Scrap PRD

App Name: Scrap

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[FigmaLink]

Elevator Pitch Executive Summary

Let's face it. We all have times when we need to take a picture of a document and quickly send it over to a friend, co-worker, or institution. However, you also do not want to share confidential personal information, such as credit card, social security, or passport numbers. So, what will you do? Normally, you will use photo editing software on your phone or laptop. It can be frustrating, however, to manually paint over the target text or cover it up using the traditional black box. And by the time you edited the picture you have lost time, made human errors, and caused a lot of unnecessary painstaking work. And to top it all off, some scanners do not recognize black boxes so the information that you intended to redact will still be visible. And some people can just copy and paste the redacted information and retain the confidential texts.

Who needs it, you might ask?

Take, for example, Camilla. She is a recent graduate and a part-time nurse who was told to share a patient's medical information with other medical institutions for research. However, to uphold the HIPAA agreement, she needs to redact or hide the patient's details before sharing the medical documents with a third party. Keeping in mind that her shift ends in a few minutes and that she has to hurry to another part-time job after, Camilla is frustrated and is having difficulty redacting personal information quickly without violating HIPAA. After an hour, Camilla was able to complete her task but was unnecessarily late for her other part-time job.

How do you solve this problem? Well, Scrap is the answer. We strive to develop software that is efficient, reliable, and can remove information with just a single tap! Our iOS application will allow the user to identify and locate the sensitive information on the document, capture them, and redact it accordingly. Hence, our app is intelligent, saves time, and eliminates human error.

Unlike Adobe Acrobat or other photo editing platforms that manually hide or remove information, We ensure accuracy using AI recognition to capture possible patterns, a batch mode to effectively reduce time, and enhance the user experience by providing a clean and easy-to-use interface for all ages.

Technical Summary

The technologies that will help us reach our project goals are Vision Framework, which we will use to identify text and bounding boxes, and implement regular expressions, which will help us identify patterns and present future suggestions for the user. Other important technologies that will go into our project are data processing to analyze and clean the data by removing unnecessary spaces or special characters. This will be included when we develop a redaction algorithm that simply removes sensitive information with one tap on the screen.

The technical novelty of this project will be its simple user interface that allows the user to redact confidential information quickly and efficiently. Thus, it will remove the time-consuming elements of the redaction tools used by most photo editing platforms. For example, Adobe Acrobat uses a redaction tool that does a manual redaction by following a series of actions just to remove confidential content. Secondly, Scrap will save data and use it to create future suggestions for the user and allow them to create their own rules.

The key objectives of this project are to develop an iOS application that redacts sensitive information, creates a batch mode to remove data across documents, maintains past suggestions, and gives users the ability to create their own rules. Some questions that need to be answered are whether the application will be user-friendly with a simple interface without overwhelming the user with redaction suggestions, and how we will account for names or non-English words in email addresses. Another question is how we will clean data before analyzing the data and processing it, and how we will determine the scalability of this project, performance, and cost of the project.

We will use the Xcode application and code using Swift language for the entire duration of this project. For the camera feature, we will be using the AVFoundation. Another tool is the Vision Framework which identifies the text on the captured image. Other tools that will be used to build the project are CoreGraphics for 2D rendering and displaying images, customized UIbutton from the UIkit interface which allows for user interactions, and regular expression to determine patterns and present them for future user suggestions.

The steps that will be taken to complete the project are UIkit and Swift Ui interface integration, creating the camera feature, using a text recognition tool from the Vision

Framework to identify text and bounding boxes, and implementing the regular expression and redaction algorithm. In the fall semester, we will use sample data and integrate and complete the tasks mentioned earlier. For the spring semester, we are aiming to use real-time data to analyze and parse data using API and a regular expression. We will also develop pattern recognition and user suggestions. The development cost for this project is the possibility of lost data or unrecognized text and the risk we have is unnecessary spaces and characters that prompt us to implement data cleaning and SHA Encryption to ensure the integrity and authenticity of data.

Overview

Scrap is an iOS redaction platform that makes the document digitization process efficient

and effective for the common consumer.

Objectives

1. A quick and easy user interface to redact sensitive information

2. Batch mode to remove data across documents

3. Maintain past suggestions

4. Support user's ability to create their own rules

Success Metrics

Our success metrics is to have a fully functioning iOS application that will allow any user to redact personal information with a simple and clean interface.

