

Mehdi Mohammadi Vizheh

Personal Information

- Date of birth: 1982/03/20
- Place of Birth: Tehran, Iran
- Languages: Persian, English
- Marital status: Married, having one child

Employment

[Since 04/2024] Research Institute for Earth Sciences (RIES) Tehran, Iran
Assistant research professor

[Since 03/2009] Geological Survey of Iran (GSI) Tehran, Iran
Geophysicist Department of mineral exploration

Education

[09/2013 – 12/2019] University of Tehran Tehran, Iran

[03/2017 – 08/2017] Uppsala University Uppsala, Sweden
Ph.D. Geophysics / Electromagnetics

[09/2005 - 07/2008] Shahrood University of Technology Shahrood, Iran
MSc. Geophysics / Geoelectric

[09/2000 - 04/2005] University of Kurdistan Sanandaj, Iran
BSc. Physics / Solid State

Summary

I have led more than 70 successful geophysics projects to investigate various targets in different fields of study, such as mineral exploration, mining studies, geological/archaeological applications, groundwater investigations, etc. My work focuses on acquiring, processing/inversion, and interpreting disparate geophysical data to publish the results in technical reports. My other tasks are project planning/managing, writing proposals, and applying for research/industrial funds. I'm fully experienced in employing various geophysical instruments and relevant commercial software.

My research interests are the joint interpretation of different geophysical/geological data, and reflection data (GPR and seismic) processing to be used in the constrained inversion of electromagnetic/geoelectric data. In this regard, I have developed a few algorithms and have written/modified several codes in Matlab and Fortran. Also, I have published 40 scientific papers (see below) and more than 60 technical reports. I have advised 15 MSc. thesis and have taught in 10 influential workshops. Also, I am a scientific responsible/reviewer for GSI publications, several conferences, and Iranian journals.

Honors, awards

- Candidate for the Iranian National Elites Foundation Award (2016, 2020)
- Letter of appreciation from Deputy Minister and Head of GSI (2012, 2018, 2021, 2023)
- The 2nd rank (1st rank after the interview) of the national Ph.D. entry exam in Geophysics-Electromagnetics, 2013
- Defense of the first MSc. thesis using GPR method in Iran, 2008; Teaching at the first GPR workshop in Iran, 2012
- The top student in MSc., 2008; The 3rd student in BSc., 2005

International Publications

1. **Mohammadi Vizheh, M.**, M. Bastani, T. Kalscheuer, B. Oskooi, G. Schwarz, and C. Juhlin, 2023, Constrained 2D inversion of radio-magnetotelluric and controlled-source audio-magnetotelluric data using high-resolution reflection seismic data: An example in groundwater surveying from Heby, Sweden: *Geophysics*, 88, no. 2, B79-B90. <http://dx.doi.org/10.1190/geo2021-0835.1>.
2. Varfinezhad, R., Parnow, S., Florio, G., Fedi, M., **Mohammadi Vizheh, M.**, 2022, DC resistivity inversion constrained by the magnetic method through sequential inversion, *Acta Geophysica*, <https://doi.org/10.1007/s11600-022-00909-1>
3. **Mohammadi Vizheh, M.**, Kalscheuer, T., Bastani, M., Oskooi, B., 2021, RMT data inversion using GPR structural and petrophysical constraints for groundwater investigations (Manuscript is in preparation).
4. Nazari, H., Ritz, J.F., Burg, J.P., Shokri, M.A., Haghipour, N., **Mohammadi Vizheh, M.**, Avagyan, A., Ensani, M.R., 2021, Archaeoseismology, Slip rate and kinematic analysis of the Khazar fault along the northern flank of Central Alborz, Iran, *Journal of Asian Earth Sciences*, **219**, 104893, <https://doi.org/10.1016/j.jseaes.2021.104893>
5. **Mohammadi Vizheh, M.**, Oskooi, B., Bastani, M., Kalscheuer, T., 2020, Using GPR data as constraints in RMT data inversion for water content estimation: a case study in Heby, Sweden, *Pure Appl. Geophys.* **177**, 2903–2929. <https://doi.org/10.1007/s00024-019-02391-1>.
6. **Mohammadi Vizheh, M.**, Ameri, A., Kamkar Rohani, A., Jafari, F., Razavi, A., 2010, Investigation of the Bed Sediments Using a Suitable Processing Algorithm in GPR Method: A Case Study, *Near Surface 2010 – 16th European Meeting of Environmental and Engineering Geophysics*, Zurich, Switzerland. <https://doi.org/10.3997/2214-4609.20144857>.

