Curriculum Vitae

Keyvan Asefpour Vakilian

Assistant Professor
Head of the Laboratory of Sensors & Biosensors
Department of Biosystems Engineering,
Gorgan University of Agricultural Sciences and Natural Resources (GUASNR)
Member of ASABE, ACS, IEEE, and ISAMEM
Research interests: Postharvest technology, Portable biosensors, Smart agriculture

PERSONAL INFORMATION

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Scopus ID: 57217077628

ACADEMIC BACKGROUND

2013-2018	Degree obtained: Ph.D. in Biosystems Engineering Department of Agrotechnology, University of Tehran, Iran Title of dissertation: "Design, Development and Performance Evaluation of an Intelligent Biosensor for the Measurement of Nitrate Ion in Greenhouse Crops".
2010-2012	Degree obtained: M.Sc. in Agricultural Engineering Department of Agrotechnology, University of Tehran, Iran Title of thesis: "Design, Development and Performance Evaluation of a Robot to Measure the Image Textural Features in Greenhouse Cucumber".
2006-2010	Degree obtained: B.Sc. in Agricultural Engineering Faculty of Agriculture, Tabriz University, Tabriz, Iran. Title of project: "Applications of Condition Monitoring in Agricultural Engineering".

AWARDS

2024	Among the 2% top researchers of the world for the second consecutive year, reported by Scopus
2023	Among the 2% top researchers of the world, reported by Scopus
2022	Outstanding entrepreneur of GUASNR
2022	Faculty member of the year with the most scientific growth, GUASNR
2018	Outstanding national Ph.D. graduate selected by Iran's National Elites Foundation (INEF)
2018	Outstanding Ph.D. dissertation of University of Tehran
2017	Ph.D. dissertation fund award of University of Tehran Science & Technology Park
2017	Outstanding Ph.D. student of University of Tehran
2015	Outstanding student selected in Research Festival of University of Tehran
2009	Top-ranked group leader for "Design and development of an electrical vehicle (ARAS Team)". Tabriz University, Tabriz, Iran

INTERNATIONAL RESEARCH PROJECTS

2020-2023	IoT and portable biosensors for environmental pollution monitoring in the Black Sea catchment Funding organization: Hulla & Co. Human Dynamics K.G, European Union	Amount of funding: 60,000 EUR
2023-present	Design and construction of a portable biosensor to detect biotic and abiotic stresses of plants Funding organization: ENVIROTIP Co.	Amount of funding: 38,000 EUR

RESEARCH PROJECTS FUNDED BY THE PRIVATE SECTOR

2023-2024	Early detection of environmental stress in cucumber plants using miRNA biosensors Funder: Raya Zist Fanavar Pirouz Co.
2021-2022	Investigating methods of making smart sensors for measuring nitrite in drinking water and canned products Funder: Zartak Noosh Co.
2020-2021	The feasibility of using nanomaterials in improving the performance of electrochemical biosensors Funder: Zist Fanavar Pishgaman Sina Co.

RESEARCH PROJECTS FUNDED BY THE GOVERNMENT

2025-present	Early detection of fungal contamination of apple fruit during cold storage using microRNA data and machine learning
2025-present	Spectral signature investigation and early detection of fungal contamination in pomegranate fruit using hyperspectral imaging and artificial intelligence
2024-present	Design and production of an electrochemical nanobiosensor based on SPE coated with gold-chitosan nanoparticles and carbon nanotubes for histamine measurement in tuna fish
2024-present	The effect of chitosan-based edible coatings on the concentration of microRNAs in apple fruit during storage
2023-2024	A biosensor for detection of heavy metal concentration in the environment
2023-2024	Performance evaluation of machine learning to determine the storage quality of apple using miRNA biosensor data

2022-2024	Using microRNA biosensors to detect nutrient stress in plants
2021-2023	Smart multiplex biosensor for simultaneous measurement of microRNA concentrations in plant tissues
2021-2022	A smart portable biosensor for accurate and fast detection of water pollution
2020-2022	Performance of machine learning in improving the specific and selective response of Au-NP biosensors
2018-2019	Performance evaluation of a smart voltammetric biosensor in the monitoring nitrate contamination in water
2016-2018	Prediction of the effect of using chemical fertilizers (potassium chloride, urea and ammonium phosphate) on soil infiltration resistance