SCENARIOS

Part-time Nurse and Sharing Patient' Personal Information

Camilla, She is a recent graduate and a part-time nurse who was told to share a patient's medical information with other medical institutions for research. However, to uphold the HIPAA agreement, she needs to redact or hide the patient's details before sharing the medical documents with a third party. Keeping in mind that her shift ends in a few minutes and that she has to hurry to another part-time job after, Camilla is frustrated and is having difficulty redacting personal information quickly without violating HIPAA. After an hour, Camilla was able to complete her task but was unnecessarily late for her other part-time job.

CEO and Sharing Bank Statement

Mark is CEO at Prospect College and for his financial bookkeeping he sends out pictures of his bank statements to the accountant. Unknowingly, he had been using his business checking account for his personal expenses that he does not feel comfortable sharing. He has to send the statement during the work hours but it will take him so much time to find and edit out documents one by one to redact those personal transactions.

High Schooler and Sharing Passport Information

Maddy, is a highschooler and is trying to send her sister her passport information to book travel tickets so she can visit her abroad, but she only wants to send the necessary information as she has heard about the importance of information security in school. She needs to redact or hide certain information without wasting a lot of time. She has tried different photo editing tools but they are tedious and does not have a lot of professional editing knowledge. At the end she ends up scribbling information in the photo in the Apple text editor which takes her 20 mins for something that could have taken her seconds. Now, she has wasted 30 mins of her screen time from the 4 hours she gets per day.

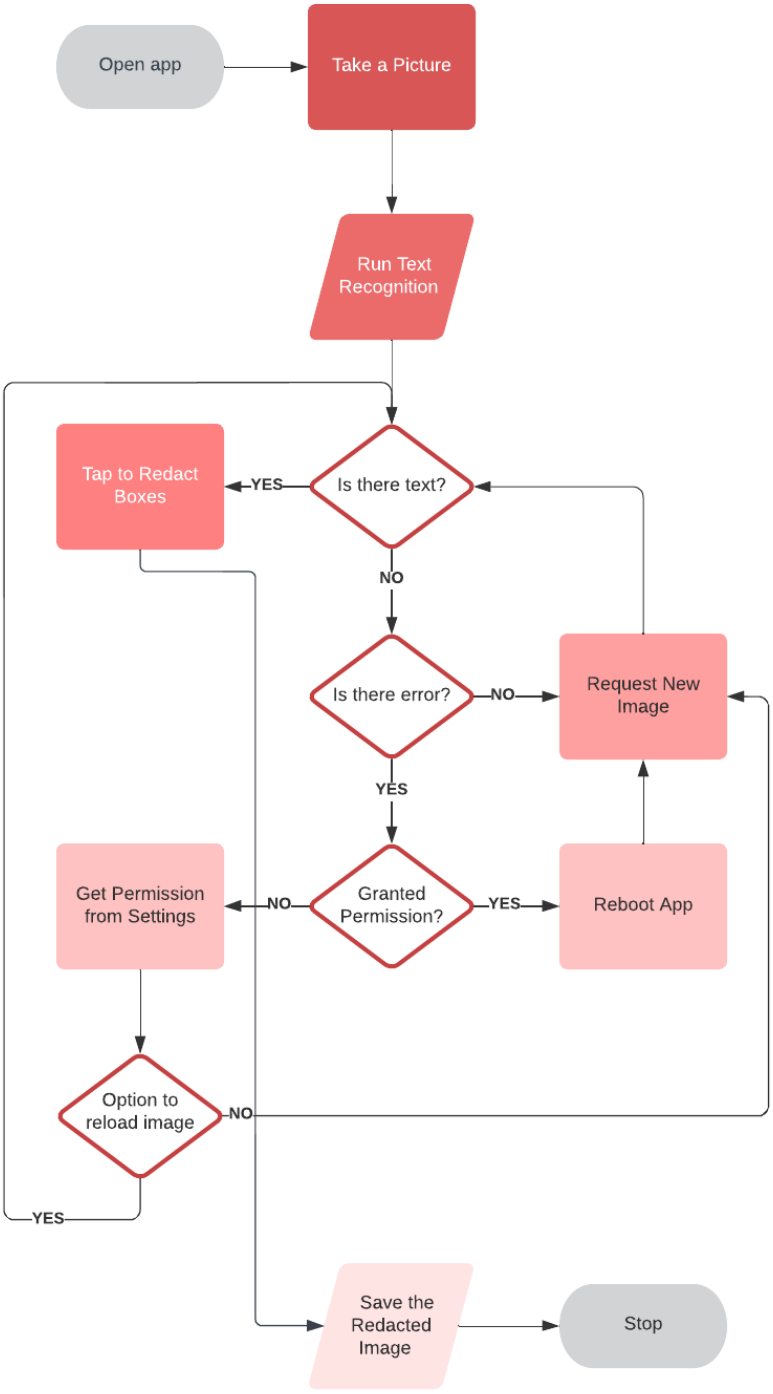
College Student and Sharing Lease Agreement

