Journal of Science, Computing and Engineering Research (JSCER)
Volume-9, Issue- 02, February 2026.
DOI: *https://doi.org/10.46379/jscer.2026.060503*

Analysis of Probabilistic Peak Acceleration Response for Random Pedestrian Loads

Mariknong gie, Shigang, Shao Gongjiao

Faculty of Civil Engineering and Architecture, Yummkuning University of Science and Technology, Notrh China.

Corresponding Author:

Richard Mangay

Abstract— Pedestrian loads that may cause excessive structural vibration involve some uncertain parameters such as walking frequency, step length, dynamic load factors and phases of harmonic components, which will lead to uncertainties of structural response and this issue need to be solved by probabilistic analysis. Considering that the traditional Monte Carlo simulation method for reliability analysis has rather low efficiency, an approach based on uniform design and response surface method for calculating the probabilistic structural response induced by pedestrian vertical loads is proposed to improve the efficiency of structural dynamic analysis with uncertainties. A few representative samples of time history of pedestrian loads are simulated using uniform design first, and then the corresponding peak acceleration response spectra are obtained by dynamic analysis on beam structures with different spans and damping ratios. The spectra which have a certain percentile are obtained by reliability analysis based on response surface method. Then the general formulae of peak acceleration response spectra, which can be used to calculate structural peak accelerations directly, are deduced from parametric analysis of damping ratio and span. Monte Carlo simulation is conducted to validate the precision of this method. The case study shows that compare to the results calculated by the proposed method, the formulae in two widely-used codes such as BS 5400-2:2006, overestimate the peak acceleration of structure with high frequency remarkably and it should be cautious when using them to obtain structural responses..

Keywords: ***Random pedestrian loads, Uniform design, Response spectrum, Peak acceleration***

Citation: Dr., "Web Page Optimization Based On Clustered Query Sessions Using Hybrid Of Trust And ACO(Ant Colony Optimization) For Effective Information Retrieval", Journal of Science, Computing and Engineering Research, Volume-9, Issue-02, February 2026.

I. INTRODUCTION

Pedestrian loads that may cause excessive structural vibration involve some uncertain parameters such as walking frequency, step length, dynamic load factors and phases of harmonic components, which will lead to uncertainties of structural response and this issue need to be solved by probabilistic analysis. Considering that the traditional Monte Carlo simulation method for reliability analysis has rather low efficiency, an approach based on uniform design and response surface method for calculating the probabilistic structural response induced by pedestrian vertical loads is proposed to improve the efficiency of structural dynamic analysis with uncertainties. A few representative samples of time history of pedestrian loads are simulated using uniform design first, and then the corresponding peak acceleration response spectra are obtained by dynamic analysis on beam structures with different spans and damping ratios. The spectra which have a certain percentile are obtained by reliability analysis based on response surface method. Then the general formulae of peak acceleration response spectra, which can be used to calculate structural peak accelerations directly, are deduced from parametric analysis of damping ratio and span. Monte Carlo simulation is conducted to validate the precision of this method. The case study shows that compare to the results calculated by the proposed method, the formulae in two widely-used codes such as BS 5400-2:2006, overestimate the peak acceleration of structure with high frequency remarkably and it should be cautious when using them to obtain structural responses. An embedded system is a special-purpose computer system, which is completely encapsulated by the device it controls. An embedded system has specific requirements and performs pre-defined tasks, unlike a general-purpose personal computer. An embedded system is a programmed hardware device. A programmable hardware chip is the 'raw material' and it is programmed with particular applications. This is to be understood in comparison to older systems with full functional hardware or systems with general purpose hardware and externally loaded software. Embedded systems are a combination of hardware and software which facilitates mass production and variety of application. The above mentioned systems are utilized for local monitoring or remote monitoring using wireless components like wireless access points and GSM/GPRS modems. Typically, such systems have been implemented using two or three hardware boards to perform the monitoring and control task. However, advances in technology have enabled the design and development of integrated monitoring and control systems that are cheaper, smaller, consume less power, have enhanced functionality