National Journals

1. Badpa, M., **Mohammadi Vizheh, M.**, Baniamerian, J., Oveisi, B., 2020, Geometric parameters estimation of Ahar fault using geomagnetic, tectonic, and seismology data (Manuscript).
2. Baniamerian, J., Radad, M., **Mohammadi Vizheh, M.**, 2020, Interpretation of magnetic and gravity anomalies by using extended Euler deconvolution method, *Journal of analytical and numerical methods in mining engineering*, **10** (23), 159-171. <https://doi.org/10.29252/anm.2020.13510.1433>.
3. Pashazadeh, B., Jahani, D., Lak, R., Nazari, H., **Mohammadi Vizheh, M.**, Berensmeier, M., 2019, Quaternary cone forming model using sedimentary and geophysical (geoelectric) data in the southeast of Yazd city, Central Iran, *Quaternary Journal of Iran*, **5** (2), 221-236. <http://journal.iranqua.ir/article-1-384-en.html>.
4. **Mohammadi Vizheh, M.**, Oskooi, B., Bastani, M., Kalscheuer, T., 2019, Constrained inversion of RMT data using GPR sections versus joint interpretation of their result in an aquifer investigation, *Journal of Research and Applied Geophysics*, **5** (2), 253-267. <https://doi.org/10.22044/jrag.2018.6877.1188>.
5. Dasbarzin, D., Rezaei, K., Lak, R., **Mohammadi Vizheh, M.**, Moslemi, H., 2019, Sedimentology and depositional paleo-environments of Quaternary alluviums determination using sedimentology and ground penetration radar (GPR) data combination, a case study: Kouchesfahan area- Guilan province, *Quaternary Journal of Iran*, **4** (4), 435-456. <http://journal.iranqua.ir/article-1-340-en.html>.
6. Alahverdi, F., **Mohammadi Vizheh, M.**, Farokhnia, A., Boustani, E., Nazari, H., 2019, Investigation of active tectonics and identification of active faults by geophysical methods case study: Gohartapeh-Behshahr, *Scientific quarterly journal Geosciences*, **28** (111), 227-236. <https://doi.org/10.22071/gsj.2019.88499>
7. Badpa, M., Kamkar Rouhani, A. Gh., Arab Amiri, A., **Mohammadi Vizheh, M.**, 2018, Using GPR and DC geoelectric forward and inverse modeling in the investigation of quaternary activities of Khazar fault in Khalilshahr- Behshahr area, *Journal of Research and Applied Geophysics*, <https://doi.org/10.22044/jrag.2018.7429.1209>.
8. Shabani, Sh., Kianfar, K., **Mohammadi Vizheh, M.**, 2017, Determination of the relationship between parameters of the stripping in different depths of asphalt using GPR; A case study: District 22 of Tehran, *Journal of Research and Applied Geophysics*, **3** (2), 229-243. <https://doi.org/10.22044/jrag.2017.904>
9. Hosseini, M., Kamkar Rouhani, A. Gh., **Mohammadi Vizheh, M.**, Parnow, S., 2017, A comparison between the results of Ground Penetrating Radar and magnetic surveys in near-surface investigations: A

