ÇANKAYA UNIVERSITY
FACULTY OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT

CENG 408

USER'S MANUAL
REPORT

Prepared By	ID
Batuhan DİLEK	201911023
Hasan Mert YILDIRIM	201911071
Zeynep Tulya AYTEKİN	201811008
İbrahim Efe ERER	201911071
Görkem KARABAY	201811039

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1. Scope of Document

We prepared this document to help Users to download GenEye application and use it as intended and efficiently. For that reason, our first priority is to explain and teach Users to set up and use with ease, they can follow every step easily with this document.

1.1. Release Dates:

Date	Version	Release Name
09.04.2023	v1.0	First Version
15.04.2023	v2.0	Second Version
17.05.2023	v3.0	First Release
09.06.2023	v4.0	Second Release

1.2. Glossary:

Machine Learning	Machine Learning is a branch of Computer Science and Artificial Intelligence which tries to imitate human learning using algorithms.
API	An application programming interface (API) is a middle-man programming interface for two or more computer programs to communicate with each other.
CPU	A central processing unit (CPU) is the most important processor in a given computer. It provides computers to calculate or execute a variety of instructions.
RAM	Random-access memory (RAM) is a form of computer memory that can be read and changed in any order, typically used to store working data and machine code.
Android	Android is a mobile operating system based on a modified version of the Linux kernel and other open-source software, designed primarily for touchscreen mobile devices such as smartphones and tablets.
IDE	An integrated development environment (IDE) is a software application that lets developers create new applications for software development.

2. Introduction:

Machine Learning technology and the object detection algorithms include multiple engineering concepts. In this project, it is aimed to combine these techniques and generate an international app for all of the visually impaired people all around the world. Therefore, real time object detection operations will be handled and will be backed up by the guidance and the warning systems which contain speech-to-text and text-to-speech algorithms in order to have a connection with our users. The main motivation behind this project is to enchant the visually impaired people's lives. They have enough struggles as it is and we desire to change that. By using our app, They can stream their surroundings to the app and It will guide our users to their desired object. Also, during their daily lives the app will watch and warn them about their surroundings if it calculates it as a threat. In this way, GenEye will improve the living conditions of visually impaired people and make their lives better

2.1. Requirements:

2.1.1. Hardware Requirements:

Due to GenEye's Object Detection and Image Process capabilities, it needs a minimum 1536 mb RAM and 4 core CPU. With these minimum hardware, GenEye can operate with ease in 5 threaded as intended in optimum capacity.

2.1.2. Software Requirements:

GenEye can only work in Android operating systems. Users with minimum Android Marshmallow (Android 6.0 - 6.01). We are using a variety of APIs in our application. Our application uses these APIs for communication with smartphones' systems, processing the images in the Machine Learning model and returning the output of the program.

3. Preparation For Installing the Application

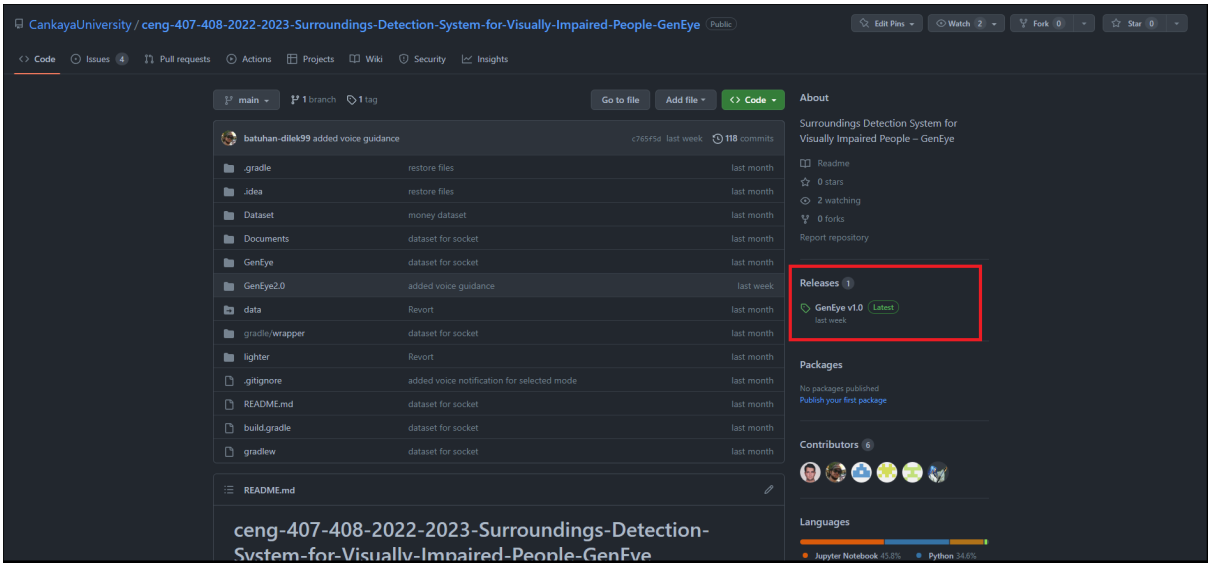
- PC loaded with Windows, Linux or Mac operating system
- USB cables for Android smartphone
- Android Studio
- Android device to operate our software application