Nick is a 20-year-old college student. He has recently decided to move out of his dorm and live on his own. He is going to be the first homeowner in his family and doesn't understand the legal process. He reaches out to a friend to ask for help. But Nick doesn't want to share all the sensitive information in the documentation. The only solution he could understand on the internet is to go to PowerPoint and individually draw rectangles to hide the sensitive information. Unfortunately, he is not very well versed in technology and it is taking him a very long time to hide all basic information, and he doesn't have a laptop on hand. Some of the sensitive information belongs in the following categories:

- Home address
- Finances
- Emails
- Credit Reports
- Social Security Number
- Income tax number

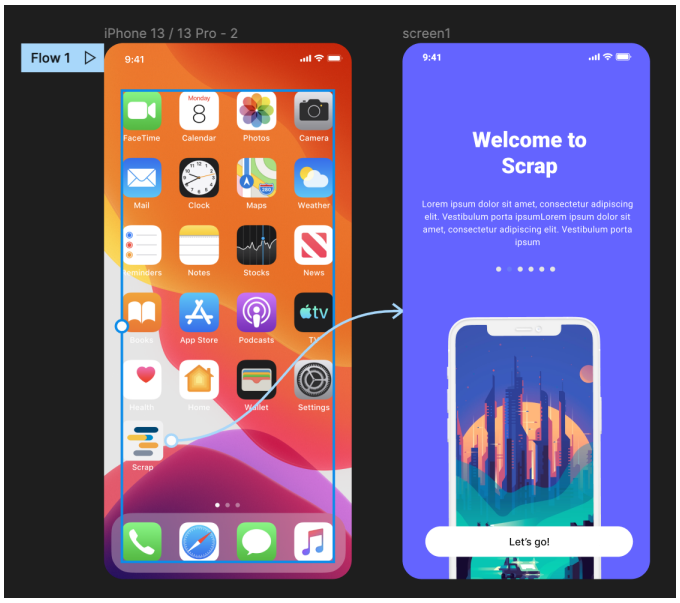
Or simply any text that might be part of the lease.

Flow Diagram:

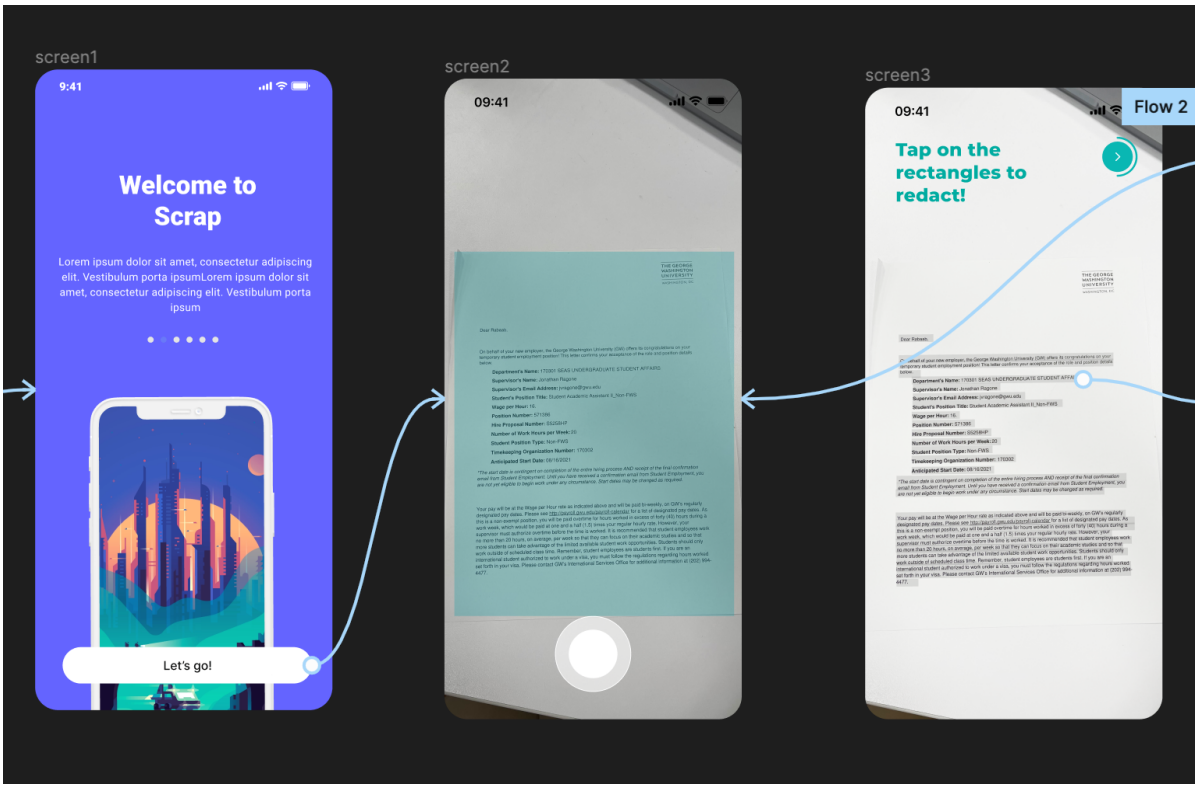


Mockup/WireFrame:

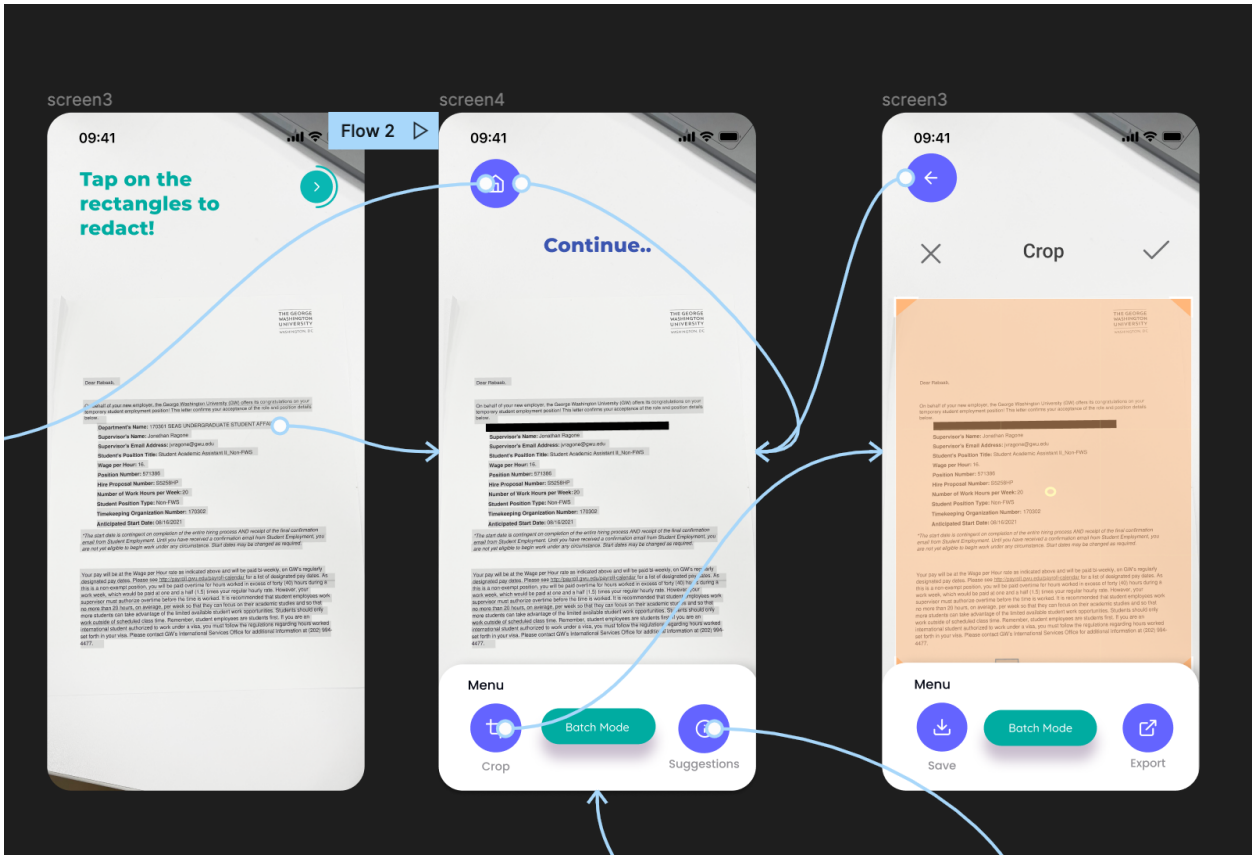
Opening Screen - IOS Application



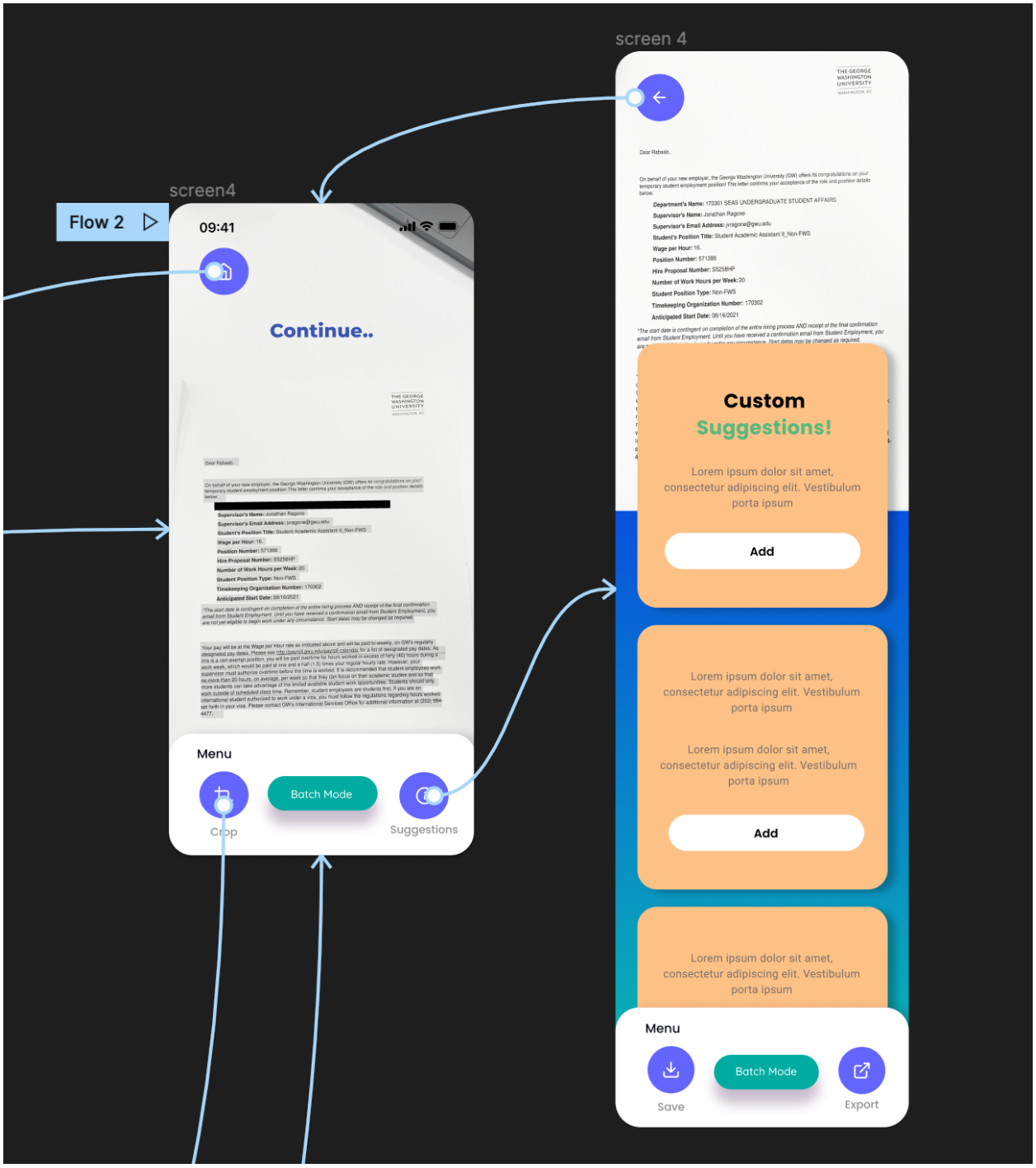
Welcome Page to Camera Workflow



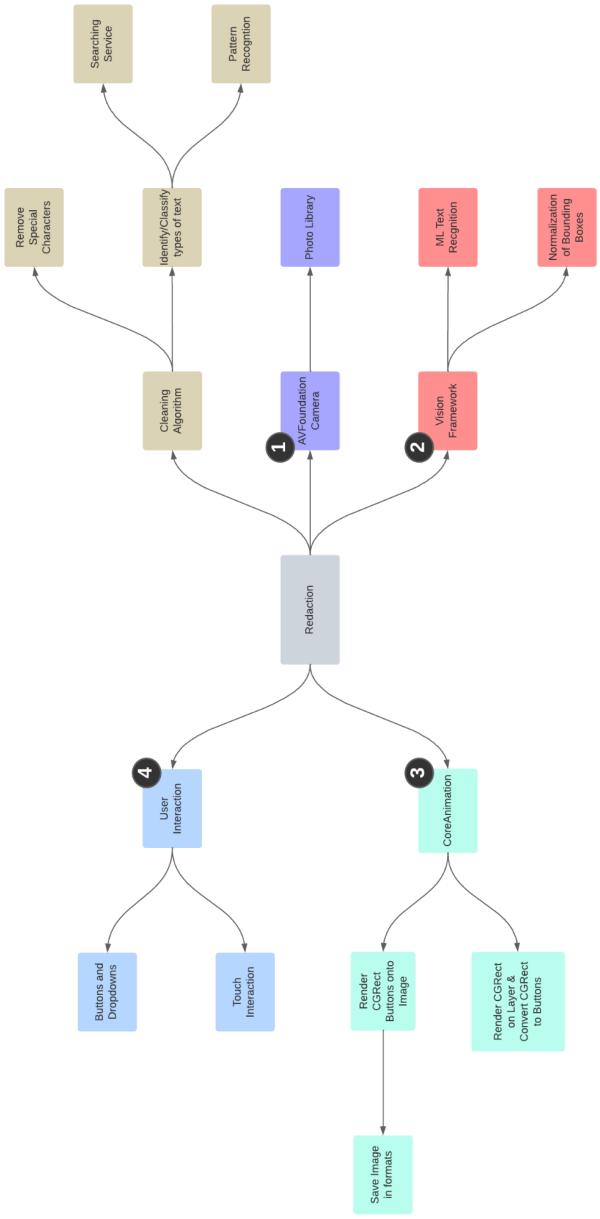
Redaction and Image Editing Example Window



Suggestions and Sharing Workflow



Architecture Diagram



The 4 main components of the project are:

1. AVFoundation and Camera Intent which allows the user to capture and load an image into the view.
2. Vision Framework to apply computer vision algorithms to perform a variety of tasks on input images and video.
3. CoreAnimation which allows the rendering of bounding boxes and buttons onto the path layer.

4. User Interface which will allow the user to interact with buttons and select options from the menu.

Frameworks:

Swift

Goal

- Develop an iOS application to run on Apple mobile devices.

Description

- For iOS, iPadOS, macOS, tvOS, and watchOS, Swift is a dynamic and user-friendly programming language. Swift offers contemporary features that developers value, and writing Swift code is interactive and engaging. The syntax is concise yet expressive. Swift code is secure and reliable and results in blazing-fast software.

AVFoundation Framework

Goal

- Work with audiovisual assets, control device cameras, process photos, and configure system photo interactions.

Description

- AVFoundation merges several major technology areas that together encompass a wide range of tasks for inspecting, capturing, and processing visual media on Apple platforms. CameraView.swift and Camera.swift uses AVFoundation to call camera intent which allows the camera service to capture images natively in the app.

Endpoints used

- [AVCaptureSession] [AVCaptureInput] [AVCaptureOutput]

Vision Framework

Goal

- Apply computer vision algorithms to perform a variety of tasks on input images and video.

Description

- The Vision framework performs text detection, barcode recognition, image registration, and general feature tracking. The framework is used in the Vision.swift file in recognizeText() and findBoundingBox() function to collect data on the passed CGImage. This allows us to use the list of recognized words along with their bounding box coordinates on the image.

Endpoints used

- Results as [VNRecognizedTextObservation]

CoreAnimation Framework

Goal

- Render, compose, and animate visual elements.

Description

- Code for text box design is used to configure animation parameters such as the start and end points, and Core Animation does the rest, handing off most of the work to dedicated graphics hardware, to accelerate rendering. The coordinates for bounding boxes are passed into the function and boxes are rendered onto the display.

Endpoints used

- [CALayer] and [CAShapeLayer]

Algorithm:

1. Data cleaning Algorithm removes unnecessary spaces and special characters before analyzing and processing the data.
2. Redaction Algorithm that creates historical data to predict new redaction rules for the user without wasting time to create redaction rules every time the user opens the application. Also make suggestions for most commonly redacted information such as social security, email, home address, passport, etc.