and utilize publicly available GIS navigation services such as online maps. Using publicly available networks enhances and extends the monitoring and control beyond the home to include additional service providers like security firms, fire departments, civil defense, police, home insurance, municipalities, and others. In turn, such services enhance the quality of life aspects related to safety and comfort of a homeowner. This paper presents the design and implementation of a compact wireless home monitoring system using a microcontroller and GPRS modem that are integrated on a single board (Micro-GPRS) unit [15]. The Micro-GPRS unit is an off-the-shelf board and has several built-in analog inputs and digital input/output (I/O) ports as well as a GPRS-GPS modem. Since Micro-GPRS unit has a built-in data acquisition unit, there is no need for programming the I/O ports; II. SYSTEM REQUIREMENTS With the ever increase world population, cities around the globe are expanding vertically with high rise buildings each has up to a few hundred apartments in one tower. Many of the residents of these towers are occupied by young working couples who are away from their home one third of the day time. Many of these homes are equipped with sensing devices that detect excessive smoke and flooding or theft. In such buildings, alarms are typically connected to the security office on the ground floor of the building indicating a problem. In the event of an emergency, the security guard on duty calls the civil defense and informs them about the nature of the emergency and the address of the building. In many situations, the monitoring process mostly relies on vigilance of security guards. This is inefficient in many ways because it requires the guard to be extremely attentive, good in communications, and to have a quick response time. This is not always the case. If separate sensors (fire, gas leak, etc.) and guards could be replaced with a low-cost single board computer system that can detect and immediately report an abnormal event and its accurate location, then not only the security will be greatly improved, but losses resulting from emergency will be minimized. The functional and nonfunctional requirements for the proposed systems are as follows: A. Functional Requirements: ¬Monitor the house/apartment through detectors; fire detector, smoke detector and motion detector. ¬Detect accident/abnormal behavior or event when the monitored physical phenomena exceed a certain threshold.

¬Alert home owner through SMS when an accident/abnormal behavior occurs. ¬Notify security service providers or the Civil Defense Department/Security firm with the emergency and its type so they can take immediate action; notification is done through generation of marker on the online Map ¬In addition to the Internet, home owners shall be able to check the Status of the houses by sending an SMS to the modem, the modem shall reply by indicating the status of the house. B. Non-functional requirements: ¬Reliability of the system; the system should be highly reliable during the time of its functionality. ¬High accuracy of the system; the system should provide an accurate status. ¬Availability and accessibility: The system shall be able to function on a 24/7 basis. ¬The system shall take a maximum of two hours to be installed. ¬The system shall not take more than one minute to respond to the changes in surroundings. ¬The system must be secure; only the home owner can get response from the modem at home or the security service providers or the Civil Defense and others. ¬The system should only accept valid SMS messages from registered modems. ADVANTAGES ¬Scalable: the system should be able to accept at least 200houses/apartments which a standard number for a tower building. ¬Expandable: the system should allow the integration of different sensors depending on the needs of the user without changing the architecture. ¬User friendly: messages to home owners or authorized users should be in plain language. The web interface shall not take more than ten minutes to learn. ¬Low power consumption: during the operation of modems at home, the modem should only be in high power modem when a valid trigger is received otherwise it is in the sleeping mode. III. SYSTEM ARCHITECTURE To satisfy the above requirements, the system is designed to have two subsystems; a Home Gateway (H-Gate), and Monitoring and Dispatch Server (MDSS) center. The H-Gate consists of the TCP/IP enabled Micro-GPRS and set of sensors to monitor gas leaks, flooding and intruders. H-Gate is located at the monitored home. The MDSS center is located at the monitoring firm service provider center/s (e.g., Security firm or Civil Defense) and interacts with a Short Message Service Center (SMSC) located at premises of the local mobile network service provider. MDSS uses the SMSC to send SMS messages to home owners. In addition to SMSC, the MDSS uses the online Map Server‘s GIS capabilities to show live maps of homes and their status to either the home owners or the service providers like the police, security companies, civil defense or the municipality. IV. SYSTEM HARWARE The system consists of set of sensors to monitoring the abnormality event. GAS SENSOR: ϖ High sensitivity ϖ Low power consumption ϖ Miniature-size The MQ-303A is a tin dioxide semiconductor gas sensor which has a high sensitivity to alcohol with quick response speed. This model is suitable for alcohol detection such as portable STRUCTURE GAS SENSOR Fig: Block Diagram Gas sensitive semiconductor material is a mini bead type and a heater coil and electrode wire are embedded in the element. The sensing element is installed in the metal housing which uses double stainless steel mesh (100mesh) in the path of gas flow. IV OPERATING CONDITIONS The standard operating circuit for this model. The change of the sensor resistance (R S) is obtained as the change of the output voltage across the fixed or variable resistor (R L). In order to obtain the best performance and specified characteristics, the values of the heater voltage (V H)circuit voltage (V C) and load resistance (R L) must be within the range of values