EXECUTIVE ACTIVITY

2023 - present	Member of Golestan Province's Elite Think Tank on Sustainable Development (GPETTSD)
2021 - present	Entrepreneurial consultant of the Faculty of Water and Soil Engineering, GUASNR
2022 - present	Member of the International Relations Workgroup, GUASNR

ACADEMIC TEACHING EXPERIENCE

2023	Teaching the short-term course "Digital Agriculture: Prospects and Challenges" at Tuscia University, Italy, under the title of Erasmus+ exchange program
2017 - present	Teaching courses at University of Tehran and GUASNR including: Advanced modelling methods (Ph.D.) Image processing and its applications (Ph.D.) Introduction to machine vision (M.Sc.) Measurement and control systems (B.Sc.) Introduction to electronics (B.Sc.) Hydraulic and pneumatic systems (B.Sc.) Physics- Electricity and magnetics (B.Sc.)

SUPERVISING PHD AND MSC STUDENTS

PhD Dissertations

2023-present	Managing Phalaenopsis orchid growth and development using light spectrum and machine learning

MSc Theses

2024-present	Design, fabrication and evaluation of a smart histamine biosensor using electrochemical and machine learning methods to assess the quality of meat products
2023-2024	Optimizing machine learning methods for intelligent biosensors to assess the postharvest quality of products
2022-2023	Construction of a fruit edible coating device and evaluation of its performance on preserving the morphological, physiological and biochemical characteristics of citrus fruits during the storage period
2022-present	Design, fabrication and evaluation of a semi-industrial carrot peeling machine

ADVISING PHD AND MSC STUDENTS

PhD Dissertations

2024-present	Improving the efficiency of resource consumption in the production of basil plant (*Ocimum basilicum* L.) in the plant factory system under various light spectrums
2024-present	Study of the factors involved in the occurrence of hypoxia stress in the hydroponic cultivation system in basil and lettuce
2022-present	Investigation of the effect of three species of Trichoderma spp on *Alternaria solani* and *Helicoverpa armigera* in tomato plant with the help of biochemical evaluations and miRNA concentration measurement
2021-present	Ecophysiological evaluation of some native endophytic fungi of Golestan province and their parasitic behavior on spot blotch disease and optimization of growth increase in barley plant
2021-present	Modeling and optimization of Phalaenopsis orchid in vitro growth and development using machine learning
2020-2023	Intelligent diagnosis of common tomato plant diseases using color and hyperspectral image processing
2020-2022	Design and construction of a smart electrochemical biosensor based on gold nanoparticles to determine arsenite
2018-2020	Design and construction of a variable flow sprayer robot based on the volume of the plant mass

MSc Theses

2024-present	Design, construction and evaluation of an intelligent device for Iranian rice variety identification based on machine vision and deep neural networks
2021-2023	Investigating the effect of mechanical damage and storage period on the morphology, physiology and miRNA of strawberry
2022-2023	Design and construction of autonomous mobile robot for agricultural applications
2021-2022	Determining the postharvest quality of tomatoes using miRNA concentrations and machine learning
2021-present	Construction and evaluation of leafy vegetable harvesting machine with electric automatic sorting capability
2018-2020	Development of an intelligent system to determine the exact time of calcium fertilization in tomatoes using image processing
2016-2018	A farm protection robot tracking system based on image processing
2016-2018	Designing, manufacturing, and optimization of date harvesting robot
2016-2018	Design and construction of a prototype of a greenhouse crop harvesting robot
2014-2015	Design and construction of the farm quadrotor robot control system
2014-2015	Design, construction and evaluation of the farm quadrotor robot
2013-2014	Design, construction and evaluation of a robot for estimation of kiwi fruit yield