3.1. Android Studio

Android Studio is the official development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ software and designed specifically for Android development. We use Android studio for GenEye's development and we are gonna need it to install it to User's smartphone. Users can download Android Studio via its internet page. If they can follow instructions on the site, Users can download the IDE with ease. [2]

4. Starting the Project

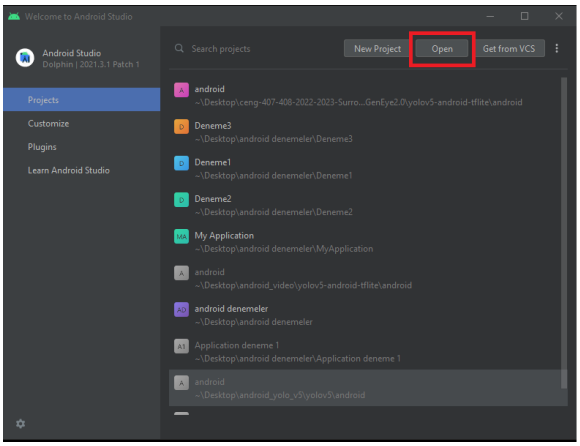
Once Users have Android Studio in their systems, they can download the GenEye at the github page.

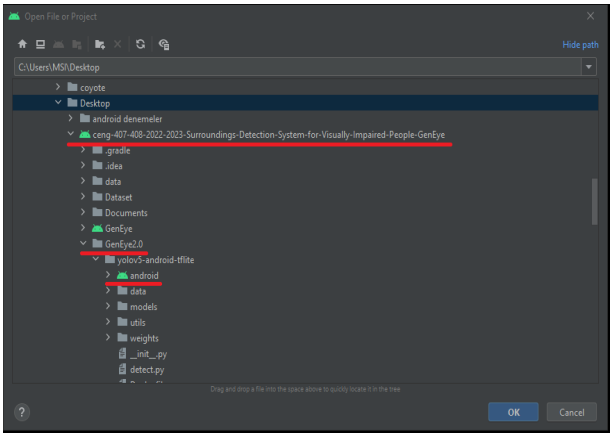


GenEye's github page.

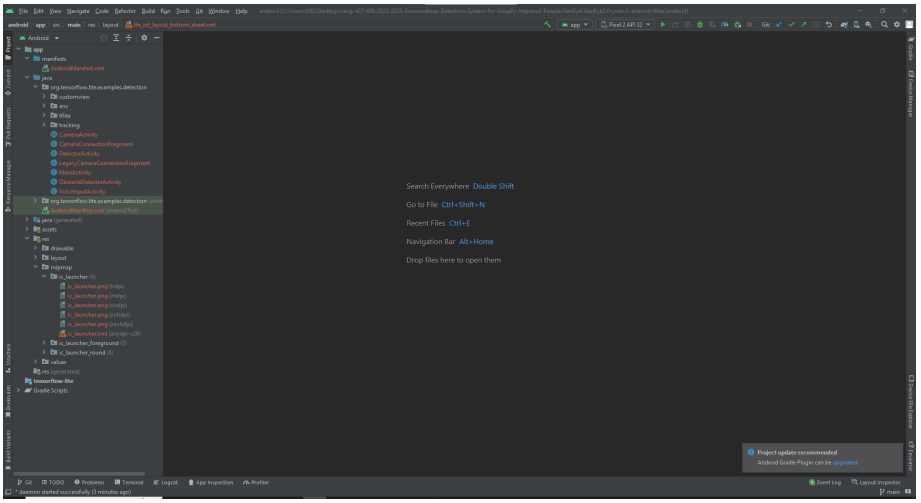
First Release page.

This zip file is the source code of GenEye. Users can check on the source code and base documents of GenEye. Users should open Android Studio and choose the “Open” button. then, they should choose the project file and open sub-files of GenEye. In there they will choose the “Android” file under the “GenEye 2.0”.



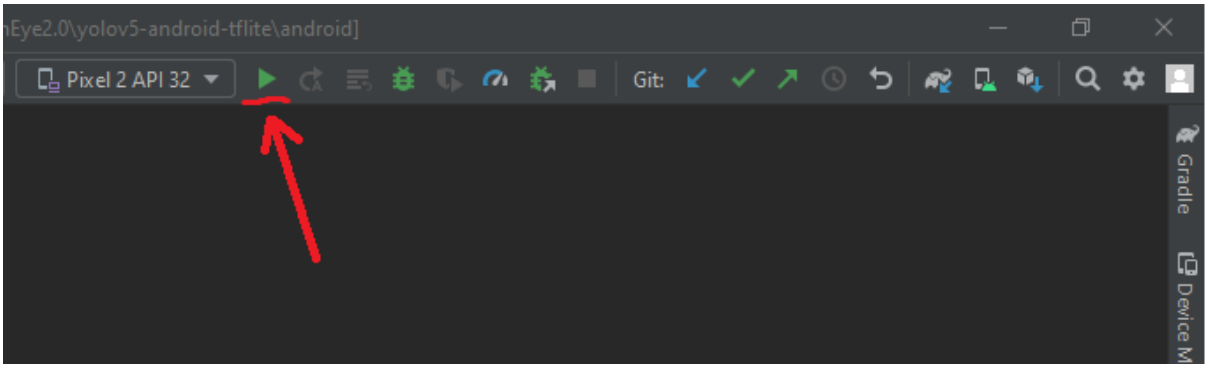


If Users follow these instructions, they should see a page like this.



