



DesignEye

Introduction

My wife often asks for my iPhone to look through the photos I've recently taken of our daughter. We're parents of a six-year-old and both hopelessly addicted to our smartphones. Like clockwork, she'll tell me that my photo library is a mess. Between the countless photos of our daughter, there are countless images of everything graphic design related I come across during my daily life. Whether I'm in line at Starbucks or walking through the trendiest of shopping districts, there is always something designed that catches my eye. Whether it's a clever use of typography in a retail store window or a billboard that has the perfect combination of image and copy, I will snap a quick photo with the intention of exploring it further at a later time. Truth be told that further exploration seldom happens.

It occurred to me a while back when I was attempting to clean up my photo library that there must be a more immediate way to delve deeper into the design of everything around us. While I'm snapping these photos, I'm often thinking, "I wonder who designed this?", "what typeface is that?" or, "how would I design this differently?" In the moment, I often stop and wonder if others have thought as critically as I have about the piece of design in front of me. I wish I could see what they thought about it and how they would improve it. I really wish I could get some insight into the mind of the person who created it.

There are web services such as Pinterest, Dribbble, and Behance that allow you to create archives of design examples you've created or found throughout the web. There are also thousands of books, documentaries, and websites that allow us to

explore the depths of design. These resources are great but usually require you to be sit down in front of a computer and enter search queries into a browser. And as designers and design educators, we spend a lot of time in a chair searching for stuff.

Is there room for a new way to explore the work of creators around us? Can information about a given design artifact be made more immediately available without placing a query into a search engine and filtering through results? Is there room for designers to make annotations of their visual work with those viewing it a more direct fashion? Augmented Reality is an emerging technology that might be the answer to these questions.

AR Rising

Augmented reality is “a system that combines real and computer-generated information in a real environment, interactively and in real-time, and aligns virtual objects with physical ones” (Feineer and Höllerer 2). Chances are you’ve been exposed to AR in the past. You know when you use the rearview camera in your car, and you see that squiggly line that pops up and tells you that you are about to back into something: that’s AR. You know that yellow line you see indicating a first down in a football broadcast: That’s AR. The term AR was coined in the early 1990s by Boeing engineers Tom Caudell and David Mizzell. Caudell and Minzell sought to simplify the process of relaying wiring instructions for aircraft assembly to workers and referred to the process as AR or augmented reality (Höllerer and Feiner 3).

Tobias Höllerer and Steven Feiner detail the essential requirements of an AR system. The first is a computational platform to generate and manage the virtual objects to be superimposed over the physical environment. A display, such as a mobile handheld display, is needed to present the virtual material. Input and interaction technologies enable a person to interact with the augmented world. Wireless networking is needed to communicate with others. Data storage and access technology must provide information about the users’ current context (Höllerer and Feiner 3).

Höllerer and Feiner believe that the biggest hurdle to mass adoption of AR thus far has been the cumulative expense of all the required components needed in the basic AR system. Höllerer and Feiner argues that the cost and the weight of the hardware should not be allowed to grow without reason as to promote adoption. With the exponential growth in the advancement and adoption of smartphones over the last decade, AR is beginning to creep into the mainstream (Höllerer and Feiner 3).

Michael Tscholl and Robb Lindgren, in their article "Empowering Digital Interactions with Real World Conversation" assert that AR resides on the spectrum of what is referred to as "mixed reality" technologies where digital elements are integrated with real-world elements in some way within an interactive experience (56). In some cases, the experiences involve digital overlays that augment a physical object or event, and in other cases, they involve embedding a physical object inside an immersive digital environment.

For years AR has been overshadowed by its more popular older brother, virtual reality (VR). Merriam-Webster defines virtual reality as "an artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and in which one's actions partially determine what happens in the environment ("Virtual reality, n"). Many believe the slow adoption of AR compared to VR can be attributed to the high cost and encumbrance of AR systems until recently (Liarokapis 175).

Dan Tynan, in his July 2017 article "The Future Will Be Augmented" in Fast Company magazine, states that with the ubiquitousness of mobile phones with cameras, GPS technology, advanced processors, and fast network connectivity, AR is poised to go mainstream (Tynan 34). Google, Facebook, and Apple are all developing and refining AR platforms (36).

Multiple smartphone applications are utilizing AR today. One example is "Ink Hunter," an app that allows you to see what a tattoo will look like on your body before you commit forever. Another is Yelp's Monocle. Monocle was an early AR application that included a feature that annotated users' camera lenses with ratings for local businesses. Snapchat's early AR features allowed users to share photos of

themselves with dog ears and snouts superimposed over their faces. Then there is Pokémon Go, the app where one can peer through their smartphone to find monsters such as “Charmanders and Squirtles” (Tynan 36).

Snapchat’s monumental success among millennials pushed AR into the mainstream using their selfie enhancing lenses in 2015. By August 2016, Pokémon Go had over 100 million downloads, as people peered through their smartphones to hunt for anime-inspired monsters across the globe (Tynan 36). The ability to add a dog snout to your face or capture an animated monster lurking outside your favorite coffee shop may sound frivolous, but it’s a successful way of easing consumers into using AR (Tynan 37). Both Snapchat and Niantic, the developer behind Pokémon Go, have laid out a formula for a successful AR application: social interaction grounded by superior location intelligence (Tynan 37).

Tynan, like Liarokapis, believes that the weight and size of AR systems will keep mass consumer adoption of AR limited to smartphones for now. Tynan states that until the size and weight of wearables can be minimized considerably, the smartphone will be the gateway in which we experience AR (36). Tynan, like Liarokapis, believes it is a matter of when and not if AR will reach mainstream adoption. Additionally, both are in agreement that AR applications on smartphones need to offer true utility to be useful due to the need to pull them out and launch the application each time you need to use them.

This assertion makes sense when you consider that roughly seventy percent of internet access is made through mobile phones (Karaian). Currently, when a user seeks to retrieve information about a given object within their immediately visible surroundings, they usually phrase a request into a search engine and then receive multiple answers to their query in text format, which introduces some friction.

In 2017, Ori Inbar, a well known AR thought leader coined the term AR Cloud. Inbar defines the AR Cloud as a persistent 3D digital copy of the real world that is continuously updated in real-time (Inbar). With the AR Cloud, information about a given object will be found right there on the object itself. Apple, Google, and

Facebook, among others, are looking to alleviate this friction by the development of the AR Cloud (Inbar).

AR In Education

Gunther Kress contends that there are two types of visual literacy — old and new (16). Old visual literacy is dominated by writing in which we progress from childhood images to adult texts (16). New visual literacy involves a complex mix of text, images, and sound and applies to all life stages(16).

Design educator Sara Briggs asserts that we live at a point in history where images are becoming a global language that can be understood by everyone (1). Thanks to a world connected by the internet, we are living in an image-driven renaissance (Biggs 1). Globally, the role of images in communication has grown exponentially and is becoming dominant like never before. However, we live in a world that does not place much value on visual literacy (Biggs 1). As designers and design educators, we should care a lot about this. Design practitioners and students must become critical and analytical of the images they see. Viewers are often unaware of an image's underlying message (Biggs 1). AR as a tool has great potential to empower design practitioners and students to see the world through the lens of critical design thinking, a lens that encourages doing what designers do best: develop the skills to change existing situations into preferred ones.

Much work has been undertaken to bring AR into the realm of education and as a design tool. Masaryk University's Fotis Liarokapis has developed MARIE, an Interactive Multimedia Reality Interface for E-Learning (Liarokapis 173). MARIE is designed for engineering students specifically but can be adapted for other disciplines (Liarokapis 173). The authors of MARIE developed and implemented an interface to explore the potential of AR by superimposing Virtual Multimedia Content (VMC) information in AR. The teaching material is composed of appropriate units and is assigned a visual marker to identify each one. The teacher then devises a learning strategy by determining the sequence in which to instruct students and display the learning material within the AR environment. With the guidance of the teacher, the

student selects the specific marker required for the AR visualization. The user can manipulate the content in three-dimensional space. They can also use a mouse to zoom, pan, and rotate the rendered images (Liarokapis 174). The teacher (who does not wear a head-mounted display) can interact with the student using the keyboard and mouse.

Jun Rekimoto, like Liarokapis, has developed Transmission, a hand-held AR system for collaborative design. In traditional automobile design studios, engineers collectively examine clay models of prospective prototypes. This old-fashioned process is being replaced by computer-aided design (CAD). However, CAD-based design tools lack natural intuitiveness communicated through body language (Rekimoto 145). Trans Vision is a shared AR system designed for collaborative designing. Users are observed moving their entire bodies during the operation of the AR object as they would when moving an object on a real table. Observation suggests that overlaying computer-generated images over real-world scenes helps users to understand the location and scale of virtual objects (Rekimoto 145).

An emerging media such as AR offers educators the possibility of teaching in new ways. An important affordance of mobile AR is that it gives students more freedom to get out of the classroom and explore their subject areas through their local environments. Much of design education involves sitting in a classroom behind a computer while listening to a lecture or watching a presentation with the goal of memorizing information. Teaching and learning, to be effective, should be tailored to the learning style of the student (Compton 28). Different learning styles should be engaged, and students' progress should not be measured by the ability to memorize information. Memorization should not be the objective of learning. Experiential learning theory suggests learners benefit if they acquire information, reflect upon it in multiple contexts outside of the environment in which it was acquired, and then interpret this information into individualized meaning and actions (Compton 28).