PATENTS

2023	Portable intelligent biosensor for heavy metals.	Patent pending
2022	Date palm harvesting robot equipped with product estimation system	Patent number: 107357
2016	Rolling ball viscometer equipped with image processing and temperature controller	Patent number: 88368
2012	Intelligent robot for determining texture characteristics of plant leaf images	Patent number: 76309

REVIEWS FOR PEER-REVIEWED JOURNALS

More than 300 review records for various journals verified at Publons/WoS database including:

Computers and Electronics in Agriculture, Publisher: Elsevier
Journal of Food Engineering, Publisher: Elsevier
Journal of Cleaner Production, Publisher: Elsevier
Intelligent Service Robotics, Publisher: Springer
Applied Artificial Intelligence, Publisher: Taylor & Francis
International Journal of Electronics, Publisher: Taylor & Francis
Scientific Reports, Publisher: Nature
IEEE Access, Publisher: IEEE
Journal of Hazardous Materials, Publisher: Elsevier
Journal of Food Process Engineering, Publisher: Wiley
Plant Cell Reports, Publisher: Springer
Scientia Iranica, Publisher: Sharif University of Technology
Waste Management & Research, Publisher: SAGE
Frontiers in Plant Science

RESEARCH INTERESTS

Design and development of smart sensors and biosensors
Instrumentation systems in agricultural robotic platforms
Machine learning in electrochemical and optical biosensors
Intelligent sensing devices for Internet of Things
Machine vision and image processing for postharvest technology
miRNA biosensors for plant biotic and abiotic stress studies
Enzyme-based intelligent sensing machines
Using nanoparticles in enzyme and miRNA sensors.

PUBLICATIONS IN PEER-REVIEWED JOURNALS

1. **Asefpour Vakilian K.** 2025. A smart multiplexed microRNA biosensor based on FRET for the prediction of mechanical damage and storage period of strawberry fruits. Plant Molecular Biology (Springer), 115: 37.

2. Sharbati M., **Asefpour Vakilian K.**, Azadbakht M. 2025. What do microRNA concentrations tell us about the mechanical damage and storage period of strawberry fruits? Food Chemistry: Molecular Sciences (Elsevier), 10: 100250.

3. Samadi S.M., **Asefpour Vakilian, K.**, Javidan, S.M. 2025. Combining miRNA concentrations and optimized machine-learning techniques: An effort for the tomato storage quality assessment in the agriculture 4.0 framework. Journal of Agriculture and Food Research (Elsevier), 19: 101605.

4. Javidan S.M., Ampatzidis Y., Banakar A., **Asefpour Vakilian K.**, Rahnama K. 2025. An intelligent group learning framework for detecting common tomato diseases using simple and weighted majority voting with deep learning models. AgriEngineering (MDPI), 7: 31.

5. Soltani Nezhad F., Rahnama K., Javidan S.M., **Asefpour Vakilian K.** 2024. Application of microscopic image processing and artificial intelligence detecting and classifying the spores of three novel species of Trichoderma. Discover Applied Sciences (Springer), 6: 669.

6. Sharifi M., Wolk W., **Asefpour Vakilian K.**, Xu H., Slamka S., Fong K. 2024. Integrating soil, leaf, fruitlet, and fruit nutrients, along with fruit quality, to predict post-storage quality of Staccato sweet cherries. Horticulturae (MDPI), 10: 1230.

7. Dayeh N., **Asefpour Vakilian K.,** Azadbakht M. 2024. A fruit edible coating machine to protect the morphological, physiological, and biochemical properties of citrus fruits. Food and Bioproducts Processing (Elsevier), 148: 428-435.

8. Javidan S.M., Ampatzidis Y., Banakar A., **Asefpour Vakilian K.**, Rahnama K. 2024. Tomato fungal disease diagnosis using few-shot learning based on deep feature extraction and cosine similarity. AgriEngineering (MDPI), 6: 4233-4247.

9. Javidan S.M., Banakar A., **Asefpour Vakilian K.**, Ampatzidis Y., Rahnama K. 2024. Early detection and spectral signature identification of tomato fungal diseases by RGB and hyperspectral image analysis and machine learning. Heliyon (Elsevier), 10: e38017.