given in the standard operating conditions Generally, the sensor enters into normal working conditions after several minutes‘ preheating, If you connect the sensor heater witha high voltage 2.2 ± 0.20V for 5-10 sec before normal testing , the sensor shall stabilize and enter into normal working conditions quickly. VIBRATION SENSOR: A sensor is a device that measures a physical quantity and converts it into a signal which can be read by an observer or by an instrument.. A thermocouple converts temperature to an output voltage which can be read by a voltmeter. For accuracy, all sensors need to be calibrated against known standards. Sensors are used in everyday objects such as touch-sensitive elevator buttons and lamps which dim or brighten by touching the base. Vibrating level sensors are designed for point level detection of very fine powders (bulk density: 0.02 g/cm3 - 0.2 g/cm3), fine powders (bulk density: 0.2 - 0.5 g/cm3), and granular solids (bulk density: 0.5 g/cm3 or greater). With proper selection of vibration frequency and suitable sensitivity adjustments, the level of highly fluidized powders and electrostatic materials can also be sensed.Single-probe vibrating level sensors are ideal for highly static bulk powder environments. Since only one sensing element contacts the powder, bridging between two probe elements is eliminated and media build-up is minimized. Vibrating level sensor technology offers other advantages: The vibration of the probe itself tends to eliminate build up of material on the probe element; and they are not affected by dust, static-charge build-up from dielectric powders, or changes in conductivity, temperature, pressure or humidity/moisture content. Tuning fork style vibration sensors are another alternative. They tend to have a lower price point, but are prone to material buildup between the forks TEMPERATURE SENSOR: Most commonly-used electrical temperature sensors are difficult to apply. For example, thermocouples have low output levels and require cold junction compensation. Thermostats are nonlinear. GSM MODEM: A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities. A GSM modem exposes an interface that allows applications such as Now SMS to send and receive messages over the modem interface. The mobile operator charges for this message sending and receiving as if it was performed directly on a mobile phone. GSM modems can be a quick and efficient way to get started with SMS, because a special subscription to an SMS service provider is not required. Due to some compatibility issues that can exist with mobile phones, using a dedicated GSM modem is usually preferable to a GSM mobile phone. This is more of an issue with MMS messaging, where if you wish to be able to receive inbound MMS messages with the gateway, the modem interface on most GSM phones will only allow you to send MMS messages. This is because the mobile phone automatically processes received MMS message notifications without forwarding them via the modem interface. It should also be noted that not all phones support the modem interface for sending and receiver SMS messages. In particular, most smart phones, including Blackberries, iPhone, and Windows Mobile devices, do not support this GSM modem interface for sending and receiving SMS messages at all at all. Additionally, Nokia phones that use the S60 (Series 60) interface, which is Symbian based, only support sending SMS messages via the modem interface, and do not support receiving SMS via the modem interface. COMMUNICATION MODULE The communication module (CM) is the Micro-GPRS board that is primarily used for machine-to-machine (M2M) communication [15]. The CM module is suitable for continuous monitoring activity on a 24/7. The CM module is IP-enabled and has a static IP address to communicate with a server through the public wireless mobile network. It supports SMS, SMTP, POP, and FTP protocols. The CM module has a built-in four analog inputs and two digital input/output ports in addition to anRS-232 port. These analog inputs and inputs/output ports are important because they eliminate the need for external microcontrollers for handling inputs and outputs. This feature makes the CM superior as compared to other home-monitoring systems that have utilized multiple microcontrollers or microprocessors in addition to a modem. In addition to lower cost, this module also has a smaller footprint and consumes less energy. V SYSTEM SOFTWARE The software architecture for the system is described in two parts; A. The Home Gateway (H-Gate): The H-Gate does not require any programming. It only needs to be configured for the analog threshold for each sensor. This configuration must be done using the software driver that comes with the modem. The H-Gate hardware is configured via its RS-232 port before installation. The module is normally in the sleep state to save power. The module goes into the wakeup status if one of the following four abnormal conditions is detected. CONDITIONS 1. The pre-set threshold value from any of the sensors (e.g., Gas or Smoke sensor) has been exceeded. 2. The intruder alarm has been activated. 3. There is an incoming phone call from a preprogrammed telephone number which typically belongs to the home-owner‘s mobile phone. 4. An SMS with a pre-configured user name and password is received. This is also typically sent by the owner. B. Monitoring and Dispatch Server (MDSS) The MDSS is built on top of the Windows Operating System and it uses multiple interacting servers to implement its functionality. The servers are HTTP, Database, Application and Socket Server.

