

Akbar Shirzad

Assistant Professor, Planning and Management of Water Resources and Environmental Systems

Email: a.shirzad@uut.ac.ir, ashirzad@ut.ac.ir

Phone: +98 44 3198 0250

Fax: +98 44 3198 0251

Academic Education

- Ph.D. in Civil Engineering-Water Engineering, Planning and Management of Water Resources and Environmental Systems, 2008-2013, Tehran University, Total GPA: about 17.6/20
 - M.Sc. in Civil Engineering-Water Engineering, 2004-2006, Tehran University, Total GPA: about 18.3/20
 - B.Sc. in Water Engineering, 2000-2004, Tabriz University, Total GPA: about 17.9/20
 - Diploma in Mathematics and Physics, Mohammad Jafar Manavi High school, Urmia, Iran, Total GPA: 19.2/20
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Awards and Honors:

- Ranked 1st among 150 students at the end of high school period, 2000
 - Ranked 2nd among 30 students at the end of BSc. period, 2004
 - Ranked 3rd in nationwide MSc. entrance exam
 - Ranked 1st among 12 students at the end of MSc. period, 2006
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Teaching Courses

- Soft Computing
 - Advanced Design of Water Distribution Networks
 - Water and Wastewater engineering
 - Engineering Hydrology
 - Hydraulic Structures
 - Hydraulics
 - Sediment Engineering
 - Fluid Mechanics
 - Environmental Engineering
 - Engineering Statistics and Probability
 - System Engineering
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Research Interests

- Soft Computing
 - Optimization of water resources and environmental systems
 - Reliability of water resources and environmental systems
 - Investigation on Pipe Failures in water distribution networks
 - Consumption management and reducing non-revenue water (NRW)
 - Head dependent simulation models
 - Experimental and field research on pressure-discharge relationship used in HDSM models
 - Modeling of leakage in water distribution networks.
 - Experimental and field research on leakage in water distribution networks
 - Meta-modeling
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Articles Published in Refereed Journals:

1. Naseri, M., Daneshbod, Y., Pirouz, M. D., Rakhshandehroo, Gh. R. and **Shirzad, A.**, (2012). "A new analytical solution to water content simulation in porous media", *Journal of Irrigation and Drainage Engineering, ASCE*, **138**(4), 328–335.
2. **Shirzad, A.**, Tabesh, M., Farmani, R. and Mohammadi, M., (2013). "Pressure-discharge relations with application in head driven simulation of water distribution networks", *Journal of Water Resources Planning and Management, ASCE*, **139**(6), 660-670.
3. Tabesh, M., **Shirzad, A.**, Arefkhani, V. and Mani, A., (2014). "A comparative study between modified and available EPANET-based models for head driven analysis of water distribution networks", *Urban Water Journal*, **11**(3), 221-230.
4. **Shirzad, A.**, Tabesh, M. and Farmani, R., (2014). "A comparison between performance of support vector regression and artificial neural network in prediction of pipe burst rate in water distribution networks", *KSCE Journal of Civil Engineering*, **18**(4), 941-948.
5. Tabesh, M., **Shirzad, A.** and Maghari, M., (2013). "Optimum pipe replacement schedule in water distribution network using genetic algorithm", *Journal of Iran- Water Resources Research*, **8**(3), 83-87 (In Persian).