10. **Asefpour Vakilian K.** 2024. Detecting abiotic stresses in rice plants using a smart optical biosensor based on gold nanoparticles, Iranian Journal of Biosystem Engineering (University of Tehran), 55: 51-69.

11. Javidan S.M., Banakar A., **Asefpour Vakilian, K.**, Ampatzidis Y., Rahnama K. 2024. Diagnosing the spores of tomato fungal diseases using microscopic image processing and machine learning. Multimedia Tools and Applications (Springer), 83:67283-67301.

12. Javidan S.M., Banakar A., Rahnama K., **Asefpour Vakilian K.**, Ampatzidis Y. 2024. Feature engineering to identify plant diseases using image processing and artificial intelligence: a comprehensive review. Smart Agricultural Technology (Elsevier), 8: 100480.

13. Javidan S.M., Banakar A., **Asefpour Vakilian K.**, Ampatzidis Y. 2024. Tomato leaf diseases classification using image processing and weighted ensemble learning. Agronomy Journal (Wiley), 116: 1029-1049.

14. **Asefpour Vakilian K.** 2023. An intelligent electrochemical biosensor based on optimized machine learning methods for measuring nitrate pollution in water. Agricultural Mechanization and Systems Research (AREEO), 24: 91-106.

15. Mohammadi, P., **Asefpour Vakilian, K.** 2023. Machine learning provides specific detection of salt and drought stresses in cucumber based on miRNA characteristics. Plant Methods (Springer), 19: 123.

16. Mohammadi P., Massah J., **Asefpour Vakilian K.** 2023. Robotic date fruit harvesting using machine vision and a 5-DOF manipulator. Journal of Field Robotics (Wiley), 40: 1408-1423.

17. Hashemi Shabankareh S., Asghari A., Azadbakht M., **Asefpour Vakilian K.** 2023. Physical and physiological characteristics, as well as miRNA concentrations, are affected by the storage time of tomatoes. Food Chemistry (Elsevier), 429: 136792.

18. Sarlaki E., Kianmehr M.H., Ghorbani M., Kermani A.M., **Asefpour Vakilian K.**, Angelidaki I., Wang Y., Gupta V. K., Pan J., Tabatabaei M., Aghbashlo M. 2023. Highly humified nitrogen-functionalized lignite activated by urea pretreatment and ozone plasma oxidation. Chemical Engineering Journal (Elsevier), 456: 140978.

19. Javidan S. M., Banakar A., **Asefpour Vakilian K.**, Ampatzidis Y. 2023. Diagnosis of grape leaf diseases using automatic K-means clustering and machine learning. Smart Agricultural Technology (Elsevier), 3: 100081.

20. Tabibi Z., Massah J., **Asefpour Vakilian K.** 2022. A biosensor for the sensitive and specific measurement of arsenite using gold nanoparticles. Measurement (Elsevier), 187: 110281.

21. Massah, J., Nomanfar, P., Dehghani-Soufi, M., **Asefpour Vakilian, K.** 2022. Electrical properties measurement: A nondestructive method to determine the quality of bread doughs during fermentation. Journal of Cereal Science (Elsevier), 107: 103530.

22. Ghorbani, M., Li, Q., Kianmehr, M.H., Arabhosseini, A., Sarlaki, E., **Asefpour Vakilian, K.**, Varjani, S., Wang, Y., Wei, D., et al. 2022. Highly digestible nitrogen-enriched straw upgraded by ozone-urea pretreatment: digestibility metrics and energy-economic analysis. Bioresource Technology (Elsevier), 360: 127576.

23. Mortazavizadeh F., Fatahi A., **Asefpour Vakilian K.**, Pagliari P.H., Cerdà A., Mirzaei M., Zhang X., Adnan Ikram R.M. 2022. Effects of ash derived from livestock manure and two other treatments on soil moisture content and water infiltration rate. Irrigation and Drainage (Wiley). 71: 1024-1033.

24. Massah J., **Asefpour Vakilian K.**, Shabanian M., Shariatmadari S. M. 2021. Design, development, and performance evaluation of a robot for yield estimation of kiwifruit. Computers and Electronics in Agriculture (Elsevier), 185: 106132.

