MINI PROJECT
(2020-21)

Augmented Reality Cut & Paste

MID-TERM REPORT

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Acknowledgement

When I am writing this project, my mood was good because of the topic title I choose, make me interested with what I am writing in this project and research I conducting up to the time I finish this project, in the point that now a days the world demand mostly on e-commerce activities in conducting business and online transaction growth everyday as now we are in science and technology century.

I would like to express my special thanks of gratitude to my instructor Md.Farman sir for the support and help he gave me towards the completion of this project, most of time their videos correct me where I am wrong, guide me where necessary, it's so helpful for me and good to working with him.

I wish to thank my fellow classmates for the advice we give each other daily we meet in the class and outside the class on which area is important in project, how to write it and also helping each other towards the completion of this project is so helpful because sometime I forget necessary research on this project, I am so thankful for that also.

I wish to thank my family and outside friends for the encouragement and motivation towards the completion of this project, is so helpful, first my family for financial matter, and outside friends for supporting each other day until now I am writing my final year project.

Lastly, I am really thankful for all I mention above and others who helped me a lot in finishing this project within the limited time.

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Abstract

It is quite complex to grasp visual and paste it into another System. And for that Augmented Reality can be a perfect tool to quickly grasp visual from the real world and paste it into digital documents. The other problem can be fiddling around emailing images to yourself or cutting out object to photoshop. It would certainly make a nice addiction to the only other AR application that seems to have much practical use: Seeing what clothes, furniture, and makeup look like pasted onto your face

and / or house. And it neatly reverses the usual AR paradigm. Instead of projecting digital images into the physical world, it brings the physical into the digital aspect of our life and it can affect our whole future. The main objective of this project is to take a snap of real-world object, have it cut out of its background, and pasted into Photoshop. Through this project user will able to get resolve with the problem of transferring the images or any object from one device to another. Through this

technology they can just take snap of their respective object and paste into the other system or we can say taking griping visual from the real world and paste into another digital document.

Introduction

Introduction of the Project

Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory. Imagine being able to snap a picture of something and bringing it into another canvas. In a sense, capture an image of one world and bring it into another digital world. This is like the traditional cut and paste we are all used to on our computer but brought into the augmented world. Grab a picture something you see and bring it into another digital platform within seconds. In the case of a paramedic, this could be snapping a picture of a scene (face recognition, drug labels, potential injuries and instantly creating a report of the situation in a digital platform. That report could be sent instantly to the hospital for instance assessment and diagnostics. This is just an example of the possibility of the AR Cut Paste application. The code is available on GitHub. The prototype code allows cutting elements from your surroundings and pasting them in an image editing software. Although only Photoshop is being handled currently, it may handle different outputs in the future. Augmented reality fuels some of the most intriguing apps available today. Aside from its obvious application to innumerable games, it offers many practical uses for personal, educational and commercial needs. 'Copy and Paste' is a phrase that most of us are familiar with as we all have done it at some point in our lives. You can go for the Ctrl+C and Ctrl+V keys while others right click and get the job done. However, one of the Google executives has showed what we can call as the future of 'Copy and Paste' technique. This doesn't require a keyboard or a mouse, but a smartphone with augmented reality (AR) support.

The pace of advances in augmented reality will only increase in coming months and years.

The future of copy-paste could be with the use of Augmented Reality (AR). This shows how smartphone cameras coupled with AR can capture objects and paste objects from surroundings directly to Photoshop or other tools. It has been mentioned that AR based solution for drag and drop uses a tool called 'OpenCV' that detects objects and removes the background. It does this by recognizing the edges of the object and clearing off the surroundings. This seems to work on Android phones for now. This is a prototype that uses the phone camera to capture, extract and paste objects from your surroundings directly to the software. Thanks to OpenCV an image-tracking technology, the app is able to detect where the phone is pointing at the screen, making it a seamless experience. It's part of a series of experiments that how machine learning and AI can help create more digital interactions that are more natural. "Forget it: your homework / mood board / dumb meme involving your pet’s stupid face is already done.

