtype Classification of Hematologic Malignancies from Peripheral Blood Smear Images. *Research Grant, Hematology and Oncology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
3. **Rezaei, S.** (Principal Investigator)
Development, Validation, and Clinical Integration of an Explainable Multimodal Precision AI System for Thyroid Nodule Malignancy Risk Stratification and Biopsy Optimization. *Research Grant, Endocrine Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
4. **Rezaei, S.** (Principal Investigator)
Design and Validation of a Multimodal AI Framework for Phenotyping Treated Primary Hypothyroidism with Persistent Symptoms despite Biochemical Euthyroidism and Clinical Decision Support. *Research Grant, Endocrine Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
5. **Rezaei, S.** (Principal Investigator)
Development and Validation of a Multimodal AI Model for Early Prediction and Longitudinal Monitoring of Pediatric Nonalcoholic Fatty Liver Disease (NAFLD) and Obesity-Related Metabolic Risks Using “Health Champion” App Data. *Research Grant, Pediatric Health Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
6. **Rezaei, S.** (Principal Investigator)
Design and Implementation of a Deep Learning–Based Angiography-Driven Decision Support System for PCI Planning. *Research Grant, Cardiovascular Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
7. **Rezaei, S.** (Principal Investigator)
Intelligent Machine-Learning–Based Clinical Decision Support System for Differentiating Active Infection from Cortical Renal Scars in Children with Rheumatologic Diseases Using ^{99m}Tc -DMSA SPECT. *Research Grant, Pediatric Health Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*

8. **Rezaei, S.** (Co-Investigator)
Design and Evaluation of an LLM-Based Smart Virtual Patient Platform for Training Internal Medicine Residents in Acute Endocrine Scenarios. *Research Grant, Endocrine Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
9. **Rezaei, S.** (Co-Investigator)
AI System for Analyzing Nasal Mucociliary Clearance (MCC) in Pediatric Respiratory Disorders Using Dynamic Gamma Camera Imaging. *Research Grant, Pediatric Health Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2026.*
10. **Rezaei, S.** (Principal Investigator)
Interpretable Machine Learning Approach for Early Detection of Parkinson's Disease Using Non-Imaging Data. *Research Grant, Neurosciences Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
11. **Rezaei, S.** (Principal Investigator)
Indirect Mapping of Structural Brain Connectivity Networks in Stroke Patients Presenting Within the First 7 Days of Symptom Onset to the Specialized Neurology and Rehabilitation Centers of Tabriz University of Medical Sciences. *Research Grant, Neurosciences Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
12. **Rezaei, S.** (Principal Investigator)
The Therapeutic Effect of Exosomal Drug Delivery Systems in Cancer Treatment: A narrative Review. *Research Grant, Clinical Research Development Unit of Tabriz Valiasr Hospital, Tabriz University of Medical Sciences, Tabriz, Iran, 2025.*
13. **Rezaei, S.** (Principal Investigator)
Neurite orientation dispersion and density imaging (NODDI) and diffusion kurtosis imaging (DKI) in amyotrophic lateral sclerosis: systematic review. *Research Grant, Student Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran, 2024.*
14. **Rezaei, S.** (Co-Investigator)
Protective effect of hesperidin on damage and inflammation of brain cells in female adult rats. *Research Grant, Hematology and Oncology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2024.*
15. **Rezaei, S.** (Principal Investigator)
Microstructural changes in hippocampus and amygdala in neurodegenerative diseases based on diffusion MRI study: systematic review. *Research Grant, Student Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran, 2024.*
16. **Rezaei, S.** (Co-Investigator)
Recent advancements in screening and diagnosis of pituitary adenoma invasion into cavernous sinus using machine learning and deep learning: A comprehensive review. *Research Grant, Student Research Committee, Tabriz University of Medical Sciences, Tabriz, Iran, 2024.*