25. Aboonajmi M., Ganjdoost M., Mirsaeedghazi H., **Asefpour Vakilian K.** 2021. Effect of power ultrasound treatment on the shelf life of edible mushroom. Journal of Food Research (University of Tabriz), 32: 139-152.

26. Hejazipoor H., Massah J., Soryani M., **Asefpour Vakilian K.**, Chegini G. 2021. An intelligent spraying robot based on plant bulk volume. Computers and Electronics in Agriculture (Elsevier), 180: 105859.

27. Sarlaki E., Kermani A.M., Kianmehr M.H., **Asefpour Vakilian K.**, Hosseinzadeh-Bandbafha H., Ma N.L., Aghbashlo M., Tabatabaei M., Lam S.S. 2021. Improving sustainability and mitigating environmental impacts of agro-biowaste compost fertilizer by pelletizing-drying. Environmental Pollution (Elsevier), 285: 117412.

28. Esmaili M., Aliniaeifard S., Mashal M., **Asefpour Vakilian K.**, Ghorbanzadeh P., Azadegan B., Seif M., Didaran F. 2021. Assessment of adaptive neuro-fuzzy inference system (ANFIS) to predict production and water productivity of lettuce in response to different light intensities and CO_2 concentrations. Agricultural Water Management (Elsevier), 258: 107201.

29. Sarlaki E., Sharif Paghaleh A., Kianmehr M.H., **Asefpour Vakilian K.** 2021. Valorization of lignite wastes into humic acids: Process optimization, energy efficiency and structural features analysis. Renewable Energy (Elsevier), 163: 105-122.

30. Ganjdoost M., Aboonajmi M., Mirsaeedghazi H., **Asefpour Vakilian K.** 2021. Effects of power ultrasound treatment on the shelf life of button mushrooms: Digital image processing and microbial counting can reveal the effects. Food Science & Nutrition (Wiley), 9: 3538-3548.

31. Hejazipoor H., Massah J., **Asefpour Vakilian K.**, Soryani M., Chegini G. 2021. Design, manufacture and evaluation of automatic spraying mechanism in order to increase productivity. Agricultural Engineering (Scientific Journal of Agriculture (Shahid Chamran University), 44: 1-19.

32. Sharifi M., Messiga A.J., **Asefpour Vakilian K.**, Stopford E., Hutchinson T. 2020. Spatial distribution of soil phosphorous fractions following 1-year farrowing sows in an outdoor hog-rearing farm in Eastern Canada. Environmental Monitoring and Assessment (Springer), 192: 322.

33. **Asefpour Vakilian K.** 2020. Machine learning improves our knowledge about miRNA functions towards plant abiotic stresses. Scientific Reports (Springer-Nature), 10: 3041.

34. **Asefpour Vakilian K.** 2020. Determination of nitrogen deficiency-related microRNAs in plants using fluorescence quenching of graphene oxide nanosheets. Molecular and Cellular Probes (Elsevier), 52: 101576.

35. Sarlaki E., Sharif Paghaleh A., Kianmehr M.H., **Asefpour Vakilian K.** 2020. Chemical, spectral and morphological characterization of humic acids extracted and membrane purified from lignite. Chemistry & Chemical Technology (Lviv Polytechnic University), 14: 353-361.

36. Massah J., Hassanpour F., Hassanpour Z., **Asefpour Vakilian K.** 2020. Experimental investigation of bionic soil-engaging blades for soil adhesion reduction by simulating *Armadillidium vulgare* body surface. INMATEH-Agricultural Engineering (INMA), 60: 99-106.

37. Massah J., **Asefpour Vakilian K.** 2019. An intelligent portable biosensor for fast and accurate nitrate determination using cyclic voltammetry. Biosystems Engineering (Elsevier), 177: 49-58.

38. **Asefpour Vakilian K.** 2019. Gold nanoparticles-based biosensor can detect drought stress in tomato by ultrasensitive and specific determination of miRNAs. Plant Physiology and Biochemistry (Elsevier), 145: 195-204.

