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Presentation

On

Self Guiding System for Blind Person

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Globally, nearly 43 million people live with blindness, and around 295 million people have visual impairments, facing significant daily challenges in navigating and perceiving their surroundings. To address this, our research presents an intelligent, real-time assistive system that delivers audio-based descriptions of nearby objects and their spatial orientation relative to the user. Utilizing the advanced YOLO v8 model for robust object detection, our system identifies objects within the camera's field of view and communicates their identities and precise locations through Android's Speech Engine. This integration of high-performance detection algorithms with dynamic speech synthesis enhances users' spatial awareness, fostering greater independence and safety. Our approach provides a seamless experience for visually impaired individuals, promoting situational awareness and supporting autonomy in complex environments.

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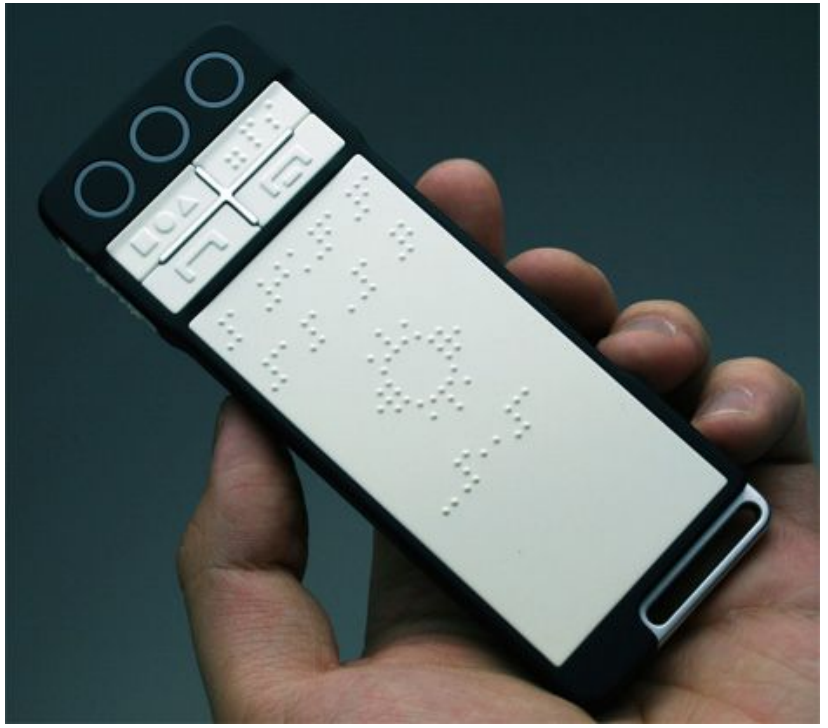
Problem Statement

➔ Developing an application that can guide a blind person to walk and move easily. The Application tries to make the phone camera an eye for the blind people.



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Literature Survey

- Ms. P Devika "OBJECT DETECTION AND RECOGNITION USING TENSORFLOW FOR BLIND PEOPLE" International Research Journal of Modernization in Engineering Technology and Science Volume:04/Issue:03/March-2022

- Outcomes of Literature Survey:

a.) Gadgets developed till date are expensive
b.) Apps present till date does not calculate distance and direction simply describe environment.
c.) some of apps available for blind people are NavCog by IBM, SeeingAI by microsoft

- Research Objective:

a) Information about direction and distance of object and narrate the object presence.
b) Provide a fully self-guiding system for detecting paths, environment and the objects in them.
c) Yolo v8 documentation
d) Android Studio documentation

Research Methodology

android device

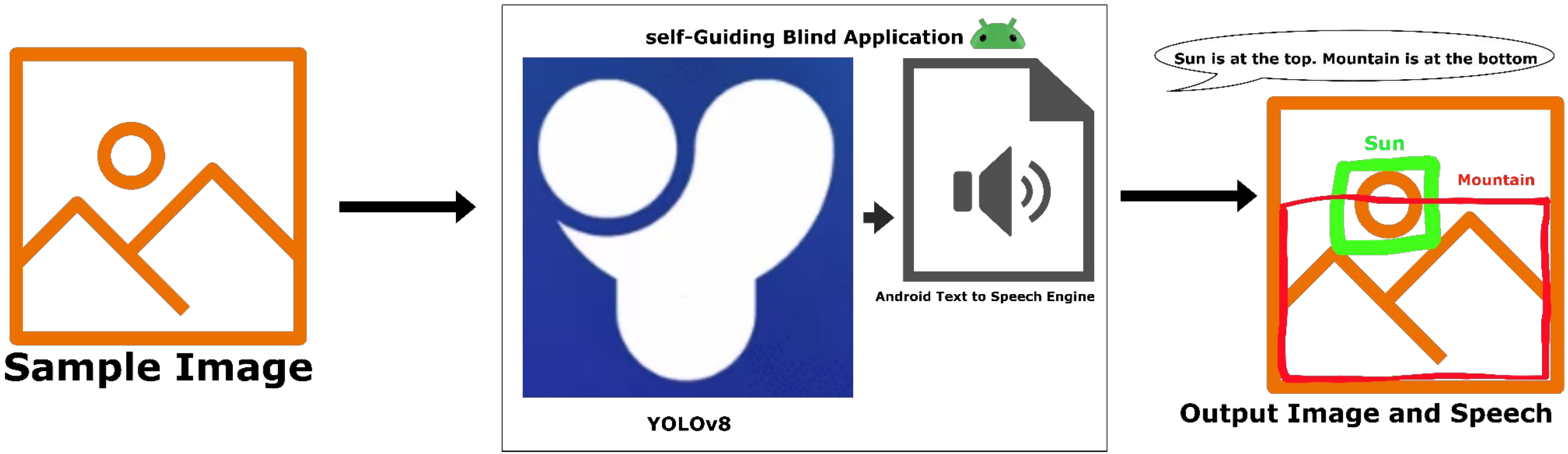
Android Application

preprocess Image

Detect Objects

Speak Detected Objects with respective location

Deletes the last Image and re analyze new image


Sample Image
self-Guiding Blind Application
YOLOv8
Android Text to Speech Engine
Sun is at the top. Mountain is at the bottom
Sun
Mountain
Output Image and Speech