17. **Rezaei, S.** (Co-Investigator)
Performance of ^{177}Lu -PSMA-617 Therapy in advanced Metastatic Prostate Cancer and Control Imaging with SPECT. *Research Grant, Clinical Research Development Unit of Tabriz Valiasr Hospital, Tabriz University of Medical Sciences, Tabriz, Iran, 2023.*
 18. **Rezaei, S.** (Principal Investigator)
SPECT Imaging of Regional Cerebral Blood Flow Changes in Patients with Anxiety Disorders Before and After Treatment. *Research Grant, Clinical Research Development Unit of Tabriz Valiasr Hospital, Tabriz University of Medical Sciences, Tabriz, Iran, 2023.*
 19. **Rezaei, S.** (Principal Investigator)
Malignant Tumors Detection with Radiopharmaceutical [$^{99\text{m}}\text{Tc}$] Tc-FAPI and SPECT imaging. *Research Grant, Hematology and Oncology Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2023.*
 20. **Rezaei, S.** (Co-Investigator)
The role of $^{99\text{m}}\text{Tc}$ (V) DMSA SPECT imaging in the diagnosis suspected lung cancer lesions. *Research Grant, Clinical Research Development Unit of Tabriz Valiasr Hospital, Tabriz University of Medical Sciences, Tabriz, Iran, 2023.*
 21. **Rezaei, S.** (Co-Investigator)
Radiosynovectomy of Painful Arthritis resistant to treatment by Intra-Articular Administration of Re-188 sulfur colloid and imaging with SPECT, *Connective Tissue Diseases Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2023.*
 22. **Rezaei, S.** (Principal Investigator)
Machine Learning applied to functional Magnetic Resonance Imaging in Anxiety Disorders. *Research Grant, Connective Tissue Diseases Research Center, Tabriz University of Medical Sciences, Tabriz, Iran, 2023.*
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Teaching Experiences

- **Digital Image Processing (M.Sc.)**
Urmia University of Medical Sciences, Iran
2017–2022
- **Mathematics Used in Physics (M.Sc.)**
Urmia University of Medical Sciences, Iran
2019–2022
- **Research Methodology (M.Sc.)**
Tehran University of Medical Sciences, Iran
2016

- **Physics of Nuclear Medicine Imaging (M.Sc.)**
Tabriz University of Medical Sciences, Iran
2023- Until now
 - **Hybrid Medical Imaging (PET/CT, SPECT/CT, PET/MRI) (M.Sc.)**
Tabriz University of Medical Sciences, Iran
2023- Until now
 - **Medical Imaging Systems Physics & Radiation Protection**
Clinical Training Course for **Medical Interns (Externship Program)**
Tabriz University of Medical Sciences, Iran
2023- Until now
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Editorial Activities

- **Topic Editor, *Frontiers in Biomedical Technologies (FBT)*** Tehran University of Medical Sciences, Tehran, Iran 2022–Present
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Memberships

- Member, **International Organization for Medical Physics (IOMP)** (2011–Present)
 - Member, **Iranian Association of Medical Physicists** (2011–Present)
 - Member, **Exceptional Talents Development Center**, Tehran University of Medical Sciences (2016–Present)
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Technical & Computer Skills

- **PET Imaging & Quantification**

Advanced proficiency in quantitative PET/CT image analysis, kinetic modeling, ROI/LFV extraction, partial-volume correction, and parametric imaging.

- **Medical Imaging Software**

Extensive experience with **PMOD**, **Amide**, and complementary platforms for PET/CT processing, visualization, and tracer evaluation.

- **Monte Carlo Simulation**

Expertise in radiation transport modeling, dosimetry estimation, and nanoparticle–tissue interaction studies using Monte Carlo–based simulation frameworks.

- **Artificial Intelligence & Machine Learning**

Application of AI/ML methods in medical imaging, including feature extraction, radiomics analysis, predictive modeling (SVM, RF, XGBoost), and AI-assisted reconstruction.

- **Deep Learning for Medical Image Analysis**

Experience with CNN-based architectures (e.g., U-Net, Autoencoders) for image segmentation, denoising, reconstruction enhancement, and texture analysis.

- **Programming & Scientific Computing**

- **Python** (NumPy, SciPy, scikit-learn, PyTorch, OpenCV, SimpleITK)

- **MATLAB** (image processing, modeling, simulation)

- **R** (statistical analysis and visualization)

- **COMSOL Multiphysics** (biomedical and electromagnetic simulation)

- **Statistical & Data Analysis Tools**

Proficient in **SPSS**, data preprocessing, statistical modeling, and quantitative research workflows.

Languages

- Persian – Native
- Azerbaijani – Native
- Turkish – Advanced
- English – Intermediate/Upper-Intermediate

Honors and Achievements

- Member, **National Elites Foundation (NEF), Iran**
- Member, **Exceptional Talents Center**, Tehran University of Medical Sciences
- **Top-Ranked Student at All Academic Levels**, Tehran University of Medical Sciences

- **Academic Excellence Award**, Tehran University of Medical Sciences
- **Jahesh-e-Elm Research Grant**, Tabriz University of Medical Sciences, 2024.
Awarded to researchers ranked among the top 30% of active university researchers based on the annual research performance evaluation.
- **Jahesh-e-Elm Research Grant**, Tabriz University of Medical Sciences, 2025.
Awarded to researchers ranked among the top 30% of active university researchers based on the annual research performance evaluation.