10. Hazermoshar, A., Lak, R., Espahbood, M., Kohansal Ghadimvand, N., **Mohammadi Vizheh, M.**, Pashazadeh, B., 2016, Reconstruction of Holocene sedimentary environment of Eynak marsh by sedimentological and geophysical evidences (west of Rasht, Gilan province), *Quaternary Journal of Iran*, 2 (3), 243-255. <http://journal.iranqua.ir/article-1-98-en.html>
11. Hosseini, M., Kamkar Rouhani, A. Gh., **Mohammadi Vizheh, M.**, Parnow, S., 2016, Importance of three-dimensional ground penetrating radar surveys in accurate display of the images of subsurface installations, Case study: Shahrood University of Technology, *Journal of Research and Applied Geophysics*, 2 (2), 67-76. <https://doi.org/10.22044/jrag.2016.651>
12. Nazari, H., Ghorashi, M., Kaveh Firooz, A., Ensani, M., Baharfirooz, Kh., Azizi, A., Lak, R., Karimi Bavandpour, A., **Mohammadi Vizheh, M.**, Soboti, F., Razavi, A. H., 2015, Probable Tsunami in the south Caspian Sea by a large earthquake, *Iranian Journal of Geology*, **8** (32), 57-72. <http://geology.saminattech.ir/fa/Article/9343>
13. Mazinani, A., Kamkar Rouhani, A., **Mohammadi Vizheh, M.**, 2015, Determination of qualitative parameters in pavements using ground penetrating radar (GPR) method, *Iranian Journal of Geophysics*, **9** (2). http://www.ijgeophysics.ir/article_33581.html?lang=en
14. **Mohammadi-Vizheh, M.**, Kamkar Rouhani, A. Gh., 2014, Detection of subsurface installations and analysis of GPR pulse characteristics, *Iranian Journal of Geophysics*, **7** (4). 117-133. http://www.ijgeophysics.ir/article_39551.html?lang=en
15. **Mohammadi Vizheh, M.**, Kamkar Rouhani, A. G., 2010, Investigation of the near-surface structures by using GPR and resistivity methods: a case study, *Scientific quarterly journal Geosciences*, **20** (80). <https://doi.org/10.22071/gsj.2011.55248>

Conference papers

1. **Mohammadi Vizheh, M.**, Oskooi, B., Bastani, M., Kalscheuer, T., 2018, GPR as a constraint in RMT inversion and a case study investigation, *18th Iranian Geophysical Conference*, Tehran, Iran.
2. Ghamari, K., **Mohammadi Vizheh, M.**, Ghamari, K., 2018, Detection of Subsurface utilities by 2D processing and 3D Visualization of GPR Data, *18th Iranian Geophysical Conference*, Tehran, Iran.
3. **Mohammadi Vizheh, M.**, Oskooi, B., Bastani, M., Kalscheuer, T., 2018, Joint interpretation of RMT and GPR data on an aquifer in Heby area, Sweden, *The 36th National and the 3rd International Geosciences Congress of Iran*, Tehran, Iran.
4. Mohammadi, M., Kamkar Rouhani, A. Gh., Arab Amiri, A., **Mohammadi Vizheh, M.**, 2018, Using Ground Penetrating Radar (GPR) to identify faults, *The 36th National and the 3rd International Geosciences Congress of Iran*, Tehran, Iran.
5. Alahverdi, F., **Mohammadi Vizheh, M.**, Jafari, F., Nazari, H., 2016, Locating hidden faults by combining of 3D geophysical methods: a case study, *The 35th National Geosciences Congress of Iran*, Tehran, Iran.
6. Chakeri, M., **Mohammadi Vizheh, M.**, Hazer Moshar, A., 2016, GPR and Geoelectric data application in the environmental study of Eynak swamp, Rasht, *The 35th National Geosciences Congress of Iran*, Tehran, Iran.
7. **M. Mohammadi Vizheh, F.**, Jafari, E., Shahin, 2016, 3D GPR study in Shrine Imamzadeh Hilal Ben Ali, Aran & Bidgol, *17th Iranian Geophysical Conference*, Tehran, Iran.
8. M., Badpa, Kamkar Rouhani, A., Arab Amiri, A., **Mohammadi Vizheh, M.**, 2016, Survey of hidden branches of Khazar fault by resistivity method and investigate the response of forward modeling of faults (case study: Khalilshahr), *2nd conference on Seismology & Earthquake Engineering*, Karaj, Iran.
9. Badpa, M., Kamkar Rouhani, A., Arab Amiri, A., **Mohammadi Vizheh, M.**, 2016, Faults mechanism analysis in the east of Mazandaran by processing of airborne magnetic data, *2nd conference on Seismology & Earthquake Engineering*, Karaj, Iran.
10. Badpa, M., Kamkar Rouhani, A., Arab Amiri, A., **Mohammadi Vizheh, M.**, 2015, Application of resistivity data Inversion and Forward modeling in a survey of hidden fault (case study: Khazar fault), *2nd applied geological congress*.
11. Jamali, F., Arab-Amiri, A., Kamkar-Rouhani, A. Gh., **Mohammadi-Vizheh, M.**, Bahrami, A., 2014, Geophysical prospecting and exploration of poly-metallic deposits in Kaboudan-Bardaskan area, *16th Iranian Geophysical Conference*, Tehran, Iran.