4.1. Loading the Application to Smartphone

For the next steps, Users should connect their smartphones to their computers and open their smartphones “developer mode”. Developer mode will let them use and download GenEye. After preparing their smartphones, Users should run the project to download GenEye. They can find the “Run” button on the upper right part of the screen.



Users can observe the building process with the building screen on the bottom left part of the page. After they download the project, Users can see the running application on their smartphones.

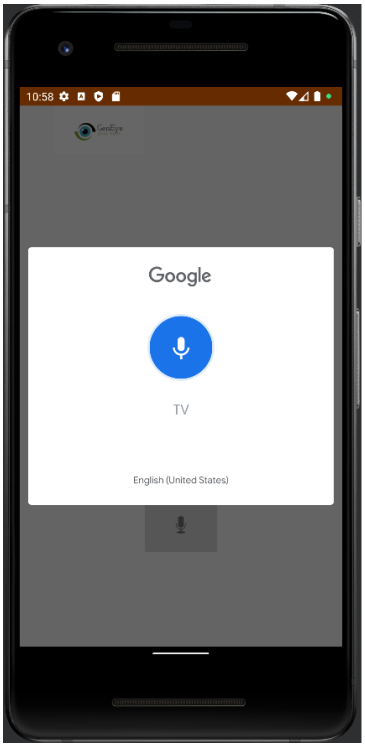
5. Using GenEye

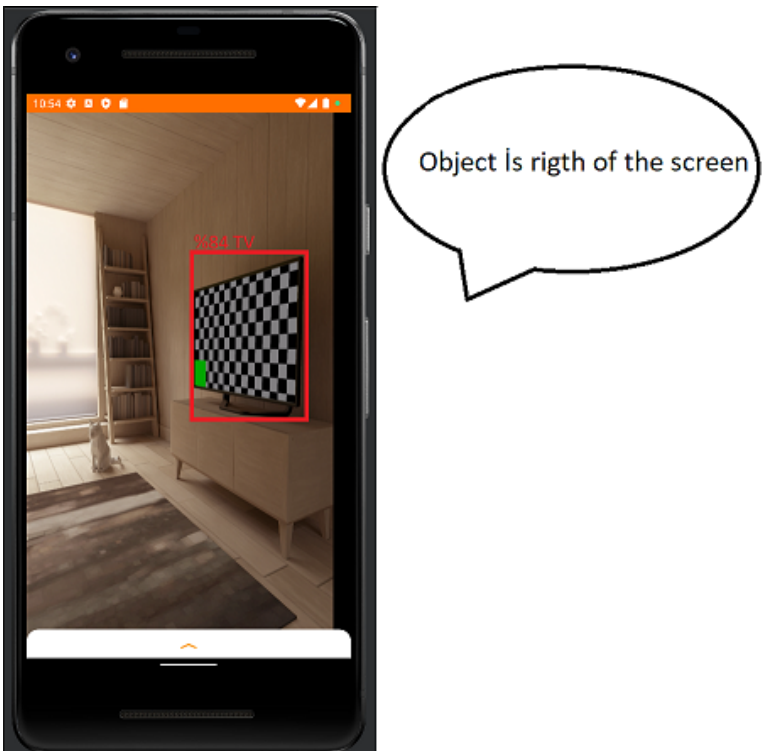
Once GenEye is downloaded, Users can easily use it on their smartphones. They can also find it via their application menu.

GenEye's simple UI design lets Users to choose their intended mode easily. After User choose "Object Detection" mode they will hear a noise notification

5.1. Object Detection

When "Object Detection" mode is started, Users should tap the microphone button and say the intended object. GenEye will start the camera of the phone and search via real time video feed. When it finds the intended object, GenEye will notify the Users its position on the video feed





5.2. Obstacle Detection

In “Obstacle Detection” mode, User just need to continue their course of mıve and hold their phone in front of them. GenEye will inform them about where they should move to evade the obstacle.

6. References

- https://github.com/CankayaUniversity/ceng-407-408-2022-2023-Surroundings-Detection-System-for-Visually-Impaired-People-GenEye/blob/main/Documents/407-Project-Report1.pdf
- https://en.wikipedia.org/wiki/Android_Studio
- https://en.wikipedia.org/wiki/Random-access_memory
- https://en.wikipedia.org/wiki/Central_processing_unit
- https://en.wikipedia.org/wiki/API
- https://en.wikipedia.org/wiki/Integrated_development_environment
- https://developer.android.com/studio/debug/dev-options#:~:text=The%20Settings%20app%20on%20Android,and%20debug%20your%20app%20performance.