

Detection and Alert System for Railway Trespassing (DART)

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Abstract: - *Trespassing on Railroads is a dangerous activity and more dangerous when it is committed near the station. Also, is a punishable offense under section 147 of the Railways Act, 1989 where a penalty of imprisonment of up to 6 months and/or fine is leviable in India. Still, a high number of cases of trespassing are reported every day at nearly every station. Even regular patrolling of potential sites is not possible due to increasing crowd and low manpower and high personnel costs. Due to the variability of the crowd, we cannot find a pattern that will cover total trespassing. All these and more reasons raise a need to find an alternate automated approach to deal with this situation. The latest Machine Learning and Computer Vision techniques provide us a direction towards making our Live Detection and Alert System for Railway Trespassing using video surveillance from CCTV cameras all around the station. Unlike various approaches suggested before this paper. DART proposes to deal with the unpredictable trespassing violations on a real-time basis and to allocate the minimum resources at proper places at the proper time to have the highest possible chances of averting the accidents. As a real-time detection system, DART is a single-step detector and hence, like some other two-step detectors, does not leverage much of the sparsity of railroad trespassing activity, and thus has an advantage of being able to detect other activities too. DART system, despite being working on live data handles the trade-off between accuracy and computational time well. DART system demonstrates efficacy on collected videos by achieving a 0.85 f1 score.*

Keyword: - Railway Trespassing detection, Railroad safety, trespassing, Deep learning, Video surveillance, webapp, Background subtraction, Computer vision, YOLO, YOLO tiny, etc.

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