It would certainly make a nice addition to the only other AR application that seems to have much practical use: seeing what clothes, furniture, and makeup look like pasted onto your face and / or house. And it neatly reverses the usual AR paradigm. Instead of projecting digital images into the physical world, it brings the physical into the digital. The concept of the app is cool. You can take a picture of any object and the app with automatically remove the background and convert it into an image. You can then paste the image on your desktop and use it in your applications. In addition to objects and people, you can also extract text from a book or page that you have. And this works on more than simple objects or people — users may also clip text from a book or physical page in one's surrounding environment

Problem Statement

It is quite complex to grasp visual and paste it into another System. And for that Augmented

Reality can be a perfect tool to quickly grasp visual from the real world and paste it into digital documents. The other problem can be fiddling around emailing images to yourself or cutting out object to photoshop. It would certainly make a nice addiction to the only other AR application that seems to have much practical use: Seeing what clothes, furniture, and makeup look like pasted onto your face and / or house. And it neatly reverses the usual AR paradigm. Instead of projecting digital images into the physical world, it brings the physical into the digital aspect of our life and it can affect our whole future.

Objective of the Project

The main objective of this project is to take a snap of real-world object, have it cut out of its background, and pasted into Photoshop. Through this project user will able to get resolve with the problem of transferring the images or any object from one device to another. Through this technology they can just take snap of their respective object and paste into the other system or we can say taking griping visual from the real world and paste into another digital document.

What an Augmented Reality Cut and Paste Works

The smartphone camera process that singles out an object, isolates it from the background and, when pointed to desktop camera, inserts the image into a document. This is all done in under few seconds. Thanks to modern developments in machine learning, it is now possible to precisely detect people and objects around you, remove the background automatically, and transfer the result to virtually any software on your computer. We offers AR Cut and Paste only as a prototype and has uploaded and a local server must be established to link the smartphone to Photoshop on the desktop computer. This demonstrates, AR can be the perfect tool to quickly grab visuals from the real world and paste them into digital documents. Just point your phone at

what you want to copy, and drag it over to your desktop. No fiddling around emailing images to yourself or cutting out objects in the software.

Applications of the Project

Froggipedia projects a lifelike 3-D frog on any surface you point your camera at, offering a highly detailed—and pain-free—step-by-step dissection, conducted with your fingertip motions. HairStyle Pro captures your image and presents you with hundreds of hairstyles and differing colours precisely positioned over your face (including beards and sideburns for men). YouCam Makeup-Magic does the same for women seeking the perfect shade of cosmetics. For the craftsmen or craftswoman in the home, AR Measure Kit lets you point your camera at any two targets and returns a precise measurement. If you prefer to purchase ready-made furniture, IKEA allows you to project images of its inventory of furniture and other home accessories right into your living room or kitchen.

Functional Requirements

Object detection: -

User must be able to take or capture image and program should be able to clear background image part and able to detect object image with image map coordinates which can further used pasting to editing software

Able to Share Image: -

User must be able to share his captured image with Image editing app (which is design by us) After image done with Object detection and background removal process

Image Position Draggable: -

User must be Able to move or drag image after image is shared with Pc/Desktop According to his/her comfort. Image will only allow drag or move option in only desktop/Pc software not in Mobile app;

Connection establishment: -

User must be able to Connect mobile app with Desktop with Qr code which will generated in mobile app and verified through Desktop Software

Non-Functional Requirements

Performance: -

Application must be lightweight and can detect objects precisely.

System Specification

Hardware requirements

In hardware requirement we require all those components which will provide us the platform for the development of the project. The minimum hardware required for the development of this project is as follows-

- Ram- minimum 128 MB
- Hard disk—minimum 5 GB
- Processor- Pentium 3

These all are the minimum hardware requirement required for our project. We want to make our project to be used in any. Type of computer therefore we have taken minimum configuration to a large extent.128 MB ram is used so that we can execute our project in a least possible RAM.5 GB hard disk is used because project takes less space to be executed or stored. Therefore, minimum hard disk is used. Other's enhancements are according to the needs.