Additionally, AR has the power to help us learn by engaging multiple learning styles. Learning styles are the preferred way in which students absorb, process,

comprehend, and retain information (Solak et al. 1071). These learning styles can be primarily visual, verbal, or kinesthetic (Solak et al. 1071).

The traditional lecture-centered teaching practice is primarily focused on auditory learners. Stanislaus State University professor, Erin M. Hall, is a doctor of education in kinesiology and physical education with an emphasis in pedagogy. Hall, in her article "Integration: Helping to Get Our Kids Moving and Learning," asserts that individuals process and retain information in different ways and to various degrees kinetically (Hall 123). Education that incorporates movement is "unique in that it allows us to teach using verbal instruction, visual demonstrations, and kinesthetic movement" (Hall 123). Hall asserts that students all have various learning styles, and those with highly kinetic learning styles are often the most underserved. Tscholl and Lindgren contend that with AR, students can utilize mobile devices and be mobile themselves, exploring the world and learning with more natural physicality

While AR is not mentioned specifically in Hall's article, many other authors have continually point out that AR targets multiple learning styles. Hall points out that exercise triggers the production and flow of BDNF, a chemical that helps neurons communicate with one another. This process enables individuals comprehension of information at a quicker rate (123). A curriculum that makes use of mobile AR enables students and teachers to get out of their chairs and approach education material with more physicality.

Indeed the recent surge in interest for the applications of AR in education stems at least partially from real-world activities, including social interaction (Tscholl and Lindgren 63). Studies of AR for learning in a variety of contexts have shown increased learner engagement and participation. Sidhu Sigh argues that unlike in traditional lecturing environments where visual, aural, and verbal learning styles are typically engaged, AR is a tool to engage students who respond to these learning styles as well as those who are kinesthetic, logical and solitary learners in new ways as well (225).

Studies of AR for learning in a variety of contexts have shown increased learner engagement and participation (Tscholl and Lindgren 58). Tscholl and Lindgren argue

along the same lines as Yuen, Rohidi, and Hall in that teaching and learning, to be effective, should be tailored to the learning style of the student.

We see here that AR, even in its infancy, provides a tool for educating in various disciplines that engages multiple learning styles. We also see that the smartphone, for the time being, is most likely going to be the platform in which we engage with AR. Design educators have yet to embrace AR fully, but that will change as tools are developed that allow them to develop their own AR experiences.

Why can't the smartphone that often distracts students in the traditional classroom setting be used as a tool to increase engagement? In the realm of design education, is there room for collaborative learning outside of the traditional classroom setting? What possibilities exist, and how and in what ways are they better than the traditional classroom setting? How can AR be used as a tool to encourage design students, design educators, and design professionals to explore design through the lens of AR?

Research Statement

In today's digitally fluent society, there is an ever-growing expectation for information on hand. We are used to routing queries into a search engine such as Google and retrieving relevant information about a given topic immediately. Tech companies are poised to introduce AR into the psyche of mainstream society. There is an opportunity to utilize visual search, through AR, to the design community as a tool to cultivate design literacy and encourage communication among creators. Additionally, AR provides an exciting new medium for creators to experiment with.

Project Overview

The DesignEye project centers around the use of an Augmented Reality enabled iOS app to index and annotate the work of creators in and around Lancaster, Pennsylvania. DesignEye users will be able to converse with other creatives, claim their publicly visible works, and create new works utilizing AR. The deliverables

include an application prototype with embedded motion graphics, a promotional video, and a website.

Featured design artifacts are user-contributed and curated. DesignEye users are encouraged to ask and answer questions about the work they see in their community and engage with the DesignEye community to cultivate design literacy. Additionally, the app enables users to plant “virtual” flags and take credit for their publicly visible work. Finally, users can also display projects using augmented reality and annotate them as well. Encouraged annotations include process, inspiration, typefaces used, etc.

All the featured artifacts and annotations within the application are sourced from creatives in the community. In order to foster community among users, several social features are included, such as the ability to “like” another user’s work, save favorite work to a collection within the app and contact fellow users through their preferred online outlets. Contributing Designers and Design Studios Fig Industries, Infantree, Foxduck, AlphaDog Advertising, Michael Rothermel Photography, and Ryaan Beck Illustration.

At launch, I intend to curate the content myself until the platform grows to a point where that is no longer feasible. Additionally, users are encouraged to police the platform themselves and report any inappropriate content. I intend to develop full terms of service agreement with legal counsel before launch. Examples of inappropriate content will include content that encourages violence, abusive or harassment of other users, pornographic content, and plagiarism.

The application is designed with Apple’s iOS developer guidelines and with the intention to make use of their SDK. The primary components of Apple’s SDK that I intend to use are ARKit 3 and Reality Composer, and RealityKit. ARKit 3 technology enables applications to include real-time motion tracking of objects viewed within the camera viewport. Reality Composer and Reality Kit enable developers to place 3D models within a 3D environment and associate them with precise GPS coordinates.

Discovery

It is quite easy to begin planning an application around exciting new technologies without exercising restraint and utilizing proven brainstorming methods. Upon the recommendation of University of Baltimore's Assistant Professor Joseph Fioramonti, I took a step back from planning functionality and completed the following exercises: Applying The Four Affordances and Maslow's Hierarchy of Humans Needs, preparing a SWOT analysis and creating user personas to define my intended audience.

The Four Affordances

Janet Murray, Associate Dean for Research and Faculty Affairs at Georgia Institute of Technology, in her book *Inventing the Medium*, states that "the computer is encyclopedic, spatial, procedural, and participatory (52)." An AR-enabled application makes use of the four affordances in the following ways.

Participatory

Participatory affordance involves "inviting human action and manipulation of the represented world" (Murray, 55). When participatory affordance is present in a digital medium, it allows a user to interact, contribute, and manipulate content and computer processing to create interactivity (Murray, 55).

AR affords users the opportunity to annotate the real world. Users can comment on an artifact or leave feedback within the visible environment. Additionally, AR affords users the ability to manipulate objects in the visible environment.

DesignEye takes advantage of this affordances in the following ways:

1. Annotation and contribution - users can comment on or leave feedback on a designed artifact within the visible environment. Such artifacts could be signage, a billboard, or a piece of architecture.

2. Contribution and manipulation - users can leave virtual artifacts over the visible one through AR. For example, signage can be replaced virtually. A piece of design can be seen in context on a billboard without the user needing to have it printed.

Spatial

Spatial Affordance involves information in regards to virtual space. It can represent space using aspects of traditional media such as maps, images and video tracking and three-dimensional models (Murray, 70). It is not, however, a function of visual representation, but a by-product of the procedural and participatory affordances that allow interaction in making sense of and navigating a fixed landscape through spatial metaphors (Murray, 70).

DesignEye takes advantage of this affordances in the following ways:

1. DesignEye makes use of this affordance through maps in some form within this project. A possible example would be exploring work tagged by a specific designer. The application could generate a map through geotagged data detailing where a designer's works are located (Murray, 66).

Encyclopedic

Encyclopedic Affordance refers to the capacity of information in multiple media formats. It includes information concerning its capacity, its extensive range of legacy and computational media formats and genres, and its ability to represent any process though logical symbolic representation (Murray, 66).

Encyclopedic aspects of this project would include data relevant to individual artifacts such as logos and branding. Users would be able to find out who designed it, what typefaces are being used, and so forth.

Procedural

Procedural affordance is composed of executable rules. It is the affordance that allows users to specify conditional, executable instructions that create a new

representational strategy (Murray, 52). It allows the "action of the computer to have visibility and parameters that are in the control of the user as well as create interactivity and transparent participation that results in agency for the user" (Murray, 52).

An AR-enabled application is not a static medium, such as a painting. As the designer of the application, one can define what users can do with it and the steps they must go through (the procedure) to do so.

Maslow's Hierarchy of Humans Needs

In addition to exploring Janet Walker's four affordances, I compared my planned functionality against Maslow's theory of the hierarchy of human needs. An essential aspect of Maslow's theory was the notion of a hierarchy of needs. Maslow identified and differentiated among various clusters of motives. The five clusters he identified were as follows: physiological needs, safety needs, belongingness or love needs, esteem needs, need for self-actualization (Aanstoos et al.). My findings are as follows:

Physiological: The profession of graphic design is more often than not a sedentary profession. Most of the tasks associated with the profession take place in a seated position staring at a computer monitor. Searching for inspiration is centered around mouse movements and clicks instead of walking and looking at the physical world. Holistically, the whole body benefits from getting up and moving. An AR-enabled application encourages the exploration of the physical environment getting out of one's chair and going there. The human body is designed to move – it is a physiological need. However, it is vital to take special care that the application does not become a threat to users' physiological needs. For example, when using an application and holding up a smartphone for long periods, a user may experience fatigue and thus undermine comfort.

Safety and security: This AR-enabled application does not directly fulfill a users' need for safety and security. However, it is of utmost importance to not put a user's

safety and security at risk. When designing an application and planning functionality, one must be mindful of the potential for distractions among users from their physical environment — for example, asking a user to engage with the application in a busy street with bustling traffic. Additionally, one must not plan a functionality that puts a user's ability to make a livelihood at risk.

Social belonging: Practicing graphic design can be isolating. Many of us work in small design teams or as the sole designer within an organization. An AR-enabled application that makes use of annotation and contribution in a can jumpstart relationships. Likewise, it can provide a sense of belonging to users within the design community.

Self-esteem: As humans, we need our efforts to be recognized by others. An AR-enabled application affords users the ability to get their work seen by other users within the application.

