IoT Based Air Quality Prediction using SVM and Random Forest

Devata R. Anekar[1], Ashish M. Hase[2], Dinesh Bharat Nikam[3], Dinesh Balkawade[4], Arti R. Masare[5]

Assistant Professor, Department of Information Technology

UG Scholar, Department of Information[2,3,4,5]

Sinhgad Academy of Engineering, Pune, Maharashtra, India

Savitribai Phule Pune University, Pune, India

Abstract: *Internet of Things (IoT) may be a worldwide System of "smart devices" which will sense and connect with their surroundings and interact with users and other systems. Global air pollution is one of the major concerns of our era. The level of pollution has increased with time by a lot of things like the increase in population, increased vehicle use, industrialization, and urbanization which ends up in harmful effects on human wellbeing by directly affecting the health of the population exposed to it. Air quality goes down when enough amount of harmful gases are present in the air like carbon dioxide, smoke, alcohol, benzene, NH3, and NO2. To analyses, we are developing an IoT Based pollution Monitoring System which we'll monitor the Air Quality over an internet server. Existing monitoring systems have inferior precision, low sensitivity, and need laboratory analysis. Therefore, improved monitoring systems are needed.*

Keywords: Air Quality Monitoring; Machine Learning; Air Quality Index

REFERENCES

[1]. Chakradhar Reddy K. and Nagarjuna Reddy K , "The Prediction of Quality of the Air Using Supervised Learning", IEEE 2021

[2]. Yun-Chia Liang and YonaMaimury , "Machine Learning-Based Prediction of Air Quality " , Applied Science , 2020

[3]. Madhuri V M, SamyamaGunjal GH, SavithaKamalapurkar , "Air Pollution Prediction Using Machine Learning Supervised Learning Approach ", International Journal Of Scientific & Technology Research Volume 9, Issue 04, April 2020

[4]. Mauro Castelli and Fabiana Martins Clemente, "A Machine Learning Approach to Predict Air Quality in California" , Research Article , 2020

[5]. Rajeev Tiwari, ShuchiUpadhyay, ParvSinghal , "Air Pollution Level Prediction System", International Journal of Innovative Technology and Exploring Engineering (IJITEE) , 2019

[6]. Vineeta , Ajit Bhat , Asha S Manek , Pranay Mishra, "Machine Learning based Prediction System for Detecting Air Pollution" IJERT,2019

[7]. Mrs. A. Gnana Soundari Mrs. J. Gnana Jeslin M.E, Akshaya A."Indian Air Quality Prediction And Analysis Using Machine Learning,"IJERT 2020

[8]. Fabiana Martins Clemente,Aleš Popovič,Sara Silva, and Leonardo Vanneschi"A Machine Learning Approach to Predict Air Quality in California", 2020.

[9]. S. L. Bangare, G. Pradeepini, S. T. Patil, "Implementation for brain tumor detection and three dimensional visualization model development for reconstruction", ARPN Journal of Engineering and Applied Sciences (ARPN JEAS), Vol.13, Issue.2, ISSN 1819-6608, pp.467-473. 20/1/2018 http://www.arpnjournals.org/jeas/research_papers/rp_2018/jeas_0118_6691.pdf

[10]. S. L. Bangare, S. T. Patil et al, "Reviewing Otsu's Method for Image Thresholding." International Journal of Applied Engineering Research, ISSN 0973-4562, Volume 10, Number 9 (2015) pp. 21777-21783, © Research India Publications https://dx.doi.org/10.37622/IJAER/10.9.2015.21777-21783

[11]. S. L. Bangare, G. Pradeepini, S. T. Patil, "Regenerative pixel mode and tumor locus algorithm development for brain tumor analysis: a new computational technique for precise medical imaging", International Journal of Biomedical Engineering and Technology, Inderscience, 2018, Vol.27 No.1/2. https://www.inderscienceonline.com/doi/pdf/10.1504/IJBET.2018.093087

[12]. S. L. Bangare, A. R. Khare, P. S. Bangare, "Quality measurement of modularized object oriented software using metrics", ICWET '11: Proceedings of the International Conference & Workshop on Emerging Trends in Technology, February 2011, pp. 771–774. https://doi.org/10.1145/1980022.1980190.1.

[13]. S. L. Bangare, G. Pradeepini and S. T. Patil, "Brain tumor classification using mixed method approach," 2017 International Conference on Information Communication and Embedded Systems (ICICES), 2017, pp. 1-4, doi: 10.1109/ICICES.2017.8070748.

[14]. S. L. Bangare, S. Prakash, K. Gulati, B. Veeru, G. Dhiman and S. Jaiswal, "The Architecture, Classification, and Unsolved Research Issues of Big Data extraction as well as decomposing the Internet of Vehicles (IoV)," 2021 6th International Conference on Signal Processing, Computing and Control (ISPCC), 2021, pp. 566-571, doi: 10.1109/ISPCC53510.2021.9609451.