6. **Shirzad, A.**, Tabesh, M. and Heidarzadeh, M., (2015). "A new method for quasi-optimal design of water distribution networks", [Journal of Water Resources Management](#), 29(14), 5295-5308.
7. **Shirzad, A.** and Tabesh, M., (2015). "A pressure dependent analysis-based index to assess reliability of water distribution networks", [International Journal of Environmental Engineering](#), ISSN: 2374-1724, 2(2), 69-72.
8. **Shirzad, A.** and Tabesh, M., (2016). "[New indices for reliability assessment of water distribution networks](#)", [Journal of Water Supply: Research and Technology-Aqua](#), 65(5), 384-395.
9. **Shirzad, A.** and Abdollahi Pourarki, A.R., (2016). "Optimal design of urban sewer networks underlining the execution aspects (case study: sewer network of Urmia city)", [Journal of Iran- Water Resources Research](#), 13(2), 215-220 (In Persian).
10. **Shirzad, A.**, Tabesh, M. and Atayikia, B., (2017). "Multiobjective optimization of pressure dependent dynamic design for water distribution networks", [Journal of Water Resources Management](#), 31(9), 2561-2578.
11. Tabesh, M., Sangroudi, G.K. and **Shirzad, A.**, (2017). "Environmental assessment of urban water and wastewater systems from greenhouse gasses production point of view; case study: city of Sari", [Journal of Environmental Studies](#), 43(1), 117-134 (In Persian).
12. Safari, M.J.S., **Shirzad, A.** and Mohammadi, M., (2017). "Sediment transport modeling in deposited bed sewers: unified form of May's equations using the particle swarm optimization algorithm", [Water Science & Technology](#), 76(4), 992-1000.
13. Shafei, E. and **Shirzad, A.**, (2017). "Ant colony optimization for dynamic stability of laminated composite plates", [Steel and Composite Structures](#), 25(1), 105-116.
14. **Shirzad, A.**, (2017). "[Shortening the search time in optimization of water distribution networks](#)", [Urban Water Journal](#), 14(10), 1038-1044.
15. Bayat, H., Tabesh, M. and **Shirzad, A.**, (2018). "Proposing a water quality index for rivers in iran", [Journal of Iran- Water Resources Research](#), 14(1), 102-113 (In Persian).
16. Faraji, M., Esmaili, A. and **Shirzad, A.**, (2018). "[A comparison among the results of various dispersion relations for the ellipsometric data of Mn:ZnO thin films using PSO algorithm](#)", [Physica B: Condensed Matter](#), 545, 15 September, 125-133.
17. Safari, M.J.S. and **Shirzad, A.**, (2018). "Self-cleansing design of sewers: definition of the optimum deposited bed thickness", [water environment research](#), doi: 10.1002/wer.1037.

Articles Published and Presented in Conferences

1. **Shirzad, A.** and Badiiei, P., (2007). "Performance of logistic and linear transfer functions in modeling of pollution mixing in rivers and reservoirs using artificial neural network", [Proceedings of the 7th International River Engineering Conference](#), Shahid Chamran University, Ahvaz, Iran, February 13-15 (In Persian).
2. **Shirzad, A.**, Ghorbani, M. and Soltani, F., (2007). "Comparison of performance of logistic and tangent hyperbolic transfer functions in modeling of rainfall-runoff process using artificial neural networks", [Proceedings of the 3rd National Congress on Civil Engineering](#), University of Tabriz, Tabriz, Iran, May 1-3 (In Persian).
3. Soltani, F. and **Shirzad, A.**, (2007). "Comparison of performance of ANFIS and ANN systems in simulation of reservoir qualitative parameters- case study: reservoir of 15-khordad dam", [Proceedings of the 3rd National Congress on Civil Engineering](#), University of Tabriz, Tabriz, Iran, May 1-3 (In Persian).
4. **Shirzad, A.**, Badiiei, P. and Soltani, F., (2008). "Modeling of pollution mixing in rivers using artificial neural network", [Proceedings of the 4th National Congress on Civil Engineering](#), University of Tehran, Tehran, Iran, May 6-8 (In Persian).
5. Heidarzadeh, M. and **Shirzad, A.**, (2008) "Importance and role of wastewater treatment plants in quantitative and qualitative conservation of water resources- case study: wastewater treatment of Khoy City", [Proceedings of the 1st National Conference on Reclaimed Water Importance in Water Resources Management](#), Sarvab Company, Mashhad, Iran, May 22-23 (In Persian).
6. **Shirzad, A.** and Badiiei, P., (2008). "Modeling of pollution mixing in reservoirs using artificial neural network", [Proceedings of the 7th Iranian Hydraulic Conference](#), Power and Water University of Technology, Tehran, Iran, November 11-13 (In Persian).
7. **Shirzad, A.**, Soltani, F. and Zare, H., (2009). "Simulation of scour downstream of ski-jump bucket using KNN and ANFIS techniques", [Proceedings of the 1st International Conference of Water Crisis](#), Zabol University, Zabol, Iran, March 10-12 (In Persian).
8. Soltani, F., Zare, H. and **Shirzad, A.**, (2009). "Comparison of ANFIS and KNN systems in simulation of qualitative parameters of reservoir- Case study: 15-khordad dam", [Proceedings of the 1st International Conference of Water Crisis](#), Zabol University, Zabol, Iran, March 10-12 (In Persian).
9. **Shirzad, A.**, Ghorbani, M. and Soltani, F., (2009). "Modeling of rainfall-runoff process using artificial neural networks- Case study: Talkheh rud Watershed", [Proceedings of the 5th National Conference on](#)

