

A Survey of Integrating Deep Learning-Based Missing Person Detection Model Into CCTV Systems For Enhanced Identification

Dr. Nirmala H¹, Archana J², Gagana N²

Professor, Department of Information Science and Engineering¹

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

Global Academy of Technology, Bangalore, Karnataka, India

Abstract: *This study looks at the possibility of increasing identification abilities in closed-circuit video (CCTV) systems using a deep learning-based missing person detection model. Missing individuals are becoming increasingly common, necessitating the development of novel search tactics. This study uses deep learning to augment traditional CCTV systems by using an improved model that can reliably identify and track persons who go missing. Taking a detailed look at current techniques to missing person identification, the literature review shows the shortcomings of existing systems and the potential for improving them through the use of deep learning. The paper examines past methodologies, including facial recognition accuracy, tracking robustness, and system scalability. The integration of computer vision with missing person identification, object tracking technologies, and facial recognition algorithms are among the main topics. The research also investigates privacy, moral, and legal implications of deploying such technology in public.*

Keywords: Missing person detection, Video surveillance, Deep learning

REFERENCES

- [1]. M. K. Singh, P. Verma, A. S. Singh and A. K., "Implementation of Machine Learning and KNN Algorithm for Finding Missing Person," *2022 2nd International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)*, Greater Noida, India, 2022, pp. 1879-1883, doi: 10.1109/ICACITE53722.2022.9823710.
- [2]. S. Ranjan, S. Tyagi, S. Gupta, M. Kaur and M. Kumar Goyal, "Image Processing-Based Real-Time Detection and Tracking of Human," *2023 3rd International Conference on Technological Advancements in Computational Sciences (ICTACS)*, Tashkent, Uzbekistan, 2023, pp. 1542-1547, doi: 10.1109/ICTACS59847.2023.10390106.
- [3]. M. D. Inavolu, D. Venna, G. V. Kallepalli and S. S. Surapaneni, "Detection of Missing Persons Using Mobile App," *2023 2nd International Conference for Innovation in Technology (INOCON)*, Bangalore, India, 2023, pp. 1-8, doi: 10.1109/INOCON57975.2023.10101097.
- [4]. B. Vinavatani, M. R. Panna, P. H. Singha and G. J. W. Kathrine, "AI for Detection of Missing Person," *2022 International Conference on Applied Artificial Intelligence and Computing (ICAAIC)*, Salem, India, 2022, pp. 66-73, doi: 10.1109/ICAAIC53929.2022.9792672.
- [5]. S. Bhoite, N. Ravi, K. Giri and K. Gupta, "A CCTV Camera-Based Target Detection and Positioning UAV System," *2021 Asian Conference on Innovation in Technology (ASIANCON)*, PUNE, India, 2021, pp. 1-6, doi: 10.1109/ASIANCON51346.2021.9544830.
- [6]. C. Geetha, L. V, M. R and N. V, "FDR: An Automated System for Finding Missing People," *2022 2nd International Conference on Technological Advancements in Computational Sciences (ICTACS)*, Tashkent, Uzbekistan, 2022, pp. 525-529, doi: 10.1109/ICTACS56270.2022.9988705.

- [7]. V. Shelke, G. Mehta, P. Gomase and T. Bangera, "Searchious: Locating missing people using an optimised face recognition algorithm," *2021 5th International Conference on Computing Methodologies and Communication (ICCMC)*, Erode, India, 2021, pp. 1550-1555, doi: 10.1109/ICCMC51019.2021.9418450.
- [8]. P. S. Chandran, N. B. Byju, R. U. Deepak, K. N. Nishakumari, P. Devanand and P. M. Sasi, "Missing Child Identification System Using Deep Learning and Multiclass SVM," *2018 IEEE Recent Advances in Intelligent Computational Systems (RAICS)*, Thiruvananthapuram, India, 2018, pp. 113-116, doi: 10.1109/RAICS.2018.8635054.
- [9]. Dharmik, R. C., Chavhan, S., y Sathe, S. R. (2022), "Deep learning based missing object detection and person identification: an application for smart CCTV", *3C Tecnología. Glosas de innovación aplicadas a la pyme*, 11(2), 51-57, <https://doi.org/10.17993/3ctecno.2022.v11n2e42.51-57>.
- [10]. S. Ayyappan and S. Matilda, "Criminals And Missing Children Identification Using Face Recognition And Web Scrapping," *2020 International Conference on System, Computation, Automation and Networking (ICSCAN)*, Pondicherry, India, 2020, pp. 1-5, doi: 10.1109/ICSCAN49426.2020.9262390.
- [11]. G. Srikanth, Adurti Swarnalatha, Thalari Abhishek, Ravula Sai Akhil Patel, Thalari Swamy, "Missing Person Identification using Machine Learning with Python", *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, 2321-9653, Volume 10, 45.98.
- [12]. Rehmat Ullah, Hassan Hayat, Afsah Abid Siddiqui, Uzma Abid Siddiqui, Jebran Khan, Farman Ullah, Shoaib Hassan, Laiq Hasan, Waleed Albattah, Muhammad Islam, and Ghulam Mohammad Karami, "A Real-Time Framework for Human Face Detection and Recognition in CCTV Images", *Hindawi*, doi: 10.1155/2022/3276704.
- [13]. J. Deng, J. Guo, J. Yang, N. Xue, I. Kotsia and S. Zafeiriou, "ArcFace: Additive Angular Margin Loss for Deep Face Recognition," in *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 44, no. 10, pp. 5962-5979, 1 Oct. 2022, doi: 10.1109/TPAMI.2021.3087709.
- [14]. M. Alansari, O. A. Hay, S. Javed, A. Shoufan, Y. Zweiri and N. Werghi, "GhostFaceNets: Lightweight Face Recognition Model From Cheap Operations," in *IEEE Access*, vol. 11, pp. 35429-35446, 2023, doi: 10.1109/ACCESS.2023.3266068.
- [15]. Akhil, M. P., Anilkumar, L., Salim, S., Shaji, S., & Sebastian, L., "An Efficient Method for the Detection of Missing Person from Crowd", *International Journal for Research in Applied Science & Engineering Technology (IJRASET)*, ISSN: 2321-9653.