39. Sarlaki E., Sharif Paghale A., Kianmehr M.H., **Asefpour Vakilian K.** 2019. Extraction and purification of humic acids from lignite wastes using alkaline treatment and membrane ultrafiltration. Journal of Cleaner Production (Elsevier), 235: 712-723.

40. Ghorbani M., Aboonajmi M., **Asefpour Vakilian K.** 2019. The machine vision technology in precision agriculture: A comprehensive review on principles and applications. Soft Computing Journal (University of Kashan), 9: 92-113.

41. Amanabadi S., Vazirinia M., Vereecken H., **Asefpour Vakilian K.**, Mohammadi M.H. 2019. Comparative study of statistical, numerical and machine learning-based pedotransfer functions of water retention curve with particle size distribution data. Eurasian Soil Science (Springer), 52: 1555-1571.

42. Massah J., **Asefpour Vakilian K.**, Torktaz S. 2019. Supervised machine learning algorithms can predict penetration resistance in mineral-fertilized soils. Communications in Soil Science and Plant Analysis (Taylor & Francis), 50: 2169-2177.

43. Sarlaki E., Sharif Paghaleh A., Kianmehr M. H., Shakiba N., **Asefpour Vakilian K.**, Mirsaeedghazi, H. 2019. Post-treatment of lignite-derived humate alkaline extracts using membrane-based technology for high-purity humic acid production. Journal of Environmental Science and Technology (Islamic Azad University), 15147.

44. **Asefpour Vakilian K.**, Massah J. 2018. A portable nitrate biosensing device using electrochemistry and spectroscopy. IEEE Sensors Journal (IEEE), 18: 3080-3089.

45. **Asefpour Vakilian K.**, Massah J. 2018. A fuzzy-based decision making software for enzymatic electrochemical nitrate biosensors. Chemometrics and Intelligent Laboratory Systems (Elsevier), 177: 55-63.

46. **Asefpour Vakilian K.**, Massah J. 2017. A farmer-assistant robot for nitrogen fertilizing management of greenhouse crops. Computers and Electronics in Agriculture (Elsevier), 139: 153-163.

47. **Asefpour Vakilian K.** 2017. Using networks in plant disease diagnosis. CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources (CAB International), 12: 047.

48. **Asefpour Vakilian K.**, Massah J. 2016. An apple grading system according to European fruit quality standards using Gabor filter and artificial neural networks. Scientific Study and Research: Chemistry and Chemical Engineering, Biotechnology, Food Industry (Bacau University), 17: 75-85.

49. Yazdani N., Osanloo B., Lotfi M., **Asefpour Vakilian K.** 2016. Application of image processing for investigating the effect of nanozeolite and nanosponge on flesh firmness of cold stored cantaloupe. International Journal of Horticultural Science and Technology (University of Tehran), 4: 127-133.

50. Razzaghi E., Massah J., **Asefpour Vakilian K.** 2015. Mechanical analysis of a robotic date harvesting manipulator. Russian Agricultural Sciences (Springer), 41: 80-85.

51. Hashemi A., **Asefpour Vakilian K.**, Khazaei J., Massah J. 2014. An artificial neural network modeling for force control system of a robotic pruning machine. Journal of Information and Organizational Sciences (Faculty of Organization and Informatics), 38: 35-41.

52. **Asefpour Vakilian K.**, Abounajmi M., Massah J. 2014. A statistical approach to classify agricultural satellite images using textural features extraction. Journal of Engineering Studies and Research (Bacau University), 20: 17-22.

53. Jafari M., Sabzevari A., **Asefpour Vakilian K.** 2014. Effects of planting methods on yield and morphological traits of three chickpea cultivars in rain fed conditions. Russian Agricultural Sciences (Springer), 40: 339-343.

54. **Asefpour Vakilian K.**, Massah J. 2013. An artificial neural network approach to identify fungal diseases of cucumber (Cucumis *sativus* L.) plants using digital image processing. Archives of Phytopathology and Plant Protection (Taylor & Francis), 46: 1580-1588.