Self-actualization: It is a stretch to claim that an AR-enabled application will provide the ultimate sense of peace, contentment, and maximum experience that a person needs. However, it is essential to not be a stumbling block to a user's path to self-actualization.

SWOT Analysis

Strengths

- AR encourages exploration
- Designers desire to have their work seen by their peers
- Smartphones are easily accessible to the target audience
- Smartphones are currently the ideal platform for an AR-enabled application

Weaknesses

- Lack of Swift programming skills will delay production of a functioning application require the involvement of a developer

- The prototyping of AR applications is a newer discipline without industry-wide accepted best practices
- Many popular AR applications are viewed as a novelty

Opportunities

- Access to a network of practicing designers, design educators, and design student students to consult with during the development of the application
- University of Baltimore's MFA program adds validity to the AR application
- Potential to sell the application to an organization more resources to further develop the application.
- Lack of direct competition in the current mobile application market

Threats

- Mass adoption of wearable AR-enabled devices that offer users a more immersive experience and require a total rethinking and development of the application
- A competitor with more resources could release a similar application before this one gains traction in the marketplace
- A competitor with more resources could release a similar application after this one gains traction in the marketplace

Content Research

I conducted an online survey of my intended audience to solicit feedback on potential features to incorporate within the application. I used the Survey Monkey platform to send a five-question survey to one-hundred recipients. The audience included a mix of practicing designers, illustrators, design educators, design students at University of Baltimore, and Pennsylvania College of Art as well as ten individuals not involved in design as a profession.

Top-line Summary Findings from Survey:

- 88.37 were aware of what augmented reality is

- 11.63 were unaware of what an augmented reality
- 50% were most likely to use an AR application that gave them the ability to instantly find out information about a piece of design or art you see in public (who made it, their process, what materials, typefaces, how to contact them, etc.)
- 19.4% were most likely to use an AR application that gave them the ability to instantly find out information about a piece of design or art you see in public (who made it, their process, what materials, typefaces, how to contact them, etc.)
- 30.56% were most likely to use an AR application that gave them the ability to instantly find out information about a piece of design or art you see in public (who made it, their process, what materials, typefaces, how to contact them, etc.)
- 46.88% maintain a Dribbble or Behance account while 53.13% do not.
- 61% rated having their own portfolio or business website as the reason they do not use Dribbble or Behance.
- Pokemon Go was the most popular AR app among participants, followed by Layar and Blippar.
- Facebook was the most popular social media app used, followed by Instagram.
- 82.3% used Apple's iPhone, and 17.7% used Android devices as their primary mobile device.

[SEE APPENDIX A](#)

Content Strategy - Information Architecture

In order to identify and define the DesignEye functionality, I created a general list of application functions, user actions, and potential functionality.

- Sign Up/login
- Access Photo Library
- Access Camera
- Access Location
- Send Notifications
- Engage in threaded messaging
- Post questions and comments concerning artifacts within a specific geographic location
- Take credit for artifacts created by the user within a specific location
- Annotate artifacts created by the user within a specific geographic location
- Place virtual artifacts using AR within a specific geographic location
- Report content to the administrator that violates the terms of service
- Maps to navigation purposes

Personas

Four personas were developed to give a realistic representation of the intended users.

Persona 1

Andrew Bell

20, Design Student at Pennsylvania College of Art and Design

Andrew is a sophomore at Pennsylvania College of Art and Design's Graphic Design major. The discipline is new to him, but he is determined to soak up as much

information about design as he possibly can. DesignEye was recommended to him by a faculty within the graphic design program. Andrew uses DesignEye primarily as a consumer. When he finds a visual artifact that he finds interesting, he will open the app to read what others have posted but rarely contributes his own thoughts. His primary goal is to acquire knowledge.

Persona 2

Avery Beckham

22, Recent Graphic design graduate from Penn State York Campus.

Avery is a recent graduate with a good portfolio. She is enthusiastic about graphic design and has received great feedback about her work. She's been out of school for six months and is finding it a lot harder than expected to land her first paid design position. Avery is an active DesignEye user. She is an active contributor who leaves comments on artifacts she finds interesting as a way to get to know and be known by practicing design professionals. Additionally, she occasionally places virtual artifacts within the environment with the same objectives in mind.

Persona 3

Ryaan Nelson

33, Professional Designer and illustrator

Ryaan is a talented designer with a solid decade of work under his belt. He is able to make a good living at his current position but wishes his work was more engaging. He wants the design community to see what he is capable of without the constraints of his employer and current clients. He contributes virtual artifacts as a means of personal fulfillment

Persona 4

Helen Mosher

51, Design Educator

Helen is a design educator and tenured faculty member at New York University who travels to Lancaster several times a year to get away from the pace of the city. Helen has a deep appreciation for the rich typographic history of the city found within its architecture. She encourages her design students to do the same.

What's in a Name?

Up to this point, I was calling the application GD/AR, an acronym for Graphic Design: Augmented Reality. However, I wanted to choose a name that focused less on the technology behind the app and more on the utility it provided. With the subject matter being design and AR, allowing users to see more than what is present in the physical environment, I decided to focus on the concept of the eye. Hence the name I landed on was DesignEye. The name also aligned with one of my main goals, which were to get users looking at design more critically.

Moodboard

A moodboard was assembled from inspirational elements including, AR UI elements, photography, textures, colors, and typography. The moodboard serves as a guide to determine the visual style of the DesignEye brand. I referenced the moodboard throughout the remaining stages of the brand and prototype development.

[SEE APPENDIX H](#)

App Icon and Logo

In designing the application icon, I went through multiple phases of execution. I started by just sketching concepts that integrated the "D" letterform and an icon of the eye. I then moved into Adobe Illustrator and rendered out some of these ideas. While these were concepts weren't poorly designed, none of them struck me as particularly memorable. They felt rather generic. I then began referencing the initial sketch of the UI and saw that circles were repeatedly used. I then began developing concepts revolving around concentric circles, which played into the metaphor of an eye or a camera lens. I added some subtle gradients within the circles and decided

upon three concentric circles, one white, with a smaller blue circle, which referenced and iris in the center, and an even smaller black circle in the center, which referenced a pupil. The sclera, or white, of the eye was a small downward tapered point, which made it reference a location marker on a map. The interplay between metaphors of the eye and map icon was appropriate for an app that focuses on looking at artifacts within specific geographic locations.

Using Apples' developer guidelines, I used their supplied app icon grid to center the three concentric circles within the app icons rounded square shape. When viewed in the context of an iOS home screen, the icon was harmonious in relation to the other apps I had installed on my iPhone. I developed multiple color themes but ultimately decided on the yellow, black, blue, and white palette. I tried multiple variations of the DesignEye logotype. I ultimately decided on Source Sans Pro Semibold by Adobe as my Typeface choice for the logo. The large round counters of the letterforms paired well with the concentric circles of the logo, and the playful loop within the "g" added a level of personality to the logo mark.

[SEE APPENDIX F](#)

Color Palette

I expanded the color palette used in the logo with the addition of almost-neon-green, vibrant magenta, several shades of grey, and generous areas of white space. The color palette is cheerful, and more importantly, the saturated hues stand out when used for UI elements that are overlaid upon the camera image in an AR application viewport.

[SEE APPENDIX F](#)

Application UI Typeface

Initially, I intended to use Source Sans Pro for the application UI text but found that Apple's San Francisco Pro font family was a better fit. The generous x-heights and

counters and neutral personality would allow the typefaces within artifacts to be the focus of attention. Ultimately, I chose to use the typeface which would remain legible at various sizes but ultimately remain unnoticed by the user. San Francisco, being Apple's default typeface, served this purpose quite well and has the benefit of being the default iOS UI font. Currently, I had no plans to develop the app for Android devices; however, if that were to change in the future, I would use Source Sans Pro wherever Apple's San Francisco user agreement prohibited to use, such as on non-Apple Devices.

[SEE APPENDIX F](#)

Artifact Collection

Over the course of 2018 and 2019, I contacted and set up in-person meetings with multiple professional design studios, independent designers, and creators to explain the DesignEye project and to ask for examples of their work to include within the app. It was essential to do this in person so I could share the assets I created and make sure they understood the purpose of the application and had a general understanding of how the app would work. I asked each to provide the following assets:

- Their studio or personal logo to use as an avatar within the App in Adobe Illustrator or EPS format (preferably in a stacked format).
- One to three source files of their work that were visible in a public place in Adobe Illustrator or EPS format.
- A brief description (50-100 words) of each artifact detailing the objective, process, typefaces used, and other decisions made for each example provided.

The majority of the studios that I reached out were receptive to the idea, and most, but not all, followed up with the required assets. A few examples were unusable to being in the wrong file format or unaccompanied by a useable description. All of the

designers and studios who participated were located in Lancaster, Pennsylvania, near the downtown area and are in close proximity to one another.

Why Lancaster?

Lancaster Pennsylvania was chosen as the target audience for multiple reasons, the first being that it was where I lived. Lancaster has a population of approximately sixty-thousand and is the eighth-largest city in Pennsylvania (U.S. Census Bureau QuickFacts: Lancaster City, Pennsylvania.) Lancaster was named as one of the 10 Coolest Cities to Visit in 2018 by Forbes magazine (Abel). With proximity to Baltimore, Washington D.C., Philadelphia, and New York, Lancaster is a frequent destination for weekend retreaters. The city is known for its historic architecture, bustling food scene, and arts community.(Abel) Within a ten-city block radius, you would find Galley Row, Pennsylvania College of Art and Design, and a downtown where historic architecture and signage would be found next to modern architecture with modern branding. What I found most attractive about downtown Lancaster was that the best publicly visible design was most often created by a designer within the city. There are no Starbucks or 7-Eleven's in the city. All of the designers who provided artifacts for the project were located within a ten-block radius.