12. **Mohammadi Vizheh, M.**, Shahin, E., Ameri, A., 2014, Effective application of GPR data deconvolution in sedimentology and geohazard study in Gilan province, *1st conference and 2nd Workshop on Ground Penetrating Radar*, Kerman, Iran.
13. Mazinani, A., Kamkar Rouhani, A. Gh., **Mohammadi Vizheh, M.**, 2012, Determination of moisture content of base in the pavement by using GPR method, *15th Iranian Geophysical Conference*, Tehran, Iran.
14. **Mohammadi Vizheh, M.**, Mazinani, A., Kamkar Rouhani, A. Gh., 2012, Determination of percentage of asphalt voids by using of GPR method, *15th Iranian Geophysical Conference*, Tehran, Iran.
15. Kamkar Rouhani, A. G., Hosseini, M., **Mohammadi Vizheh, M.**, 2010, Comparison of results of processing and interpretation of GPR data with Geomagnetic results in detection of buried pipeline in Ghale Shokat area. *14th Iranian Geophysical Conference*, Tehran, Iran.
16. Esmaili, S. Hafizi, M. K., Jazayeri, S., **Mohammadi Vizheh, M.**, 2010, GPR 3D data processing and interpretation in the archeological investigation in the Kerman area. *14th Iranian Geophysical Conference*, Tehran, Iran.
17. **Mohammadi Vizheh, M.**, Shahin, E., Ameri, A., 2010, Investigation bed sediments of Tar Lake by using of GPR method and offer a suitable processing algorithm. *14th Iranian Geophysical Conference*, Tehran, Iran.
18. **Mohammadi Vizheh, M.**, Ameri, A., 2010, Tar Lake bathymetry using GPR method, *The 27th symposium on geosciences and 13th geological society of Iran*, Tehran, Iran.
19. Samimi, S., **Mohammadi Vizheh, M.**, 2010, An applied study of GPR method in solving of engineering geology problems, *The 27th symposium on geosciences and 13th geological society of Iran*, Tehran, Iran.
20. Hosseini, M., Kamkar Rouhani, A. G., **Mohammadi Vizheh, M.**, 2010, Detection of subsurface structures by using of GPR data processing: a case study, *The 27th symposium on geosciences and 13th geological society of Iran*, Tehran, Iran.
21. **Mohammadi Vizheh, M.**, Kamkar Rouhani, A. G., 2009, Investigation of GPR method capability in detection of buried pipes and distinguishing of their specifications in Shahrood area, *12th symposium of geological society of Iran*, Ahvaz, Iran.
22. **Mohammadi Vizheh, M.**, Kamkar Rouhani, A. G., Oveysi Moakhar, M., 2008, Comparison of GPR and Resistivity methods in the detection of water qanat near Shahrood in high conductivity soils, *13th Iranian Geophysical Conference*, Tehran, Iran.

Other Publications

1. Publish more than 60 technical reports in applied/exploration geophysics for GSI and some private companies.
2. **Mohammadi Vizheh, M.** (a member of provider group), 2016, Guidance on the description of services and the determination of the fees for geophysical studies, *Plan and Budget Organization of Iran*
3. **Mohammadi Vizheh, M.**, (a member of provider group), 2013, Radiometry Journal of Iran, *Mining Engineering Organization*

Work Experiences

- Leading more than 70 geophysical projects and collaborating in 30 other ones
- Reviewer and a member of the scientific committee for GSI publications, conferences and national journals
- Geophysics advisor of several exploration/mining companies

Software

Operating System: Windows, Linux, and relevant applications

Languages of Coding: Matlab, Fortran, C

Professional software: RadExplorer, ReflexW, Res1Dinv, Res2Dinv, Res3Dinv, Res2Dmod, Geosoft, Sensoft GPR Package (old versions), Prism, Surfer, Voxler, Global Mapper, IPI2Win, 1X1D, Modelvision Pro, Profile Analysis, UBC Mag3D, UBC Grav3D, Empower, WinGLink, Map source/GPS expert, etc.