C. Online maps The Online Maps server dynamically show the status of any home in an Internet browser running either on a normal computer or a mobile phone. An administrator is able to add, edit and delete various homes and home owners. As well as an administrator is able to conduct search and configure the online Maps server. The primary logic sequences for MDSS are summarized after receiving an SMS and/or data frame, the system checks the validity of the abnormal values. If the values are valid, a

corresponding event is added to a database and an SMS warning is sent to the home owner. In either case, the Map is updated with a status of the home. The Online Maps Server is described next. APPLICATION: • Harsh Industrial Environments • Fire Service and Rescue management • Police Department • Sewage Tunnel Maintenance • Metro Politian Traffic Management ADVANTAGE: • GPRS are cheaper, consume less power and also compact. • Home monitoring system utilizes GPRS & freely available public services like GIS online maps. FUTURE ENHANCEMENT: • Different type of sensors can be implemented for various problems like Traffic management, sewage control, and theft detection. • Local Alarm can also be used for more security purpose.

II. CONCLUSION

This paper has presented the design and implementation of a compact, low-cost, low-power single-board integrated home monitoring system that utilizes GPRS and the freely available public services like GIS Maps. The monitoring service is accessible through the mobile phone or through the Internet (using GIS Maps). In addition, database and convenient interfaces to services providers like home security firms and the municipality are also provided.

REFERENCES

[1]. P. Nirmala, T. Manimegalai, J. R. Arunkumar, S. Vimala, G. Vinoth Rajkumar, Raja Raju, "A Mechanism for Detecting the Intruder in the Network through a Stacking Dilated CNN Model", Wireless Communications and Mobile Computing, vol. 2022, Article ID 1955009, 13 pages, 2022. https://doi.org/10.1155/2022/1955009.

[2]. D. Sathyanarayanan, T. S. Reddy, A. Sathish, P. Geetha, J. R. Arunkumar and S. P. K. Deepak, "American Sign Language Recognition System for Numerical and Alphabets," 2023 International Conference on Research Methodologies in Knowledge Management, Artificial Intelligence and Telecommunication Engineering (RMKMATE), Chennai, India, 2023, pp. 1-6, doi: 10.1109/RMKMATE59243.2023.10369455.

[3]. J. R. Arunkumar, Tagele berihun Mengist, 2020" Developing Ethiopian Yirgacheffe Coffee Grading Model using a Deep Learning Classifier" International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-9 Issue-4, February 2020. DOI: 10.35940/ijitee.D1823.029420.

[4]. Ashwini, S., Arunkumar, J.R., Prabu, R.T. et al. Diagnosis and multi-classification of lung diseases in CXR images using optimized deep convolutional neural network. Soft Comput (2023). https://doi.org/10.1007/s00500-023-09480-3

[5]. J.R.Arunkumar, Dr.E.Muthukumar," A Novel Method to Improve AODV Protocol for WSN" in Journal of Engineering Sciences" ISSN NO: 0377-9254Volume 3, Issue 1, Jul 2012.

[6]. R. K, A. Shameem, P. Biswas, B. T. Geetha, J. R. Arunkumar and P. K. Lakineni, "Supply Chain Management Using Blockchain: Opportunities, Challenges, and Future Directions," 2023 Second International Conference on Informatics (ICI), Noida, India, 2023, pp. 1-6, doi: 10.1109/ICI60088.2023.10421633.

[7]. Arunkumar, J. R. "Study Analysis of Cloud Security Chanllenges and Issues in Cloud Computing Technologies." Journal of Science, Computing and Engineering Research 6.8 (2023): 06-10.