UX User Flow Chart

The UX user flow chart serves as a visual representation of the experiences the users will have with the app. The UX user flowchart begins with the users' initial opening of the app and includes the additional functions users can take with the app. The user flow chart uses the UML Format (Unified Modeling Language), in which ovals represent the beginning and end of a process, and diamonds represent user decisions.

[SEE APPENDIX B](#)

The Paper Prototype

I began my app design by creating a paper prototype. I purchased 3" x 5" index cards and sketched out the various screens to start developing the user interface of

the app. Within the initial user paper prototype, users would be tasked with creating an account, claiming and annotating an artifact that they created, viewing and commenting on annotation created by another user, and posting their AR artifact over signage visible through the viewport of the device. With the initial paper prototype, I began testing the application with a group of undergraduate students from Pennsylvania College of Art & Design. A summary of my findings is listed below.

- Students noted that there were too many UI elements visible on screen at a single time, which led to confusion as to which action to take next.
- The crudeness of the sketches led to confusion about what elements represented the user interface and which represented the environment displayed through the camera.
- There was no way for users to backtrack if they ended up in a UI path they did not want to continue.
- Posting their AR artwork was not intuitive.

[SEE APPENDIX C](#)

The Mid-Fidelity Prototype

Armed with the knowledge gleaned from the initial paper prototype testing, I then began refining the user interface in Sketch. I acquired Apple's iOS Developer Sketch library from their Human Interface Guidelines website. With these official assets, I was able to recreate the stock UI of the iPhone with the same design resources that their own developers use. UI elements such as modal alerts, keyboards, and system fonts would be rendered accurately within my sketch prototype. Additionally, I began shooting photography on at all locations of the artifacts supplied by the design contributors I had previously solicited for examples of their work. Before presenting the revised prototype to students for testing, I converted all of my photos and UI elements to grayscale using Adobe Photoshop. This action was taken to keep

feedback centered on the UI structure of the prototype and not on subjective elements such as color.

Additionally, I used Marvel, a cloud-based prototyping software that integrates with Sketch to create a clickable prototype that I could more easily distribute to my testing participants. I also limited the UI elements visible on the screen to just two elements: a navigation map that users could use to see if there were any tagged artifacts in their viewport and a menu icon that users could use to access application settings. The buttons that allowed users to comment, claim, and create artifacts were now hidden by default and made visible by tapping the screen. The feedback that I received from the testing participants was that the UI was less cluttered, and initiating actions was more intuitive once they were made aware of how to access the controls for the various app actions. For the next iteration of the prototype, I decided to include an optional series of onboarding screens that serve as a tutorial on how to execute top-level app functions.

[SEE APPENDIX D](#)

The High-Fidelity Prototype

I continued testing in one on one sessions for the next two months and further refined the UI design of the app. I purchased a DJI Osmo Mobile 2 smartphone gimbal, which was used to capture footage of all the artifacts I would include in the prototype. Sketch did not allow me to import video footage, so I used still photos as placeholders. When I uploaded my screens from Sketch into Marvel. I replaced all the videos with five-second animated GIFs created in After Effects. The GIFs were then compressed to under ten megabytes to relieve the loading delay. I designed a guided demo taking users through the following tasks:

- Creating a user
- Submitting an application to be a featured contributor
- Creating a conversations node for other users to respond to

- Claiming and annotating a publicly visible artifact
- Posting and annotating a piece an AR artifact

[SEE APPENDIX D](#)

The Website

The website serves as a place for interested parties to learn about the DesignEye project, view the promotional video, and access the prototype. The domain name "designeye.com" was unavailable, but "designeyeapp.com" was available for purchase. I coded the website by hand and used Zurb's Foundation 6 as my Responsive CSS Framework.

[SEE APPENDIX G](#)

The Video

The promotional video demonstrating the Converse, Claim, and Create functions of the DesignEye app was shot using an iPhone XR, the Filmic Pro app, and using a DJI Osmo Mobile 2 smartphone Gimbal. I filmed footage of a user using the application at artifact locations. A high fidelity mockup of select sections of the User Interface was created with Sketch, Flinto, and Adobe After Effects and were then edited using Apple's Final Cut Pro X. The backing instrumental track, Flames by Dan Henig, was sourced from YouTube's audio library.

[SEE APPENDIX I](#)

Project Costs

Project Costs Included:

Sketch App	\$69
3x5 Index cards	\$3
Sharpie Pens (2)	\$3
Adobe Creative Cloud	Already Owned
Web Hosting	Already Owned
Filmic Pro (iOS)	\$15
Domain (DesignApp.com)	13
Marvel Prototyping	Free
Final Cut Pro X	Already Owned
DJI Osmo Mobile 2 Gumble	\$90
Flinto: Prototyping Mac App	\$50
Books	\$75

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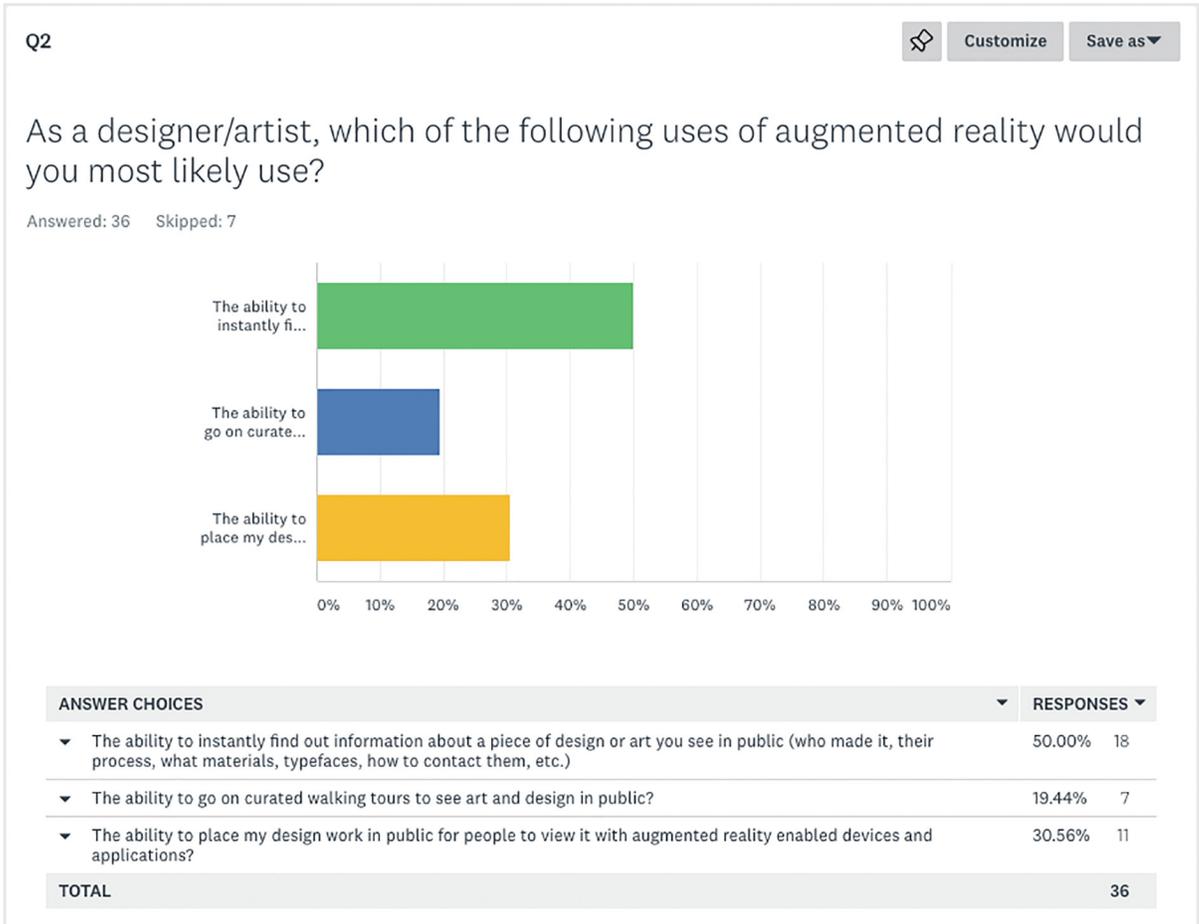
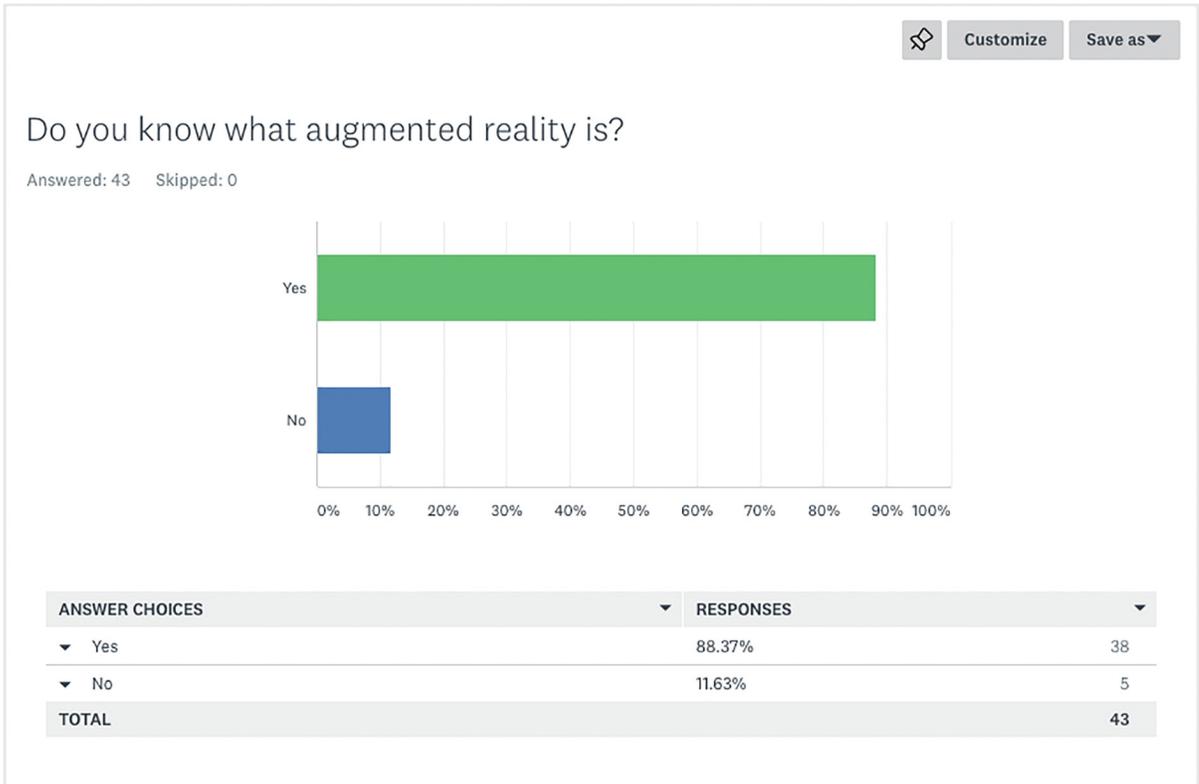
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APPENDIX A: Survey Monkey Results