Academic code: EMILIA, REBOCC, Strike, etc.

Geophysical instrument

GPR: MalaGS, Sensoft, GSSI, Cobra, Zond, etc.

DC resistivity and IP: IRIS (Elerec Pro), GDD, ARES, ABEM (300, 1000, 4000), Orange lamp (WDJS2, WDJ3), etc.

Geomagnetic: Scintrex (MP2, MP3), GEM (19T), Geometrix, etc., **RMT, MT and CSAMT:** Enviro-MT, Phoenix MTU-5C, **Gravity:** Scintrex (CG3, CG5, CG6), **VLF:** Wadi, **Seismic:** ABEM, **NMR:** IRIS (Numis),

Advisor of MSc. Thesis

University of Tehran: Younes Karimi (2020), Amir Haghdost (2018), Sanaz Esmaili (2010)

Shahrood University of Technology: Mehdi Dehghanian (now), Reza Shoki (now), Kosar zahmati (2020), Mojtaba Mohamadi (2017), Miad Badpa (2016), Farzaneh Jamali (2014), Ahmad Mazinani (2012), Masoud Hoseini (2009)

Kharazmi University: Dara Dasbarzin (2019); **Qazvin University:** Hosein Iranshahi (2019), **Arak University:** Azam Sohrabi (2020); **RIES:** Mahmoud Navvar (2020)

Workshop Teaching

1. Exploration geophysics (16 Hours), 2023, Gohar Zamin Iron Ore Company, Sirjan, Iran.
2. Exploration geophysics (16 Hours), 2022, Iranian mining engineering organization, Tehran, Iran.
3. Radiomagnetotelluric and controlled-source audiomagnetotelluric methods in exploration of metallic ores and groundwater investigations (2 Hours), 2020, 2nd international conference and specialized exhibition of Non-Ferrous metals, Exploration, Extraction, and Processing, Tehran, Iran.
4. Application and survey design of geophysical methods in the solving of mining problems (With an exclusive look at the exploration of metallic mines and building stones), 2019, 2nd international conference and specialized exhibition of mineral exploration, Tehran, Iran.
5. GPR workshop (8 Hours), 2017, The 35th National Geosciences Congress of Iran, Tehran, Iran.
6. DC resistivity and Induced polarization workshop (8 Hours), 2016, The 34th National and the 1st International Geosciences Congress of Iran, Tehran, Iran.
7. GPR workshop (8 Hours), 2015, The 34th National Geosciences Congress of Iran, Tehran, Iran.
8. GPR workshop (8 Hours), 2014, The 16th Iranian Geophysical Conference, Tehran, Iran.
9. GPR workshop (7 Hours), 2013, Geological Survey of Iran, Tehran, Iran.
10. GPR workshop (8 Hours), 2012, The 32th National Geosciences Congress of Iran, Tehran, Iran.

Important Professional Training Courses

1. Processing and 3D modeling of magnetic and gravity data (2020)
2. Airborne survey using DJI quadcopter drone, 30 Hours, 2019
3. Airborne TDEM and its application for mineral exploration, 4 hours, 2018
4. Field training course in exploration geophysics, 15 days, 2017 (by Geological Survey of Finland)
5. Field training course in exploration geophysics, 20 days, 2016 (by Geological Survey of Finland)
6. Integration and modeling in Arc GIS, 24 Hours, 2016
7. Arc GIS, 24 Hours, 2015
8. Field trip of "North faults of Tehran," 8 Hours, 2014
9. Copper ore deposit of Iran, one day, 2012
10. Gold deposit in Sanandaj-Sirjan zone, one day, 2011
11. Rare earth elements, one day, 2011
12. Well Logging and new achievements of Mineral Researches, one day, 2011

References

Dr. Mehrdad Bastani, mehrdad.bastani@sgu.se
Dr. Thomas Kalscheuer, thomas.kalscheuer@geo.uu.se
Dr. Behrooz Oskooi, boskooi@ut.ac.ir
Dr. Abolghasem Kamkar Rouhani, kamkar@shahroodut.ac.ir