- Watershed Management (Natural Hazards Sustainable Management), University of Gorgan, Gorgan, Iran, April 22-23 (In Persian).
10. Tabesh, M., **Shirzad, A.** and Maghari, M., (2009). "A pipe replacement model in water distribution networks considering economic and hydraulic constraints and cost of lost water", Proceedings of the 1st National Conference on Engineering and Management of Infrastructures, University of Tehran, Tehran, Iran, November 27-28 (In Persian).
 11. Nasser, M., Dolatshahi, M. and **Shirzad, A.**, (2010). "Investigation of water content simulation in porous media: application of traveling wave solution", Proceedings of the First International Conference on Mathematics and Statistics, Sharjah, U.A.E., March 18-21.
 12. **Shirzad, A.**, Tabesh, M. and Arjomandi, P., (2011). "Investigation on the influence of utilizing average hydraulic pressure and maximum hydraulic pressure for pipe burst rate prediction in water distribution networks", Proceedings of the 2011 World Environmental & Water Resources Congress, ASCE, Palm Springs, California, May 22-26.
 13. **Shirzad, A.** and Tabesh, M., (2011). "Prediction of pipe burst rate in water distribution networks using support vector machine", Proceedings of the 4th IWA-ASPIRE Conference, Tokyo, Japan, October 2 to 6.
 14. **Shirzad, A.** and Tabesh, M., (2011). "Investigation on hydraulic pressure variations influence on pipe burst rate prediction in water distribution networks", Proceedings of the 6th national Congress on Civil Engineering, University of Semnan, Semnan, Iran, April 26-27 (In Persian).
 15. **Shirzad, A.**, Tabesh, M. and Soltani, F., (2011). "Comparison between the performance of SVM and ANFIS techniques in prediction of pipe failure rate in water distribution networks", Proceedings of the 1st International Conference on Water and Wastewater, Tehran, Iran, April 26-28 (In Persian).
 16. **Shirzad, A.**, Tabesh, M. and Soltani, F., (2011). "Comparison between the performance of SVM and KNN techniques in prediction of pipe failure rate in water distribution networks", Proceedings of the 4th Iran Water Resources Management Conference, University of Amirkabir, Tehran, Iran, May 3-4 (In Persian).
 17. **Shirzad, A.** and Tabesh, M., (2011). "Experimental evaluation of pressure-discharge relations used in head driven analysis based models of water distribution networks", Proceedings of the 10th Iranian Hydraulic Conference, University of Guilan, Rasht, Iran, November 8-10 (In Persian).
 18. **Shirzad, A.** and Tabesh, M., (2012). "Study of pressure-discharge relations in water distribution networks using field measurements", Proceedings of the IWA World Water Congress & Exhibition, Busan, Korea, September 16-21.
 19. **Shirzad, A.**, Badii, P. and Arjomandi, P., (2012). "Modelling of pollution mixing in water bodies", Proceedings of the 1st Water Flow and Pollution National Conference, University of Tehran, Tehran, Iran, May 23-24 (In Persian).
 20. **Shirzad, A.** and Tabesh, M., (2012). "Field evaluation of pressure-discharge relations used in head driven analysis based models of water distribution networks", Proceedings of the 9th International Congress on Civil Engineering, Isfahan University of Technology, Isfahan, Iran, May 8-10 (In Persian).