APPENDIX A: Survey Monkey Results

Q3 Save as ▾

Have you used any augmented reality applications in the past? If so, which ones?

Answered: 32 Skipped: 11

RESPONSES (32) WORD CLOUD TAGS (0) Sentiments: OFF

 **NEW!**
Introducing Sentiment Analysis
Detect the feeling and sentiment behind written responses.

[Try it!](#)
Premier plan only
UPGRADE

[Watch a demo](#)

Apply to selected ▾ Filter by tag ▾ Search responses

Showing 32 responses

<input type="checkbox"/>	No.	8/21/2019 9:17 AM	View respondent's answers Add tags ▾
<input type="checkbox"/>	Not yet	8/15/2019 3:11 PM	View respondent's answers Add tags ▾
<input type="checkbox"/>	lgcb	8/14/2019 7:16 AM	View respondent's answers Add tags ▾
<input type="checkbox"/>	Yes. Pokemon Go. Duhhhhh.	8/13/2019 7:45 PM	View respondent's answers Add tags ▾

APPENDIX A: Survey Monkey Results

Q4 Save as ▾

Do you use social media? If so what services/apps?

Answered: 32 Skipped: 11

RESPONSES (32) WORD CLOUD TAGS (0) Sentiments: OFF

 **NEW!** **Introducing Sentiment Analysis**
Detect the feeling and sentiment behind written responses.

[Try it!](#)
Premier plan only
UPGRADE

[Watch a demo](#)

Apply to selected ▾ Filter by tag ▾ Search responses

Showing 32 responses

<input type="checkbox"/> No. 8/21/2019 9:17 AM	View respondent's answers Add tags ▾
<input type="checkbox"/> Facebook 8/15/2019 3:11 PM	View respondent's answers Add tags ▾
<input type="checkbox"/> No 8/14/2019 7:16 AM	View respondent's answers Add tags ▾
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APPENDIX A: Survey Monkey Results

Q5

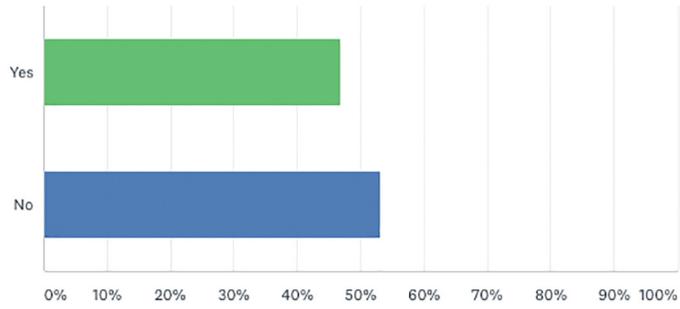


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Save as

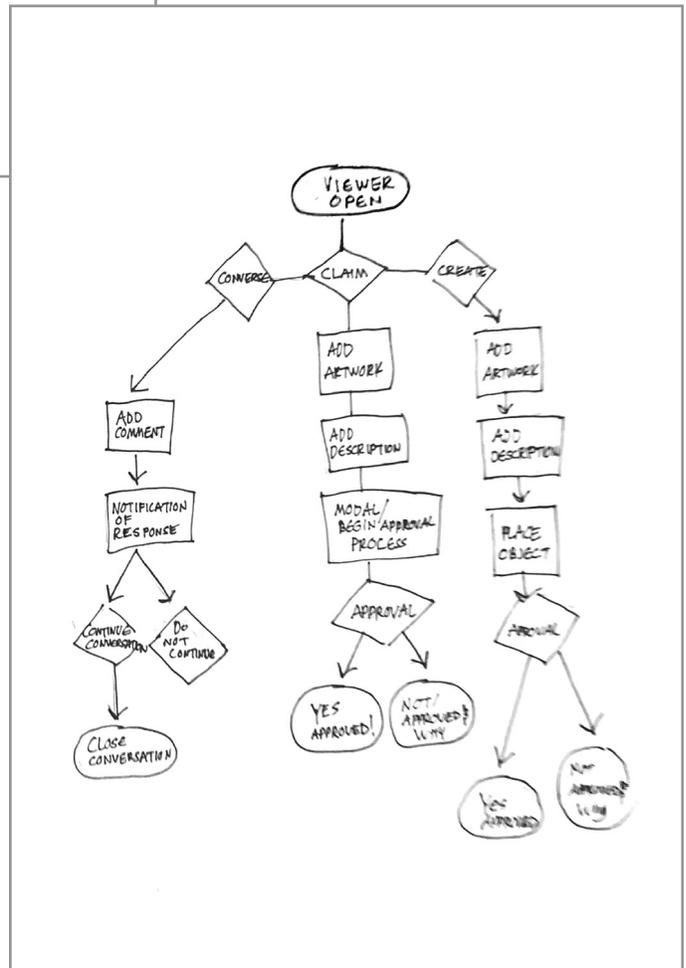
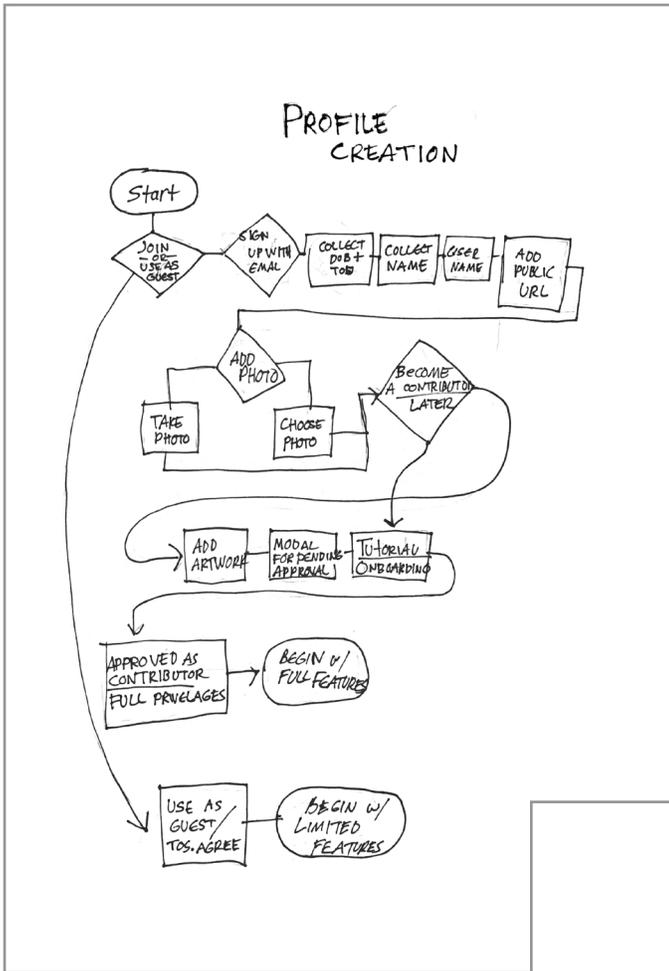
Do you have a Behance or Dribbble account?