Software requirements

Software's can be defined as programs which run on our computer. It acts as petrol in the vehicle. It provides the relationship between the human and a computer. It is very important to run software to function the computer. Various software's are needed in this project for its development.

- Operating system—Windows 7
- Others—Python IDE

We will be using PyCharm as our front hand because it is easier to use and provides features to the users which are used for the development of the project.

System Analysis

SYSTEM IMPLEMENTATION AND MAINTENANCE

The aim of system implementation is to making the new system available to a prepared set of users (the deployment) and positioning on-going support and maintenance of the system within the performing company (the transition), at a first level of detail, deploying the system involves of executing all steps important to educate the users on the use of the new system, placing the newly developed system into production, confirming that all data required at the start of operations is available and accurate and valid.

SYSTEM MAINTENANCE

System maintenance is a catchall term used to describe various forms of computer or server maintenance required to keep a computer system running properly. It can describe network maintenance which could mean that servers are being physically repaired, replaced, or moved. Network maintenance can also mean that the software for a server is being updated, changed, or repaired. This sort of maintenance is typically performed on a regular or semi-regular schedule, often during non-peak usage hours, and keeps servers running smoothly. System maintenance for system of ordering online in very important because it will keep the system function as it supposed day by day, and to avoid errors which might occur in multifunction use of the system, so maintenance will make system work properly for long time.

TYPES OF SYSTEM MAINTENANCE

- Adaptive Maintenance

Adaptive maintenance, is the type of system maintenance where improvements to the system are important for adaption, program functions are changed to enable the information system to satisfy the information needed by the users, this type of maintenance is necessary because company changes which involves change in the company procedures, change in information needs of managers and change in company objectives, goals and policies.

- Corrective Maintenance

Corrective maintenance, is the type of system maintenance where ongoing improvements are made (correcting errors) to ensure the system will still meets the original user requirements, if the system shows errors in this situation developers will have to work on the problem immediately.

- Perfective Maintenance

Perfective maintenance, is the type of system maintenance were improving of the system takes place therefore it becomes more refined and more efficient at processing stage, also adding new programs or modifying the existing programs to enhance the performance of the system.

- Predictive Maintenance

Predictive maintenance, is the type of system maintenance where strategic changes are made involves anticipation of likely changes to technology or working practices in future, developers not only built the system that will be used by the users but also create monitoring tool, it possible for developers to get third party to monitor the system performance of each user.

SYSTEM DEVELOPMENT

Systems development is, fundamentally, a problem-solving activity. A problem in an application domain is transformed by the systems development process into a solution in the computer implementation domain.

- Front-end Phase:

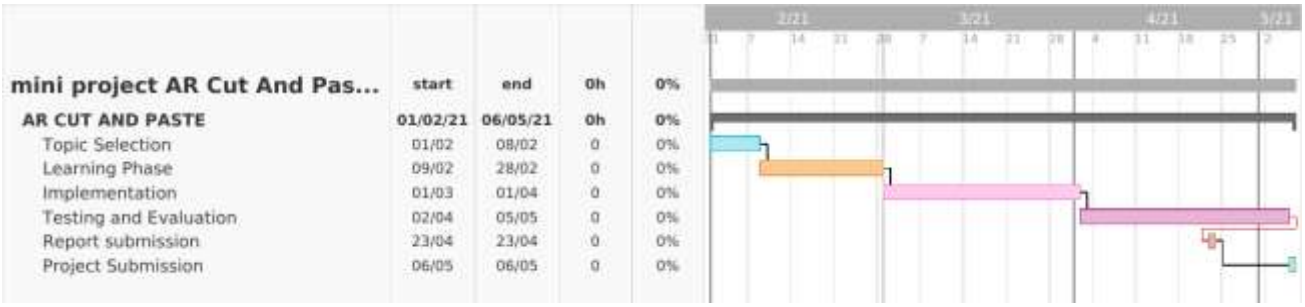
Front-end and back-end are terms used to characterize program interfaces and services relative to the initial user of these interfaces and services. (The "user" may be a human being or a program).A "front-end" application is one that application users interact with directly. A "back-end “application or program serves indirectly in support of the front-end services, usually by being closer to the required resource or having the capability to communicate with the required resource. The back-end application may interact directly with the front-end or, perhaps more typically, is a program called from an intermediate program that mediates front-end and back-end activities.