55. **Asefpour Vakilian K.**, Massah J. 2013. Performance evaluation of a machine vision system for insect pests identification of field crops using artificial neural networks. Archives of Phytopathology and Plant Protection (Taylor & Francis), 46: 1262-1269.

56. Massah J., **Asefpour Vakilian K.** 2013. Statistical modelling of error measurement for diaphragm gas meters at different ambient temperatures. Acta Technica Corviniensis (University Politehnica Timisoara), 6: 97-100.

57. **Asefpour Vakilian K.**, Massah J. 2012. Design, development and performance evaluation of a robot to early detection of nitrogen deficiency in greenhouse cucumber (*Cucumis sativus*) with machine vision. International Journal of Agriculture: Research and Review (ECISI), 2: 448-454.

58. **Asefpour Vakilian A.**, Asefpour Vakilian K. 2012. A new satellite image segmentation enhancement technique for weak image boundaries. International Journal of Engineering (University Politehnica Timisoara), 10: 239-243.

59. **Asefpour Vakilian K.**, Massah J. 2012. Performance evaluation of CCD and CMOS cameras in image textural features extraction. Acta Technica Corviniensis (University Politehnica Timisoara), 5: 61-64.

60. **Asefpour Vakilian K.**, Massah J. 2012. Non-linear growth modeling of greenhouse crops with image textural features analysis. International Research Journal of applied and Basic Science (Science Explore), 3: 197-202.

PRESENTATIONS AT NATIONAL AND INTERNATIONAL CONFERENCES

1. **Asefpour Vakilian K.** 2024. An intelligent electrochemical biosensor based on optimized machine learning methods for measuring nitrate pollution in water, 16th National Congress on Mechanics of Biosystems Engineering and Agricultural Mechanization, October 2-4, 2024, Mashhad, Iran.

2. Samadi S.M., **Asefpour Vakilian K.,** Javidan S.M. 2024. The role of microRNA compounds in determining some of the post-harvest characteristics of agricultural products, 16th National Congress on Mechanics of Biosystems Engineering and Agricultural Mechanization, October 2-4, 2024, Mashhad, Iran.

3. Dayeh N., **Asefpour Vakilian K.,** Azadbakht M. 2024. A review of the effects of edible coatings to preserve the properties of fruits during storage, 16th National Congress on Mechanics of Biosystems Engineering and Agricultural Mechanization, October 2-4, 2024, Mashhad, Iran.

4. Derakhshan N., Rahnama K., Javidan S.M., **Asefpour Vakilian K.** 2024. Classification of barley plant fungal diseases using image processing and artificial intelligence, 25th Iranian Plant Protection Congress, September 7-10, 2024, Tehran, Iran.

5. Soltaninezhad F., Rahnama K., Javidan S.M., **Asefpour Vakilian K.** 2024. Application of microscopic image processing in the detection and classification of Trichoderma spores, 25th Iranian Plant Protection Congress, September 7-10, 2024, Tehran, Iran.

6. Dayeh N., Azadbakht M., **Asefpour Vakilian K.** 2024. A review of methods for fruit edible coating, 13th International Conference of Innovative Technologies in the Field of Science, Engineering, and Technology, April 16-17, 2024, Thessaloniki, Greece.

7. Dayeh N., Azadbakht M., **Asefpour Vakilian K.** 2024. Investigating the effects of edible coatings on fruit postharvest properties, 13th International Conference of Innovative Technologies in the Field of Science, Engineering, and Technology, April 16-17, 2024, Thessaloniki, Greece.

8. **Asefpour Vakilian K.**, Moreau M., Javidan S.M. 2024. An IoT-based smart biosensor for the measurement of nitrate concentration in liquid samples, 20th IEEE International Symposium on Artificial Intelligence and Signal Processing, February 21-22, 2024, Mazandaran, Iran.

9. Javidan S.M., Ampatzidis Y., **Asefpour Vakilian K.**, Mohammadzamani D. 2024. A novel approach for automated strawberry fruit varieties classification using image processing and machine learning, 10th IEEE-International Conference on Artificial Intelligence and Robotics, February 29, 2024, Qazvin, Iran.