Answered: 32 Skipped: 11

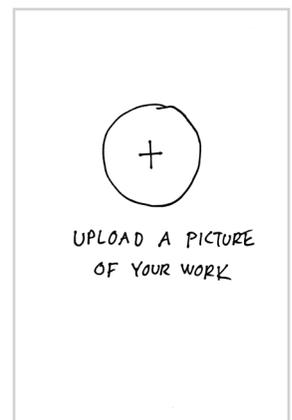
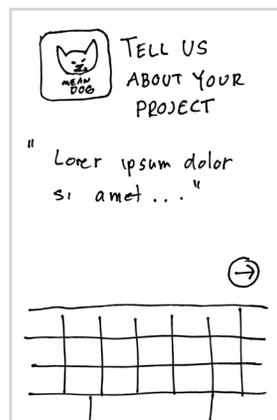
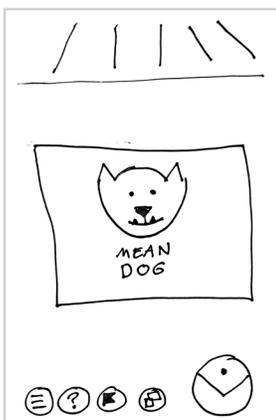
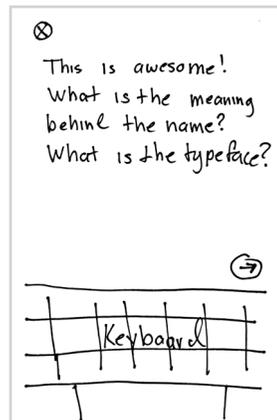
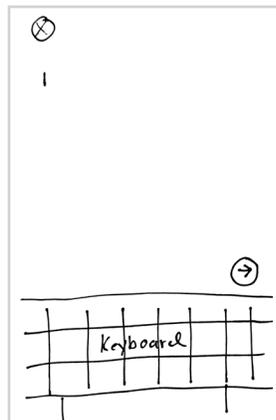
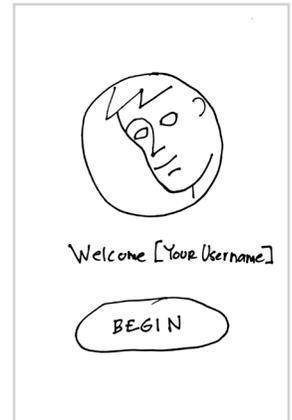
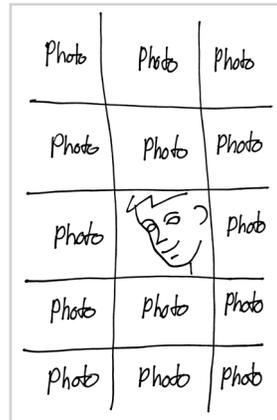
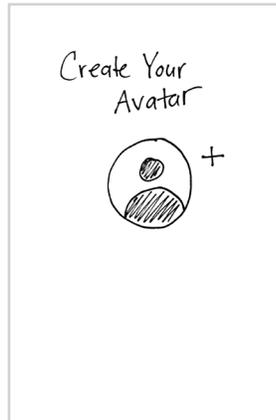


ANSWER CHOICES	RESPONSES
Yes	46.88% 15
No	53.13% 17
TOTAL	32

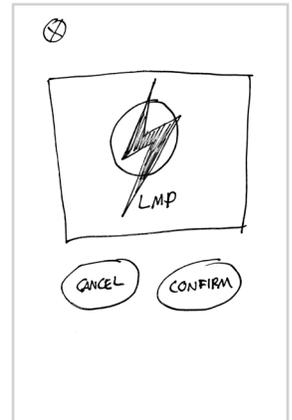
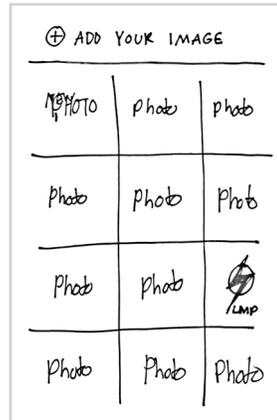
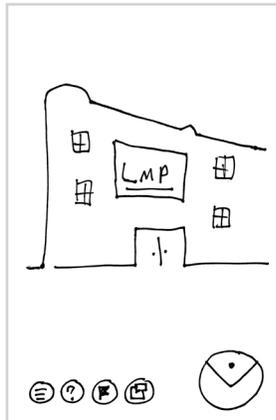
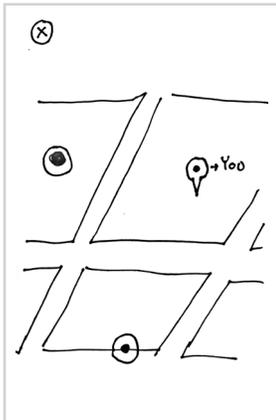
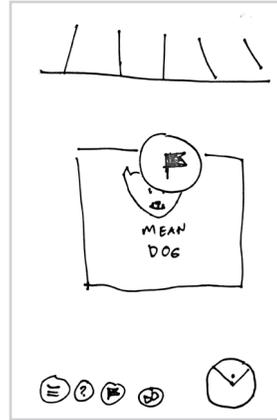
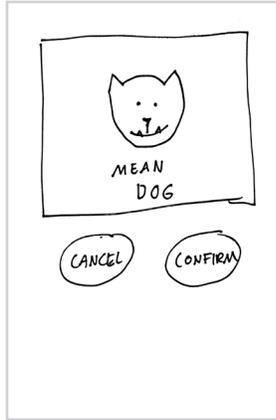
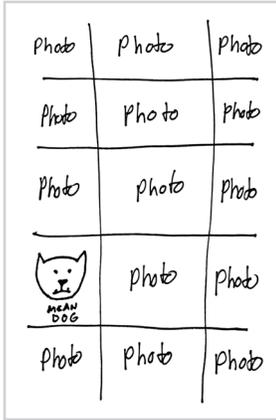
APPENDIX B: UX Flow Chart