[8]. J. R. Arunkumar, R. Raman, S. Sivakumar and R. Pavithra, "Wearable Devices for Patient Monitoring System using IoT," 2023 8th International Conference on Communication and Electronics Systems (ICCES), Coimbatore, India, 2023, pp. 381-385, doi: 10.1109/ICCES57224.2023.10192741.

[9]. S. Sugumaran, C. Geetha, S. S, P. C. Bharath Kumar, T. D. Subha and J. R. Arunkumar, "Energy Efficient Routing Algorithm with Mobile Sink Assistance in Wireless Sensor Networks," 2023 International Conference on Advances in Computing, Communication and Applied Informatics (ACCAI), Chennai, India, 2023, pp. 1-7, doi: 10.1109/ACCAI58221.2023.10201142.

[10]. R. S. Vignesh, V. Chinnammal, Gururaj.D, A. K. Kumar, K. V. Karthikeyan and J. R. Arunkumar, "Secured Data Access and Control Abilities Management over Cloud Environment using Novel Cryptographic Principles," 2023 International Conference on Advances in Computing, Communication and Applied Informatics (ACCAI), Chennai, India, 2023, pp. 1-8, doi: 10.1109/ACCAI58221.2023.10199616.

[11]. Syamala, M., Anusuya, R., Sonkar, S.K. et al. Big data analytics for dynamic network slicing in 5G and beyond with dynamic user preferences. Opt Quant Electron 56, 61 (2024). https://doi.org/10.1007/s11082-023-05663-2

[12]. Krishna Veni, S. R., and R. Anusuya. "Design and Study Analysis Automated Recognition system of Fake Currency Notes." Journal of Science, Computing and Engineering Research 6.6 (2023): 16-20.

[13]. V. RamKumar, S. Shanthi, K. S. Kumar, S. Kanageswari, S. Mahalakshmi and R. Anusuya, "Internet of Things Assisted Remote Health and Safety Monitoring Scheme Using Intelligent Sensors," 2023 International Conference on Advances in Computing, Communication and Applied Informatics (ACCAI), Chennai, India, 2023, pp. 1-8, doi: 10.1109/ACCAI58221.2023.10199766.

[14]. R. S. Vignesh, R. Sankar, A. Balaji, K. S. Kumar, V. Sharmila Bhargavi and R. Anusuya, "IoT Assisted Drunk and Drive People Identification to Avoid Accidents and Ensure Road Safety Measures," 2023 International Conference on Advances in Computing, Communication and Applied Informatics (ACCAI), Chennai, India, 2023, pp. 1-7, doi: 10.1109/ACCAI58221.2023.10200809.

[15]. I. Chandra, G. Sowmiya, G. Charulatha, S. D, S. Gomathi and R. Anusuya, "An efficient Intelligent Systems for Low-Power Consumption Zigbee-Based Wearable Device for Voice Data Transmission," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-7, doi: 10.1109/ICECONF57129.2023.10083856.

[16]. G. Karthikeyan, D. T. G, R. Anusuya, K. K. G, J. T and R. T. Prabu, "Real-Time Sidewalk Crack Identification and Classification based on Convolutional Neural Network using Thermal Images," 2022 International Conference on Automation, Computing and Renewable Systems (ICACRS), Pudukkottai, India, 2022, pp. 1266-1274, doi: 10.1109/ICACRS55517.2022.10029202.

[17]. R. Meena, T. Kavitha, A. K. S, D. M. Mathew, R. Anusuya and G. Karthik, "Extracting Behavioral Characteristics of

College Students Using Data Mining on Big Data," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-7, doi: 10.1109/ICECONF57129.2023.10084276.

[18]. S. Bharathi, A. Balaji, D. Irene. J, C. Kalaivanan and R. Anusuya, "An Efficient Liver Disease Prediction based on Deep Convolutional Neural Network using Biopsy Images," 2022 3rd International Conference on Smart Electronics and Communication (ICOSEC), Trichy, India, 2022, pp. 1141-1147, doi: 10.1109/ICOSEC54921.2022.9951870.