Front-end for the proposed system:

Allows user to drag the objects present int the physical world into the system.

Implementation and System Testing

Gantt Chart



mini project AR Cut And Pas...	start	end	0h	0%
AR CUT AND PASTE	01/02/21	06/05/21	0h	0%
Topic Selection	01/02	08/02	0	0%
Learning Phase	09/02	28/02	0	0%
Implementation	01/03	01/04	0	0%
Testing and Evaluation	02/04	05/05	0	0%
Report submission	23/04	23/04	0	0%
Project Submission	06/05	06/05	0	0%

OBJECTIVE OF TESTING

The important objectives of system testing are to make system defect less/perfect so that itworks properly in any condition means it satisfy all conditions and work for all input. System testing simulates real life scenario that occur in a simulated real-life testenvironment, and tests all functions of the system that are required real life System testing is deemed complete when actual results and expected results are either inline or differences are explainable or acceptable, based on client input.

UNIT TESTING:

Unit testing is a software development process in which the smallest testable parts of an application, called units, are individually and independently scrutinized for proper operation. Unit testing is often automated but it can also be done manually. This testing mode is a component of Extreme Programming (XP), a pragmatic method of software development that takes a meticulous approach to building a product by means of continual testing and revision.

INTEGRATION TESTING:

Integration testing is a logical extension of unit testing. In its simplest form, two units that have already been tested are combined into a component and the interface between them is tested. A component, in this sense, refers to an integrated aggregate of more than one unit. In a realistic scenario, many units are combined into components, which are in turn aggregated into even larger parts of the program. The idea is to test combinations of pieces and eventually expand the process to test your modules with those of other groups. Eventually all the modules making up a process are tested together. Beyond that, if the program is composed of more than one process, they should be tested in pairs rather than all at once.

ACCEPTANCE TESTING:

User Acceptance Testing is often the final step before rolling out the application. Usually, the end-users who will be using the applications test the application before 'accepting' the application. This type of testing gives the end users the confidence that the application being delivered to them meets their requirements. This testing also helps nail bugs related to usability of the application.

1. Some Blogs
2. GitHub

Technical Tools

1) Computer Vision: Technology which will detect the object through camera.