 21. **Shirzad, A.** and Tabesh, M., (2013). "Pressure dependent simulation of water distribution networks using a new pressure-discharge relationship", Proceedings of the 6th International Perspective on Water Resources and the Environment (IPWE), ASCE, Izmir, Turkey, January 7-9.
 22. Hoseinzadeh, M., Amiri, S., Bayat, M. and **Shirzad, A.**, (2013). "Assessment and Upgrading of the Aerated Lagoons of Khoy Wastewater Treatment Plant for Water Reusing", Proceedings of the 1st National Conference on Water Reuse, University of Tehran, Tehran, Iran, January 25-26 (In Persian).
 23. **Shirzad, A.** and Tabesh, M., (2015). "Evaluation of different pressure dependent analysis models of water distribution networks", Proceedings of the 1st Water Engineering Conference, Shahid Beheshti Conf. Center, Tehran, Iran, October 17-18 (In Persian).
 24. **Shirzad, A.** and Tabesh, M., (2015). "A pressure dependent analysis-based index to assess reliability of water distribution networks", Proceedings of the 4th International Conference on Advances in Applied Science and Environmental Engineering, [Kuala Lumpur, Malaysia](#), September 26-27, doi: 10.15224/978-1-63248-068-2-57.
 25. **Shirzad, A.**, Dini, M., and Tabesh, M., (2016). "Maximization of water distribution networks' reliability", Proceedings of the 4th International Reliability Engineering Conference, IREC2016, Sahand University of Technology, Tabriz, Iran, May 2-4 (In Persian).
 26. Dini, M., **Shirzad, A.**, and Tabesh, M., (2016). "Comparing the efficiency of hydraulic reliability indices in the design of water distribution systems", Proceedings of the 4th International Reliability Engineering Conference, IREC2016, Sahand University of Technology, Tabriz, Iran, May 2-4 (In Persian).
 27. Kherad Ranjbar, M. and **Shirzad, A.**, (2017). "Comparing the performance of MLP and RBF neural networks in prediction of river daily discharge", National Conference of Water and Hydraulic Structures, Islamic Azad University, Dezfoul Branch, Iran, March 1 (In Persian).
 28. Shabihzadeh, A., Shafei, E. and **Shirzad, A.**, (2017). "Vibration control and energy dissipation enhancement of reinforced concrete members with shape memory alloys (SMA) subjected to dynamic loads", National Conference on Modern Knowledge and Technology in Engineering in the Technology Era, Tehran, Iran, November 8 (In Persian).

29. **Shirzad, A.**, Sakkaki, S. and Jafari, E., (2018). "Estimation of compressive strength of hollow concrete prisms using fuzzy inference system", First National Conference on Infrastructure Engineering, Urmia University, Urmia, Iran, October 10-11 (In Persian).
30. Ghale jughhi, F., Shafei, E. and **Shirzad, A.**, (2018). "Estimation of nominal shear strength of FRP-strengthened concrete beams using artificial neural networks", First National Conference on Infrastructure Engineering, Urmia University, Urmia, Iran, October 10-11 (In Persian).

Professional Membership

- Member of IWWA (Iranian Water and Wastewater Association)
- Member of IHA (Iranian Hydraulic Association)
- Member of IAID (Iranian Association of Irrigation and Drainage)
- Member of IRCOLD (Iranian National Committee on Large Dams).