[19]. I. Chandra, G. Sowmiya, G. Charulatha, S. D, S. Gomathi and R. Anusuya, "An efficient Intelligent Systems for Low-Power Consumption Zigbee-Based Wearable Device for Voice Data Transmission," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-7, doi: 10.1109/ICECONF57129.2023.10083856. I. Chandra, K. V. Karthikeyan, R. V, S. K, M. Tamilselvi and J. R. Arunkumar, "A Robust and Efficient Computational Offloading and Task Scheduling Model in Mobile Cloud Computing," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-8, doi: 10.1109/ICECONF57129.2023.10084293.

[20]. Revathi, S., et al. "Developing an Infant Monitoring System using IoT (INMOS)." International Scientific Journal of Contemporary Research in Engineering Science and Management 6.1 (2021): 111-115.

[21]. R. K, A. Shameem, P. Biswas, B. T. Geetha, J. R. Arunkumar and P. K. Lakineni, "Supply Chain Management Using Blockchain: Opportunities, Challenges, and Future Directions," 2023 Second International Conference on Informatics (ICI), Noida, India, 2023, pp. 1-6, doi: 10.1109/ICI60088.2023.10421633.

[22]. J.R.Arunkumar. "Comprehensice Analysis of Security Issues in Cloud Computing Technologies", Journal of Science,Computing and Engineering Research, 6(5), 06-10, June 2023.

[23]. S. Sugumaran, C. Geetha, S. S, P. C. Bharath Kumar, T. D. Subha and J. R. Arunkumar, "Energy Efficient Routing Algorithm with Mobile Sink Assistance in Wireless Sensor Networks," 2023 International Conference on Advances in Computing, Communication and Applied Informatics (ACCAI), Chennai, India, 2023, pp. 1-7, doi: 10.1109/ACCAI58221.2023.10201142.

[24]. I. Chandra, K. V. Karthikeyan, R. V, S. K, M. Tamilselvi and J. R. Arunkumar, "A Robust and Efficient Computational Offloading and Task Scheduling Model in Mobile Cloud Computing," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-8, doi: 10.1109/ICECONF57129.2023.10084293.

[25]. R. S. Vignesh, A. Kumar S, T. M. Amirthalakshmi, P. Delphy, J. R. Arunkumar and S. Kamatchi, "An Efficient and Intelligent Systems for Internet of Things Based Health Observance System for Covid 19 Patients," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-8, doi: 10.1109/ICECONF57129.2023.10084066.

[26]. DC Jullie Josephine, J Sudhakar, T Helan Vidhya, R Anusuya, G Ramkumar,"An Improved Multi class Breast cancer classification and Abnormality Detection based on Modified Deep Learning Neural Network Principles", Deep Learning in Biomedical Signal and Medical Imaging, CRC Press, Taylor and Francis, 2024.

[27]. R. Anusuya, Pragya Vashishtha, "Real Automatic Number Plate Image Detection With Yolo Algorithms", Journal of Science, Computing and Engineering Research, 7(7), July 2024.

[28]. K. Shetty, S. Tyagi, A. Jha, D. N. M. K. Rao, J. R. Arunkumar and L. R, "Natural Language Processing in Strategic Planning Analysis," 2024 Second International Conference Computational and Characterization Techniques in Engineering & Sciences (IC3TES), Lucknow, India, 2024, pp. 1-5, doi: 10.1109/IC3TES62412.2024.10877514.

[29]. S. Sugumaran, C. Geetha, S. S, P. C. Bharath Kumar, T. D. Subha and J. R. Arunkumar, "Energy Efficient Routing Algorithm with Mobile Sink Assistance in Wireless Sensor Networks," 2023 International Conference on Advances in Computing, Communication and Applied Informatics (ACCAI), Chennai, India, 2023, pp. 1-7, doi: 10.1109/ACCAI58221.2023.10201142.

[30]. R. S. Vignesh, A. Kumar S, T. M. Amirthalakshmi, P. Delphy, J. R. Arunkumar and S. Kamatchi, "An Efficient and Intelligent Systems for Internet of Things Based Health Observance System for Covid 19 Patients," 2023 International Conference on Artificial Intelligence and Knowledge Discovery in Concurrent Engineering (ICECONF), Chennai, India, 2023, pp. 1-8, doi: 10.1109/ICECONF57129.2023.10084066.

