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| Title | SafeguardNet: Enhancing Corporate Safety via Tailored Deep Transfer Learning for Threat Recognition | | |
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| Abstract |  |
| In today’s rapidly evolving corporate environments, ensuring comprehensive security measures is paramount. This paper presents SafeguardNet, a deep transfer learning-based model designed to enhance corporate safety through effective multiclass threat detection. Recognizing the limitations of existing binary threat detection systems, our approach introduces a diverse dataset encompassing a wide array of threat categories, including knives, guns, fires, and normal scenarios. This diversity in threat classes significantly improves the model’s ability to accurately distinguish between various types of security risks, leading to enhanced robustness and reliability in real-world applications. Utilizing the Xception architecture, SafeguardNet achieves an overall accuracy of 94.5%, precision of 92.3%, recall of 93.8%, and an F1 score of 93.0%., the model demonstrates exceptional capability with individual F1 scores of 96% for guns and fires, 95% for Additionallyknives, and 89% for normal scenarios, reflecting its proficiency in handling diverse threat types. The integration of a varied dataset plays a critical role in enhancing these performance metrics by providing the model with a comprehensive range of scenarios for training. This diversity ensures that SafeguardNet can robustly and accurately detect and classify multiple security threats, offering a reliable and comprehensive solution for corporate security needs. | |