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Currency and Object Detection for Blind People Using Yolo Architecture

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Abstract: *This project is designed to significantly improve the independence and quality of life for visually impaired individuals by developing an advanced system utilizing the YOLO (You Only Look Once) architecture for real-time currency and object detection. The YOLO architecture, known for its high speed and accuracy, employs convolutional neural networks to perform object detection in a single forward pass, making it an ideal choice for applications requiring real-time performance. The system integrates a lightweight, efficient detection model capable of processing live video feeds from a camera to identify and differentiate between various denominations of currency and a wide range of everyday objects. This detection process is crucial for enabling visually impaired individuals to handle financial transactions with confidence, ensuring that they can correctly identify and use different denominations of money. The project also includes extensive training and testing phases to ensure high accuracy and reliability in diverse environments and lighting conditions. By incorporating advanced machine learning techniques and a comprehensive dataset, we aim to achieve a robust detection system that performs well in real-world scenarios. The anticipated outcome is a significant enhancement in the autonomy and safety of visually impaired individuals, enabling them to navigate their daily lives with greater ease and confidence. This innovative solution promises to bridge the gap between technological advancements and accessibility, offering a practical tool that can profoundly impact the lives of those with visual impairments.*

Keywords: Machine learning, Deep learning, Convolutional Neural Network, YOLOv8