[31]. Jullie Josephine DC, Sudhakar J, Helan Vidhya T, Anusuya R, Ramkumar G. 15 An Improved Multi. Deep Learning in Biomedical Signal and Medical Imaging. 2024 Sep 30:237.

[32]. Arunkumar, J.R., Anusuya, R., Chilukuri, P., Ramkumar Prabhu, M. (2024). Secure Data Transfer and Deletion Using Secure Encryption Algorithm in Cloud Computing. In: Singh, N., Bashir, A.K., Kadry, S., Hu, YC. (eds) Proceedings of the 1st International Conference on Intelligent Healthcare and Computational Neural Modelling . ICIHCNN 2022. Advanced Technologies and Societal Change. Springer, Singapore. https://doi.org/10.1007/978-981-99-2832-3_84

[33]. G. Manoharan, P. D. Sawant, J. Vanitha, M. Lourens, R. Anusuya and I. Bhati, "Cognitive Computing for HR Decision-Making," 2024 Second International Conference Computational and Characterization Techniques in Engineering & Sciences (IC3TES), Lucknow, India, 2024, pp. 1-5, doi: 10.1109/IC3TES62412.2024.10877480.

[34]. S. Sivakumar, R. Anusuya, V. Nagaraju, L. P. Narendruni and R. Thamizhamuthu, "QoS Based Efficient Link and Consistent Routing in Wireless Sensor Network," *2023 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE)*, Bengaluru, India, 2023, pp. 1241-1246, doi: 10.1109/IITCEE57236.2023.10091080.

[35]. R.Anusuya, R. Arumuganainar, J. R. Arunkumar and K.Saravanan, "Deep Learning-based Reconstruction and Classification of Corneal Images using EfficientNet Variants," 2025 6th International Conference on IoT Based Control Networks and Intelligent Systems (ICICNIS), Bengaluru, India, 2025, pp. 1486-1494, doi: 10.1109/ICICNIS66685.2025.11315817.

[36]. J. R. Arunkumar, R.Anusuya, R. Arumuganainar and V. V. Baskar, "Hybrid Deep Learning Models for Enhancing Retinal Images and Early Detection of Non-Proliferative Diabetic Retinopathy," 2025 6th International Conference on IoT Based Control Networks and Intelligent Systems (ICICNIS), Bengaluru, India, 2025, pp. 1495-1500, doi: 10.1109/ICICNIS66685.2025.11315509.

[37]. Hemachandran, J. R. Arunkumar, R. A. R. Anusuya and R. Arumuganainar, "Comparative Evaluation of Deep CNN Architectures for Reliable Image Recognition," 2025 5th International Conference on Ubiquitous Computing and Intelligent Information Systems (ICUIS), Erode, India, 2025, pp. 732-737, doi: 10.1109/ICUIS67429.2025.11380777.

[38]. Prakash.D, R. Arumuganainar, J. R. Arunkumar and R.Anusuya, "High-Fidelity Melanoma Image Reconstruction for Clinical Diagnosis using Deep Convolutional Networks," 2025 5th International Conference on Ubiquitous Computing and Intelligent Information Systems (ICUIS), Erode, India, 2025, pp. 738-743, doi: 10.1109/ICUIS67429.2025.11380667.

[39]. A. Murgai, M. V. B. Reddy, M. P. Vani, S. Jagtap, M. Adudhodla and J. R. Arunkumar, "Blockchain-Enabled Secure Data Sharing in Cloudedge Learning Networks," 2025 International Conference on Digital Innovations for Sustainable Solutions (ICDISS), Faridabad, India, 2025, pp. 1-6, doi: 10.1109/ICDISS68238.2025.11320669.

[40]. S. Surya, D. Narayana, S. S, K. R. Gopalan, K. R. Pathak and J. R. Arunkumar, "Blockchain-Driven Access Control in Edge-Based Learning Environments," 2025 International Conference on Digital Innovations for Sustainable Solutions (ICDISS), Faridabad, India, 2025, pp. 1-6, doi: 10.1109/ICDISS68238.2025.11320794.

[41]. K, A., Chaturvedi, A., Jadhav, S. et al. Deep Learning-Enabled Multi-Satellite Terahertz Networks for Real-Time Global Climate Data Fusion and Analytics. J Infrared Milli Terahz Waves 47, 8 (2026). https://doi.org/10.1007/s10762-026-01114-7

[42].