[15]. S. L. Bangare, G. Pradeepini, S. T. Patil et al, "Neuroendoscopy Adapter Module Development for Better Brain Tumor Image Visualization", International Journal of Electrical and Computer Engineering (IJECE) Vol. 7, No. 6, December 2017, pp. 3643~3654. http://ijece.iaescore.com/index.php/IJECE/article/view/8733/7392

[16]. N. Shelke, S. Chaudhury, S. Chakrabarti, S. L. Bangare et al. "An efficient way of text-based emotion analysis from social media using LRA-DNN", Neuroscience Informatics, Volume 2, Issue 3, September 2022, 100048, ISSN 2772-5286, https://doi.org/10.1016/j.neuri.2022.100048

[17]. Suneet Gupta, Sumit Kumar, Sunil L. Bangare, Shibili Nuhmani, Arnold C. Alguno, Issah Abubakari Samori, "Homogeneous Decision Community Extraction Based on End-User Mental Behavior on Social Media", Computational Intelligence and Neuroscience, vol. 2022, Article ID 3490860, 9 pages, 2022. https://doi.org/10.1155/2022/3490860.

[18]. Gururaj Awate, S. L. Bangare, G. Pradeepini and S. T. Patil, "Detection of Alzheimers Disease from MRI using Convolutional Neural Network with Tensorflow",arXiv, https://doi.org/10.48550/arXiv.1806.10170

[19]. P. S. Bangare, S. L. Bangare, R. U. Yawle and S. T. Patil, "Detection of human feature in abandoned object with modern security alert system using Android Application," 2017 International Conference on Emerging Trends & Innovation in ICT (ICEI), 2017, pp. 139-144, doi: 10.1109/ETIICT.2017.7977025

[20]. Kalpana S. Thakare, Viraj Varale, "Prediction of Heart Disease using Machine Learning Algorithm", Bioscience Biotechnology Research Communications (Special issue) Volume 13, Issue 12, 2020 (Dec 2020 issue).

[21]. Kalpana S. Thakare, A. M. Rajurkar, "Shot Boundary Detection of MPEG Video using Biorthogonal Wavelet Transform", International Journal of Pure and Applied Mathematics, Volume 118, No. 7, pp. 405-413, ISSN: 1311-8080 (printed version); ISSN: 1314-3395 (on-line version), url: http://www.ijpam.eu

[22]. Kalpana S. Thakare, A. M. Rajurkar, R. R. Manthalkar, "Video Partitioning and Secured Key frame Extraction of MPEG Video", Proceedia Computer Science Journal, Volume 78, pp 790-798, Elsevier, 2016. Scopus DOI: htpp://10.1016/j.procs.2016.02.058, www.sciencedirect.com/science/article/pii/S1877050916000600

[23]. Kalpana S. Thakare, A. M. Rajurkar and R. R. Manthalkar, "Content based Video Retrieval using Latent Semantic Indexing and Color, Motion and Edge Features", International Journal of Computer Applications 54(12):42-48, September 2012, Published by Foundation of Computer Science, New York, USA. DOI: 10.5120/8621-2486

[24]. Kalpana S. Thakare, Archana M. Rajurkar, R. R. Manthalkar, "A Comprehensive System Based on Spatiotemporal Features Such as motion, Quantized Color and Edge Features", International Journal of Wireless and Microwave Technologies (IJWMT) ISSN 1449 (Print), ISSN: 2076-9539 (Online), Vol.1, No.3, June. 2011, DOI: 10.5815 /ijwmt

[25]. Kalpana S. Thakare, Archana M. Rajurkar, Dr. R. R. Manthalkar, "An effective CBVR system based on Motion, Quantized color and edge density features", International Journal of Computer Science & Information Technology (IJCSIT), ISSN 0975 – 3826, Vol 3, No 2, April 2011 DOI: 10.5121/ijcsit.2011.3206 78.

[26]. M. L. Bangare, "Attribute Based Encryption And Data Integrity For Attack on Cloud Storage", Journal of Analysis and Computation (JAC), (An International Peer Reviewed Journal), www.ijaconline.com, ISSN 0973-2861, ICASETMP-2019, pp.1-4. http://www.ijaconline.com/wp-content/uploads/2019/07/ICASETMP67.pdf

[27]. M. L. Bangare, Sarang A. Joshi, "Kernel interpolation-based technique for privacy protection of pluggable data in cloud computing", International Journal of Cloud Computing, Volume 9, Issue 2-3, pp.355-374, Publisher Inderscience Publishers (IEL).

[28]. M. L. Bangare, P. M. Bangare, R. S. Apare, S. L. Bangare, "FOG COMPUTING BASED SECURITY OF IOT APPLICATION", Design Engineering ISSN: 0011-9342, Year 2021 Issue 7, pp.7542-7549.

[29]. Rajesaheb R. Kadam and Manoj L. Bangare, "A survey on security issues and solutions in live virtual machine migration", International Journal of Advance Foundation and Research in Computer (IJAFRC), (December, 2012). ISSN (2014), pp.2348-4853.

[30]. Sachindra K. Chavan, Manoj L. Bangare, "Secure Data Storage in Cloud Service using RC5 Algorithm", International Journal of Recent Technology and Engineering (IJRTE), ISSN: 2277-3878, Volume-2, Issue-5 November 2013, pp.139-144.