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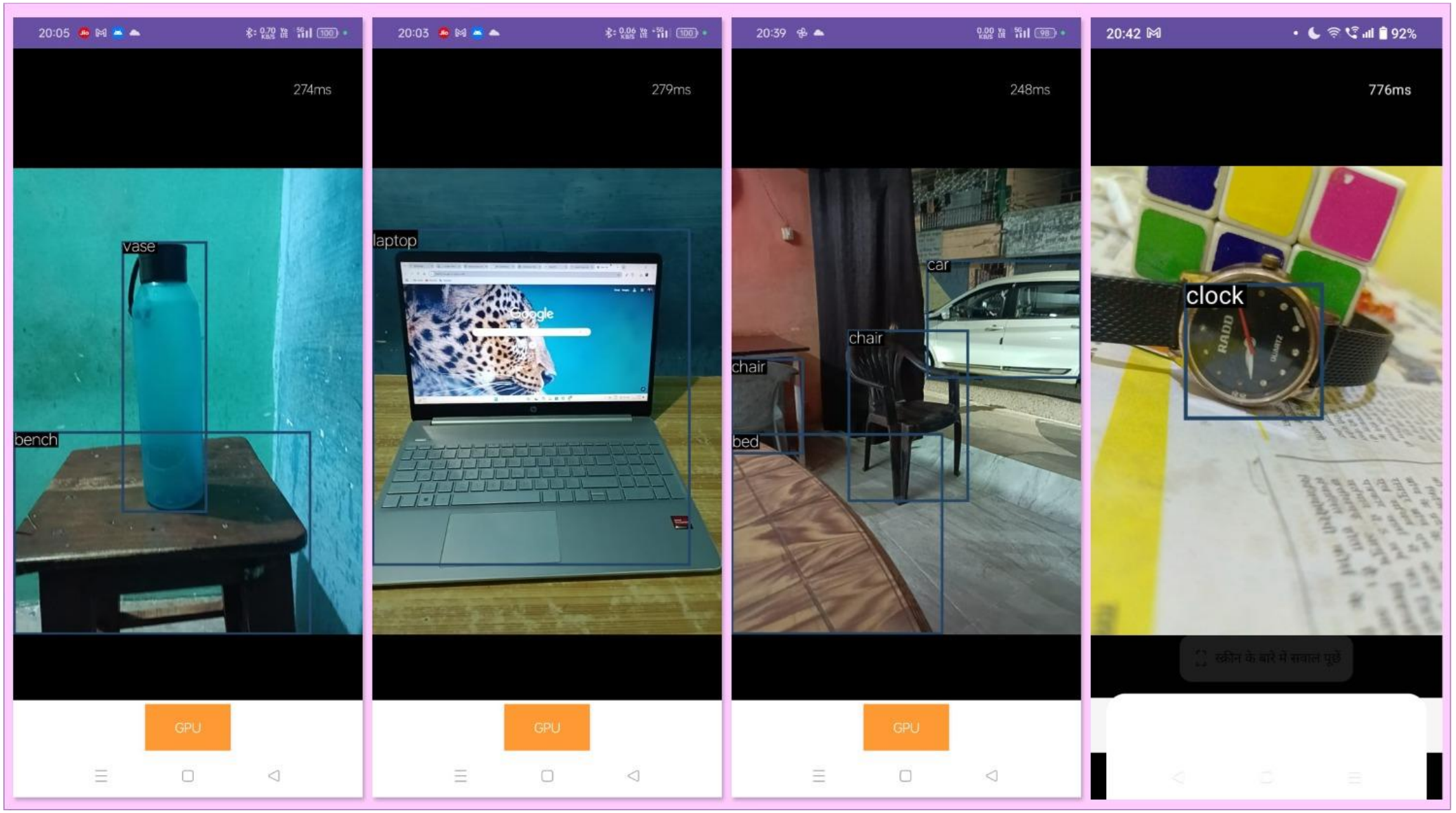
Result



Research Paper	Model Used	Speech System used	Accessibility
OBJECT DETECTION AND RECOGNITION USING TENSORFLOW FOR BLIND PEOPLE	SSD Detection Model	Default voice notes in Python	Less
Third Eye: Object Recognition and Speech Generation for Visually Impaired	YOLOv5	pyttsx3, gTTS	Less
Self-Guiding System for Blind People	YOLOv8	Android Speech Engine	More

TABLE 1. Comparison Table

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Discussions

- Yolo v8 model for object detection
- Memory management for the models of Computer Vision and Speech Generation
- A Novel Approach or a solution from state of Art Computer vision AI

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Scope of Project

- A Helpful Technological Improvement for Blind people
- A cutting edge blend of Computer Vision, Natural Language and AI audio generation

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Thank you