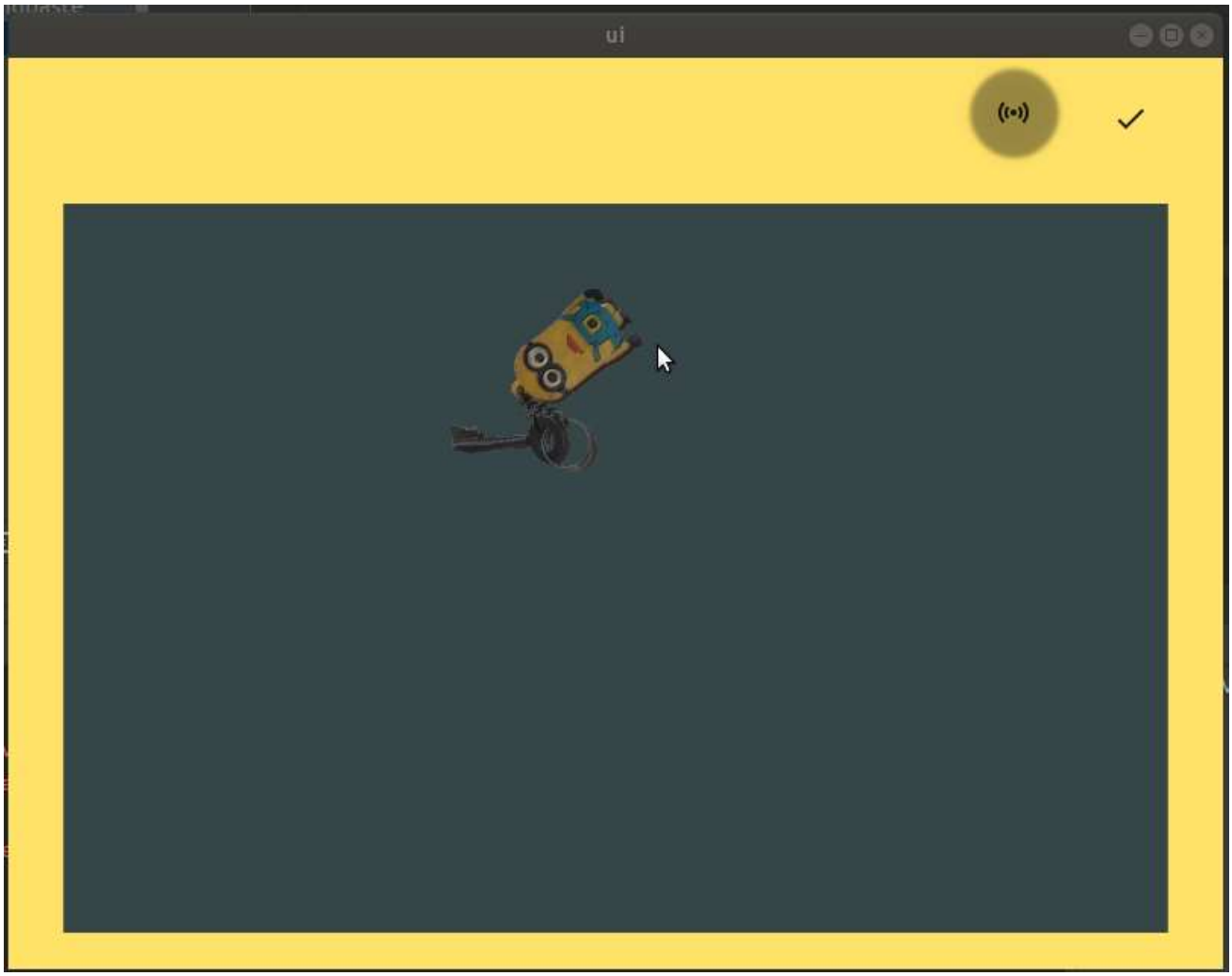
2) Raw Sockets: A **raw socket** is used to receive **raw** packets. This means packets received at the Ethernet layer will directly pass to the **raw socket**. Stating it precisely, a **raw socket** bypasses the normal TCP/IP processing and sends the packets to the specific user application

