

Assessment of Waste Management through Mobile Edge Computing and Deep Learning

Manjula S¹, Aryan Raj Rout², Aryan³, Aditya A Kamat⁴

Assistant Professor, Department of Information Science and Engineering¹

Students, Department of Information Science and Engineering^{2,3,4}

B. M. S. College of Engineering, Bengaluru, India

Abstract: Due to the random occurrences of street waste, city managers usually spend a lot of energy and money cleaning street garbage, which is a core duty in computer vision, with applications ranging across the process of smart city creation. Deep network solutions are frequently constrained by the amount of training data available as they become deeper and more complicated. With this in mind, Open CV or Google AI has made the Open Images dataset publicly available in order to drive breakthroughs in image analysis and interpretation. Open Images continues the legacy of PASCAL VOC, Image Net, and COCO, but on a much larger scale. As a result, visual street cleanliness assessment will be extremely vital in this project. Existing assessment methods, on the other hand, have several significant drawbacks, such as the lack of automation in the collecting of street waste data and the lack of real-time street cleanliness data. Finally, the findings are fed into a framework for calculating street cleanliness, which allows for the visualisation of street cleanliness. Cleanliness levels are maintained at a high level, making it easier for city managers to schedule clean-up crews.

Keywords: Waste Management

BIBLIOGRAPHY

- [1]. P. Zhang, Q. Zhao, J. Gao, W. Li and J. Lu, "Urban Street Cleanliness Assessment Using Mobile Edge Computing and Deep Learning," in IEEE Access, vol. 7, pp. 63550-63563, 2019, doi: 10.1109/ACCESS.2019.2914270.
- [2]. Chahar, H., Keshavamurthy, B.N. & Modi, C. Privacy-preserving distributed mining of association rules using Elliptic-curve cryptosystem and Shamir's secret sharing scheme. Sādhanā 42, 1997–2007 (2017). <https://doi.org/10.1007/s12046-017-0743-4>
- [3]. S. Dolev, P. Gupta, Y. Li, S. Mehrotra and S. Sharma, "Privacy-Preserving Secret Shared Computations Using MapReduce," in IEEE Transactions on Dependable and Secure Computing, vol. 18, no. 4, pp. 1645-1666, 1 July-Aug. 2021, doi: 10.1109/TDSC.2019.2933844.
- [4]. Sneha Khemani and Payal Awwal, "Privacy Preserving In Tpa Using Blowfish Encryption And Shamir's Secret Sharing For Secure Cloud" in International Journal of Engineering Science Invention (IJESI),www.ijesi.org ||Volume 7 Issue 5 Ver. III || May 2018 || PP 66-71
- [5]. Pedersen, Thomas & Saygin, Yucel & Savas, Erkey. (2007). Secret Sharing vs. Encryption- based Techniques For Privacy Preserving Data Mining 1
- [6]. B. Yang, X. Cao, X. Li, Q. Zhang and L. Qian, "Mobile-Edge-Computing-Based Hierarchical Machine Learning Tasks Distribution for IIoT," in IEEE Internet of Things Journal, vol. 7, no. 3, pp. 2169-2180, March 2020, doi: 10.1109/JIOT.2019.2959035.
- [7]. J. Chen, S. Chen, Q. Wang, B. Cao, G. Feng and J. Hu, "iRAF: A Deep Reinforcement Learning Approach for Collaborative Mobile Edge Computing IoT Networks," in IEEE Internet of Things Journal, vol. 6, no. 4, pp. 7011-7024, Aug. 2019, doi: 10.1109/JIOT.2019.2913162.
- [8]. Kumar S, Mohan & Majumder, Darpan. (2020). Healthcare Solution based on Machine Learning Applications in IOT and Edge Computing. International Journal of Pure and Applied Mathematics. 119. 1473-1784.
- [9]. Singh, A., Chatterjee, K. & Satapathy, S.C. An edge based hybrid intrusion detection framework for mobile edge computing. Complex Intell. Syst. (2021). <https://doi.org/10.1007/s40747-021-00498-4>

- [10]. S. J. Lee et al., "IMPACT: Impersonation Attack Detection via Edge Computing Using Deep Autoencoder and Feature Abstraction," in IEEE Access, vol. 8, pp. 65520-65529, 2020, doi: 10.1109/ACCESS.2020.2985089.
- [11]. S. J. Lee et al., "IMPACT: Impersonation Attack Detection via Edge Computing Using Deep Autoencoder and Feature Abstraction," in IEEE Access, vol. 8, pp. 65520-65529, 2020, doi: 10.1109/ACCESS.2020.2985089.
- [12]. Sun, Jiajia Liu, and Yanlin Yue, "AI-Enhanced Offloading in Edge Computing: When Machine Learning Meets Industrial IoT", 0890-8044/19/\$25.00 © 2019 IEEE
- [13]. Zhihan Lv, Dongliang Chen a, Ranran Lou a, Qingjun Wang, "Intelligent edge computing based on machine learning for smart city", Future Generation Computer Systems 115 (2021) 90–99, Elsevier
- [14]. Baotong Chen, Jiafu Wan, Antonio Celesti, Di Li, Haider Abbas, and Qin Zhang, Edge Computing in IoT-Based Manufacturing, 0163-6804/18/\$25.00 © 2018 IEEE
- [15]. Xiaolan Liu , Student Member, IEEE, Jiadong Yu , Student Member, IEEE, Jian Wang, Member, IEEE, and Yue Gao, Senior Member, IEEE, Resource Allocation With Edge Computing in IoT Networks via Machine Learning, IEEE INTERNET OF THINGS JOURNAL, VOL. 7, NO. 4, APRIL 2020