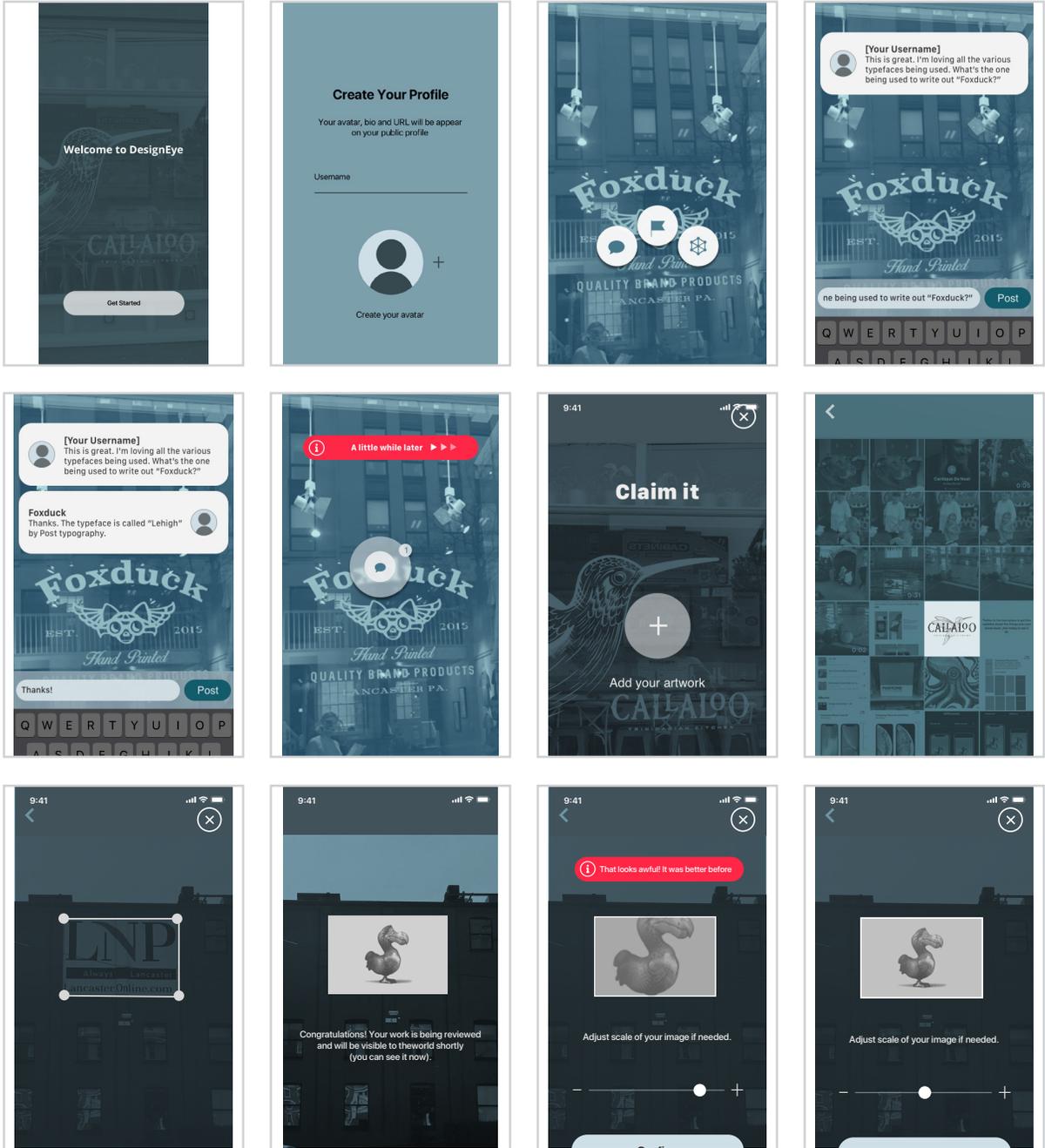
APPENDIX C: Paper Prototype



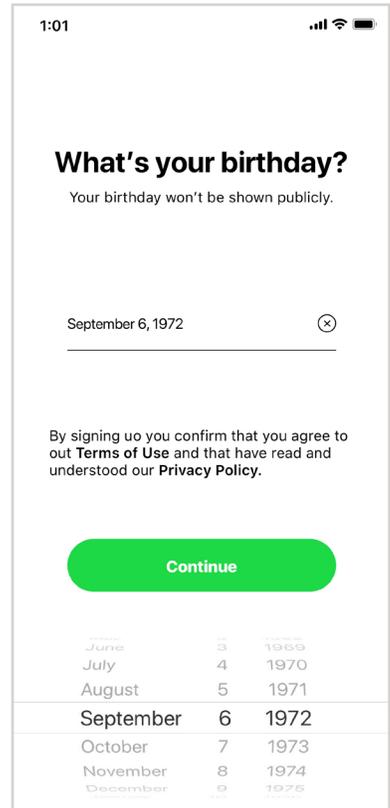
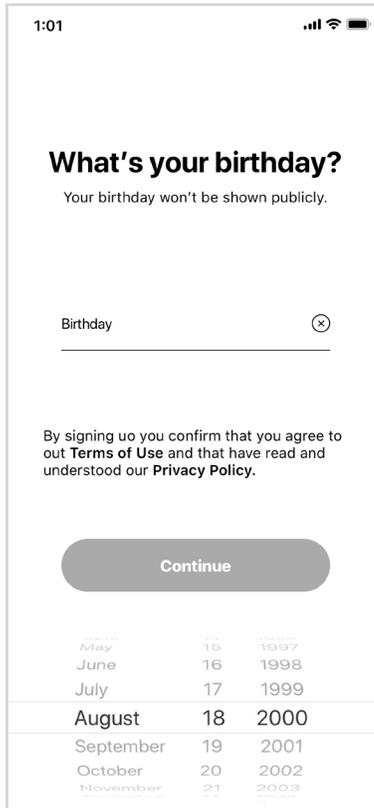
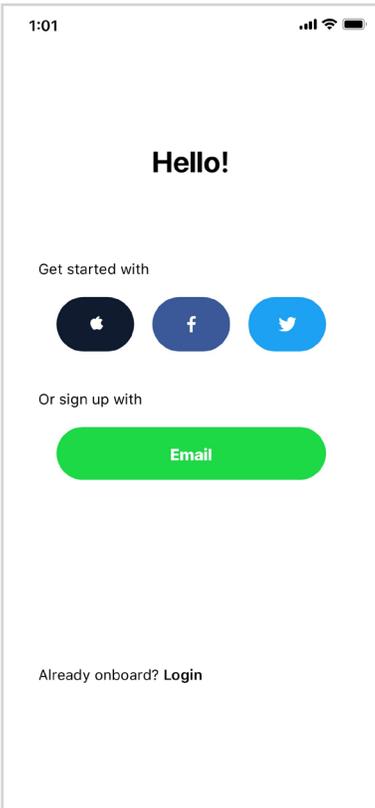
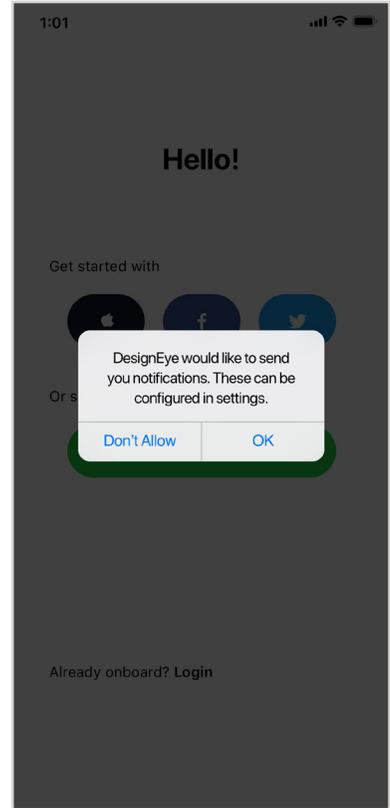
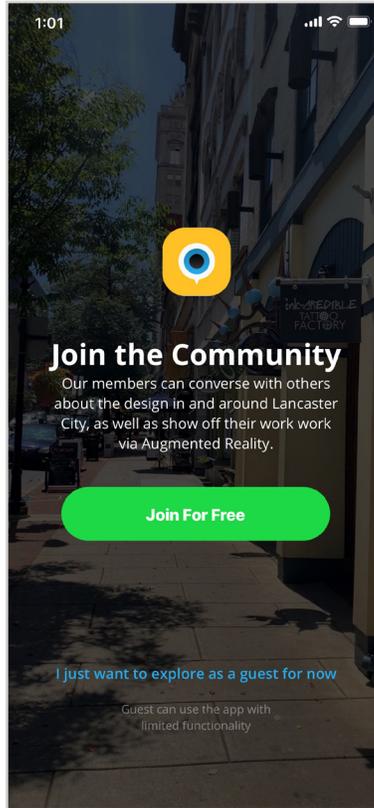
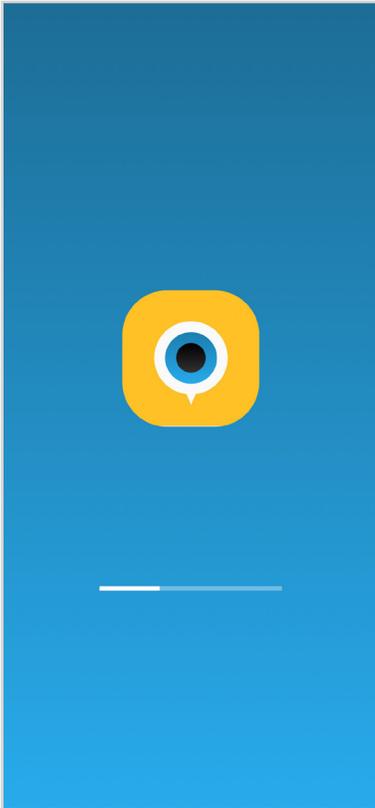
APPENDIX C: Paper Prototype



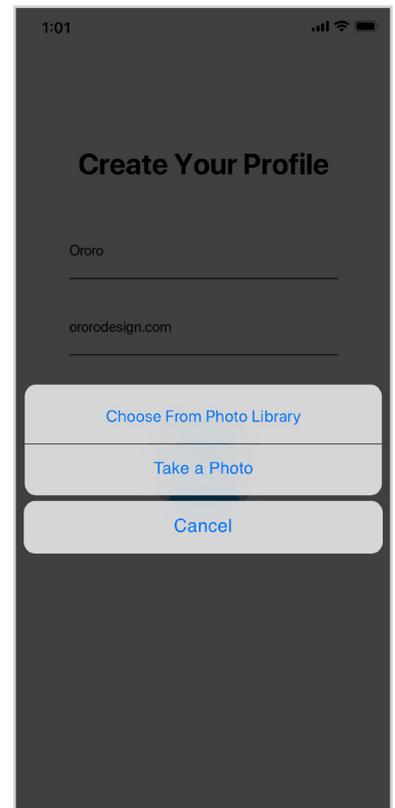
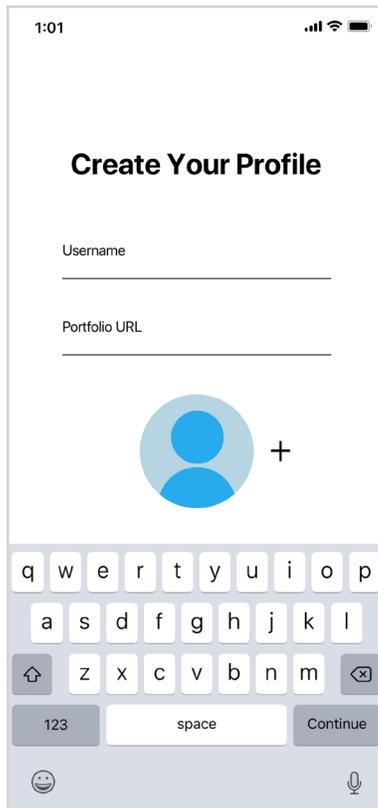
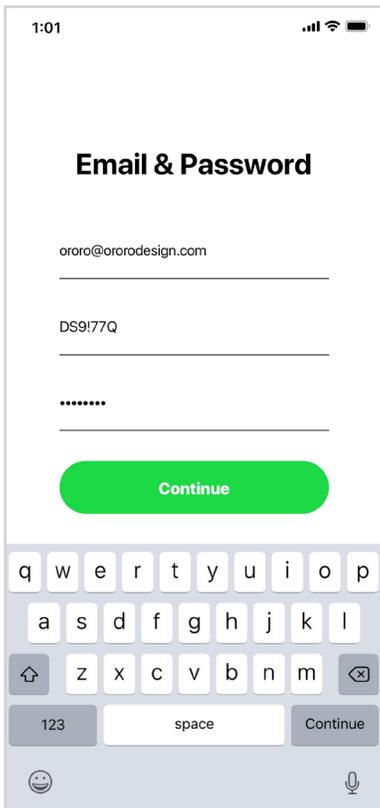
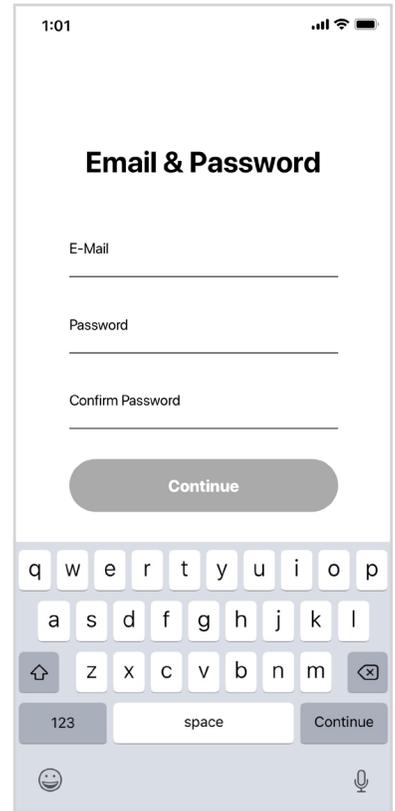
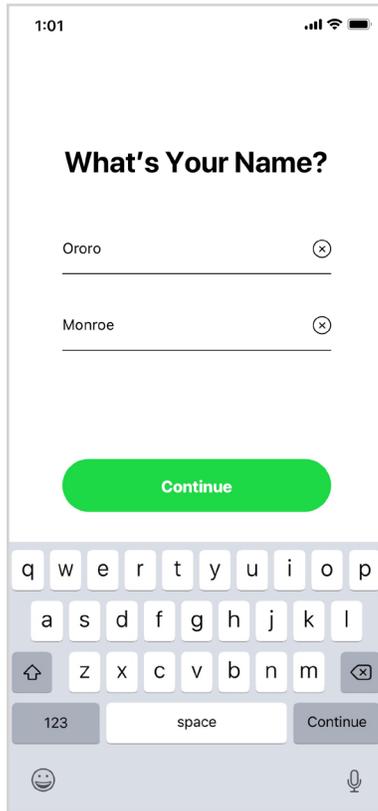
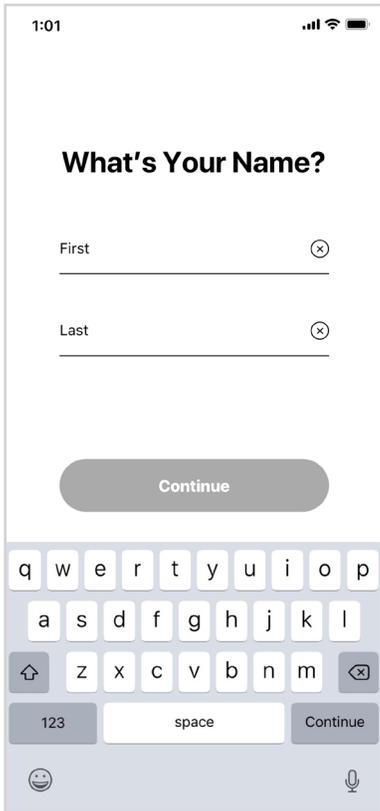
APPENDIX D: Mid-Fidelity Prototype (Selected Screens)