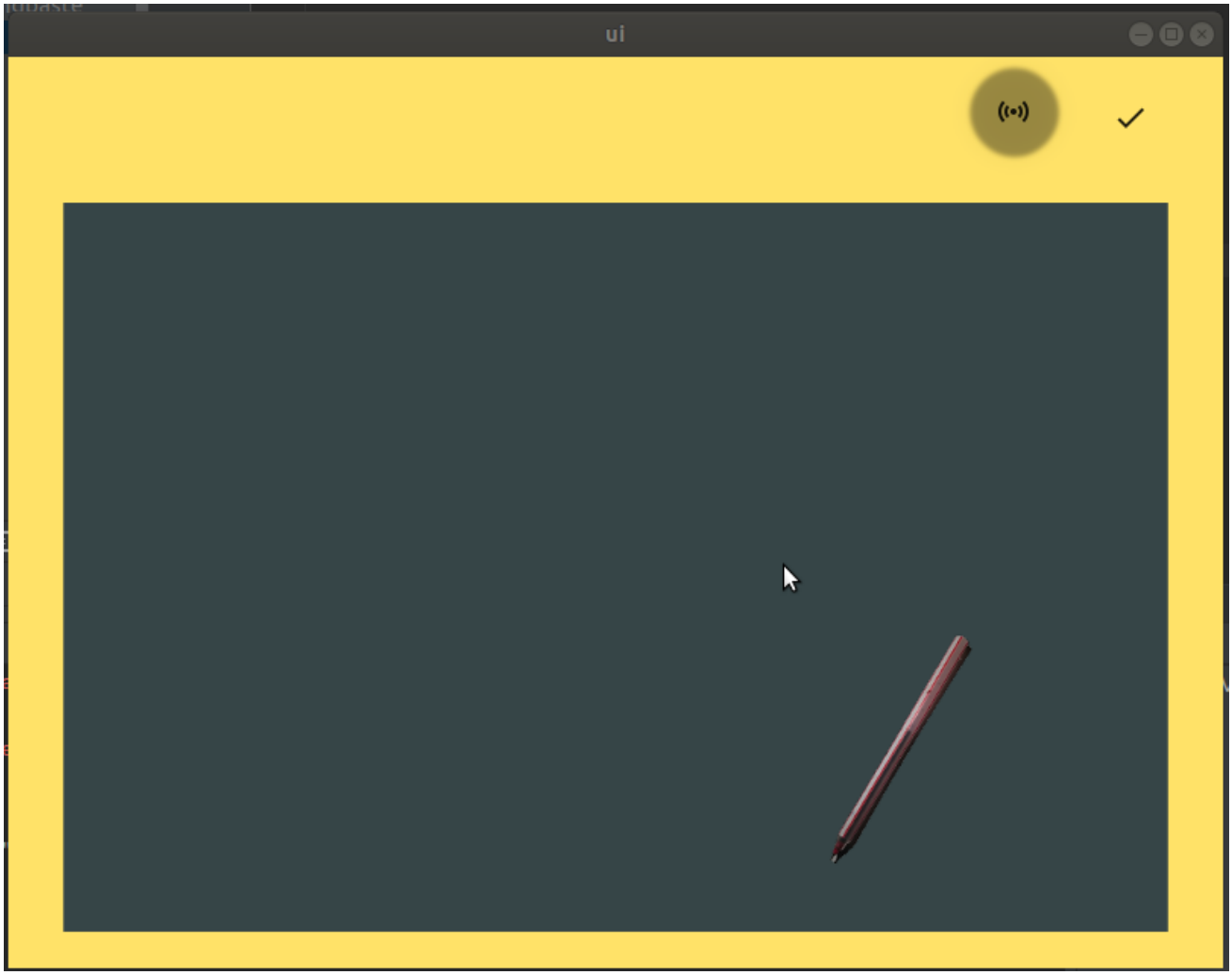
3) PyCharm: PyCharm is an integrated development environment used in computer programming, specifically for the Python language. It is developed by the Czech company JetBrains

4) GitHub: GitHub, Inc. is a provider of Internet hosting for software development and version control using Git. It offers the distributed version control and source code management functionality of Git, plus its own features.

5) Kivy: Kivy is a free and open-source Python framework for developing mobile apps and other multitouch application software with a Natural User Interface (NUI). It is distributed under the terms of the MIT License, and can run on Android, iOS, Linux macOS, and Windows