10. Nazari A., Mohammadzamani D., Javidan S.M., **Asefpour Vakilian K.**, 2024. A new approach for red grape bunches detection in natural light using color image processing, 10th IEEE-International Conference on Artificial Intelligence and Robotics, February 29, 2024, Qazvin, Iran.

11. **Asefpour Vakilian K.** 2023. Emerging smart biosensors for the specific and ultrasensitive detection of plant abiotic stresses, 15th International Congress on Agricultural Mechanization and Energy in Agriculture, November 1, 2023, Antalya, Turkey.

12. Mohammadi P., **Asefpour Vakilian K.** 2023. Combining digital image processing and machine learning is useful for the early detection of salinity and drought stresses in cucumber, 15th International Congress on Agricultural Mechanization and Energy in Agriculture, November 1, 2023, Antalya, Turkey.

13. **Asefpour Vakilian K.** 2023. A smart electrochemical biosensor for arsenic detection in water, 13th IEEE-International Conference on Computer and Knowledge Engineering, November 1-2, 2023, Mashhad, Iran.

14. Rafieipour M.R., Soleimanipour A., Rezaei Asl A., **Asefpour Vakilian K.** 2023. Design and fabrication of a mobile robot for weed control in agricultural fields, 15th Congress on Mechanics of Biosystems Engineering & Agricultural Mechanization, September 20, 2023, Tehran, Iran.

15. Rafieipour M.R., Soleimanipour A., Rezaei Asl A., **Asefpour Vakilian K.** 2023. Agricultural robots based on artificial intelligence: Investigating the applications of artificial intelligence and robotics in agricultural operations, 8th International Conference on Science and Technology of Agricultural Sciences, Natural Resources and Environment, March 18, 2023, Tehran, Iran.

16. **Asefpour Vakilian K.** 2023. A robust method based on Markov model and fuzzy inference system to classify high-resolution aerial images of agricultural terrains, 4th International Conference on Agricultural Science and Engineering, March 8-10, 2023, Yerevan, Armenia.

17. **Asefpour Vakilian K.** 2023. Plant growth monitoring in cucumber greenhouse using real-time image processing, 4th International Conference on Agricultural Science and Engineering, March 8-10, 2023, Yerevan, Armenia.

18. **Asefpour Vakilian K.** 2022. Optimization methods can increase the durability of smart electrochemical biosensors, 8th IEEE-Iranian Conference on Signal Processing and Intelligent Systems, December 28-29, 2022, Behshahr, Iran.

19. **Asefpour Vakilian K.**, Zarafshan P. 2022. A fuzzy controller design for a stem-vibration strawberry harvester robot, 8th IEEE-Iranian Conference on Signal Processing and Intelligent Systems, December 28-29, 2022, Behshahr, Iran.

20. Javidan S.M., Banakar A., **Asefpour Vakilian K.**, Ampatzidis Y. 2022. A feature selection method using slime mould optimization algorithm in order to diagnose plant leaf diseases, 8th IEEE-Iranian Conference on Signal Processing and Intelligent Systems, December 28-29, 2022, Behshahr, Iran.

21. **Asefpour Vakilian, K.** 2022. Predicting the success rate of entrepreneurship in biotechnological companies using machine learning (Case study: Iranian companies). 10th International Scientific Conference on Space, Society, and Politics, June 23-25, 2022, Tbilisi, Georgia.

22. **Asefpour Vakilian K.** 2022. A nitrate enzymatic biosensor based on optimized machine learning techniques, 9th IEEE-Iranian Joint Congress on Fuzzy and Intelligent Systems, March 2-4, 2022, Bam, Iran.

23. **Asefpour Vakilian K.** 2021. Metaheuristic optimization to improve machine learning in Raman spectroscopic-based detection of foodborne pathogens, 7th IEEE-International Conference on Signal Processing and Intelligent Systems, December 28-29, 2021, Tehran, Iran.

24. **Asefpour Vakilian K.** 2021. A comparison of optimization methods in image processing-based agricultural yield estimation, AHI EVRAN International Conference on Scientific Research, November 30-December 2, 2021, Kirşehir, Turkey.

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