

**A**  
**PROJECT SCHOOL REPORT**  
**ON**  
**AUTOMATED STUDENT COUNTING IN CLASSROOM**

**Submitted By**

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# NEIL GOGTE INSTITUTE OF TECHNOLOGY

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## CERTIFICATE

*This is to certify that the project work entitled **AUTOMATED STUDENT COUNTING IN CLASSROOM** is a bonafide work carried out by **Deekshith Reddy A (245322748015)**, **Medisetty Amith (245322748046)**, **N Surya Snehith (245322748048)**, **Racharla Vishwas (245322748054)**, **Sunkari Sahith (245322748058)**, **Varun Jakkula (245322748089)** of III-year V semester **Bachelor of Engineering in CSE (AIML)** during the academic year **2024-2025** and is a record of bonafide work carried out by them.*

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# **ABSTRACT**

In this project, we address the challenge of accurately counting humans in images for real-world applications such as crowd analysis, security systems, and surveillance. Our work explores various deep learning models, starting with basic Convolutional Neural Networks (CNN1 and CNN2) and progressing to more sophisticated architectures like ResNet9. While these models provided incremental improvements in accuracy, they lacked the robustness needed for complex real-world scenarios.

To overcome these limitations, we designed and implemented a customized ResNet50 model tailored for human counting tasks. Leveraging ResNet50's powerful feature extraction capabilities, our architecture includes additional fully connected layers, dropout for regularization, and a dual-branch design. This approach enables the model to predict both the total count of humans and intersection counts in images with high precision.

Our customized ResNet50 model demonstrated significant improvements in accuracy and generalization compared to earlier models, making it a reliable solution for applications requiring real-time human counting. The model's modular design and adaptability also make it suitable for integration into various edge computing and cloud-based systems, paving the way for future enhancements and domain-specific applications.

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