Screenshots


ui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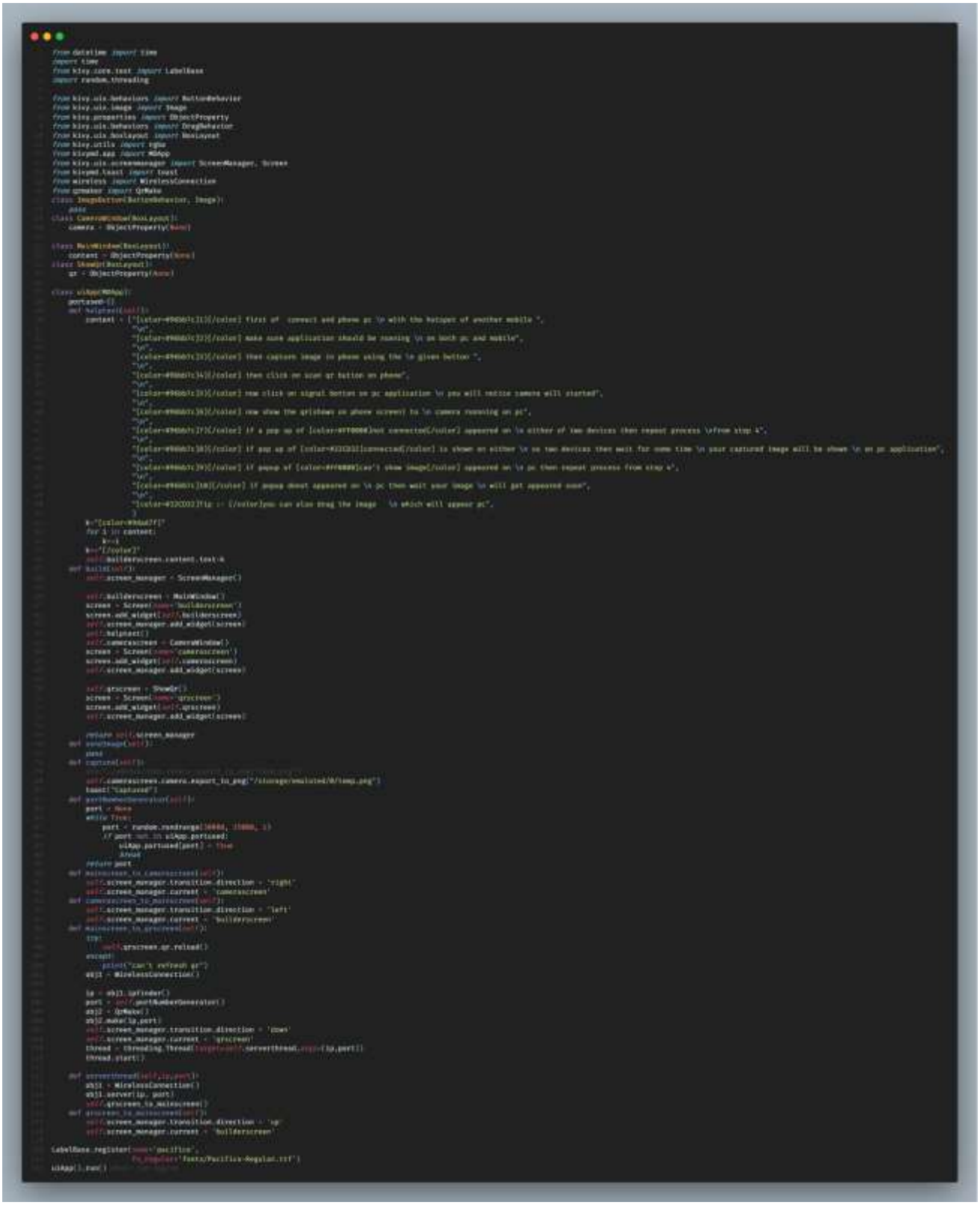

```python
import qrcode
#Qr generator for connection
class QrMake():

    def __init__(self):
        pass
    def make(self,ip,port):
        msg = str(ip) + "@@@" + str(port)
        img = qrcode.make(msg)
        img.save('qr.png')
```


<ShowQr>:
qr:qr
BoxLayout:
canvas.before:
Color:
rgba : C("#ffe268")
Rectangle:
pos: self.pos
size:self.size
orientation:"vertical"
AnchorLayout:
padding:[50,50,50,50]
size_hint:(0.3,1)
anchor_x :'left'
anchor_y :'top'
ImageButton:
size_hint:(None,None)
size:(50,50)
source:"images/app/back.png"
on_release:app.qrscreen_to_mainscreen()
AnchorLayout:
anchor_x :'center'
anchor_y :'center'

```
BoxLayout:
        orientation:"vertical"
        BoxLayout:
            orientation:"vertical"
            size_hint:(1,0.2)

            canvas.before:
                Color:

                    rgba : C("#ffe268")
                Rectangle:

                    pos: self.pos
                    size:self.size
            BoxLayout:
            BoxLayout:
                spacing:25
                MDFloatingActionButton:
                    icon: "qrcode-scan"
                    md_bg_color: C("#5d8ebe4")
                    on_release:app.mainscreen_to_qrscreen()
                MDFloatingActionButton:
                    icon: "camera"
                    on_release: app.mainscreen_to_camerascreen()
                    md_bg_color: C("#5d8ebe4")
                BoxLayout:

                MDIconButton:
                    icon: "check"

            BoxLayout:
        BoxLayout:
            orientation:"vertical"
            canvas.before:
                Color:

                    rgba : C("#364547")
                Rectangle:

                    pos: self.pos
                    size:self.size

            Label:
                size_hint:(1,0.2)

                markup:True
                text:"[color=#96bb7c][size=100][font=pacifico]CutandPaste[/font][/size][/color]"

            Label:
                markup:True
                size_hint:(1,0.2)
                text:"[color=#fad586][size=50]steps to use:[/size][/color]"
            Label:
                id:content
                markup:True
                text:""
        BoxLayout:
```

```
[app]

# (str) Title of your application
title = CutAndPaste

# (str) Package name
package.name = cutpaste

# (str) Package domain (needed for android/ios packaging)
package.domain = org.test

# (str) Source code where the main.py live
source.dir = .

# (list) Source files to include (let empty to include all the files)
source.include_exts = py,png,jpg,kv,atlas,ttf


version = 0.1


requirements = python3,kivy==1.11.0,kivymd,qrcode,numpy,android,xcamera


orientation = portrait


osx.python_version = 3

# Kivy version to use
osx.kivy_version = 1.9.1

#
# Android specific
#


# (bool) Indicate if the application should be fullscreen or not
fullscreen = 0



# (list) Permissions
android.permissions = INTERNET,READ_EXTERNAL_STORAGE,WRITE_EXTERNAL_STORAGE,CAMERA



# armeabi-v7a, x86, x86_64
android.arch = armeabi-v7a

# (int) overrides automatic versionCode computation (used in build.gradle)
# this is not the same as app version and should only be edited if you know what you're doing
# android.numeric_version = 1


ios.kivy_ios_url = https://github.com/kivy/kivy-ios
ios.kivy_ios_branch = master

# Another platform dependency: ios-deploy
# Uncomment to use a custom checkout
#ios.ios_deploy_dir = ../ios_deploy
# Or specify URL and branch
ios.ios_deploy_url = https://github.com/phonegap/ios-deploy
ios.ios_deploy_branch = 1.7.0

# (str) Name of the certificate to use for signing the debug version
# Get a list of available identities: buildozer ios list_identities
#ios.codesign.debug = "iPhone Developer: <lastname> <firstname> (<hexstring>)"

# (str) Name of the certificate to use for signing the release version
#ios.codesign.release = %(ios.codesign.debug)


[buildozer]

# (int) Log level (0 = error only, 1 = info, 2 = debug (with command output))
log_level = 2

# (int) Display warning if buildozer is run as root (0 = False, 1 = True)
warn_on_root = 1
```

```python
import socket
import time

from kivymd.toast import toast
class WirelessConnection():

    def __init__(self):
        pass
    def ipfinder(self):

        s = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
        s.connect(("8.8.8.8", 80))
        ip = s.getsockname()[0]
        s.close()
        return ip


    def server(self,ip,port):
        s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
        print(ip)
        # self.sendscreen.ip.text, int(self.sendscreen.port.text)
        try:
            s.bind((ip, int(port)))

        except:
            toast('something is incorrect with your data')
            s.close()

            return 0
        s.listen(4)


        toast('working')

        print('oktry')
        self.clientsocket, address = s.accept()
        while len(address)==0:
            self.clientsocket, address = s.accept()
            print('ok')

        toast(f"Connection from {address} has been established.")

        time.sleep(0.2)
        self.filebreaker()

    def filebreaker(self):
        with open('/storage/emulated/0/temp.png', 'rb') as f:

            l = f.read(99216)

            while len(l)!=0:
                self.clientsocket.send(l)
                l = f.read(99216)
```