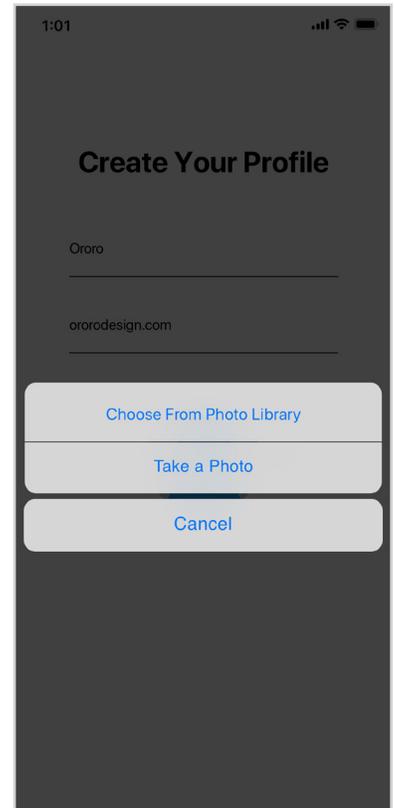
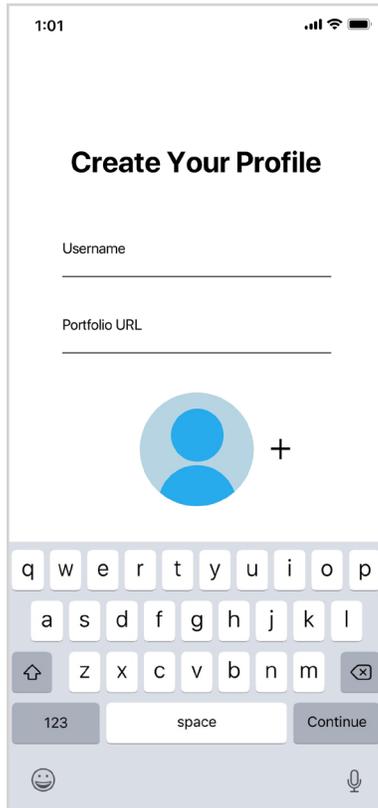
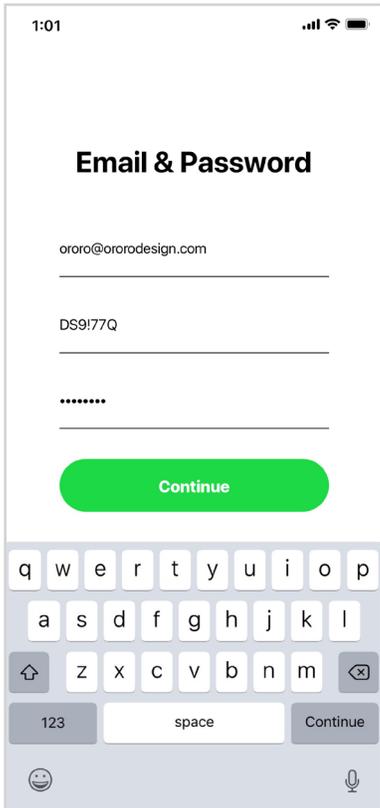
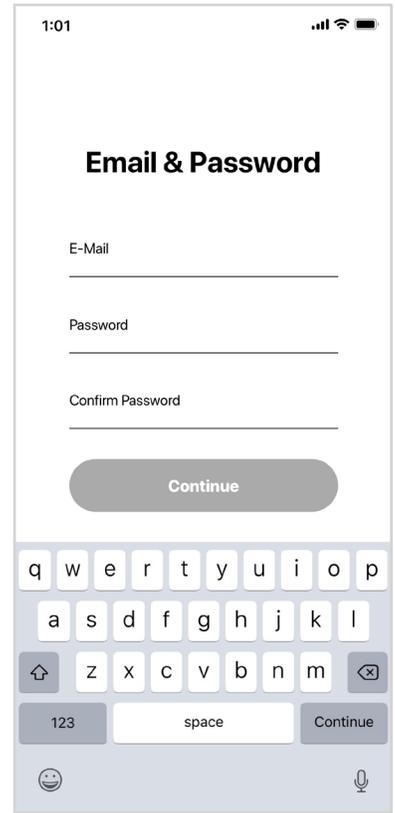
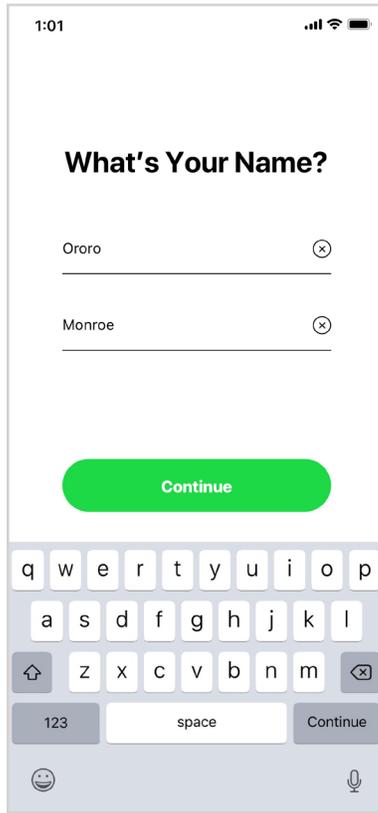
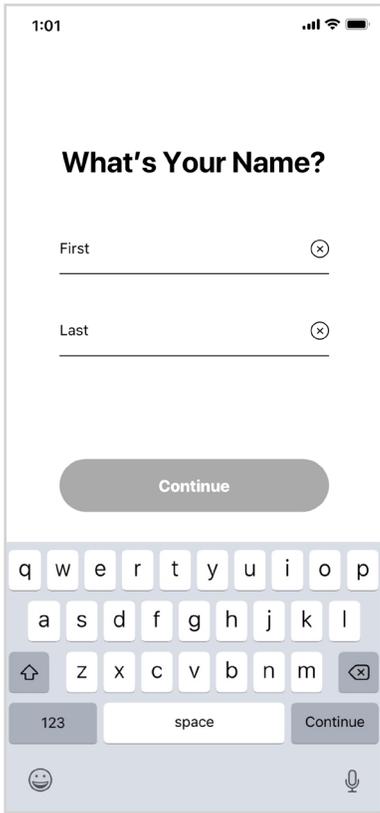
APPENDIX E: High Fidelity Prototype



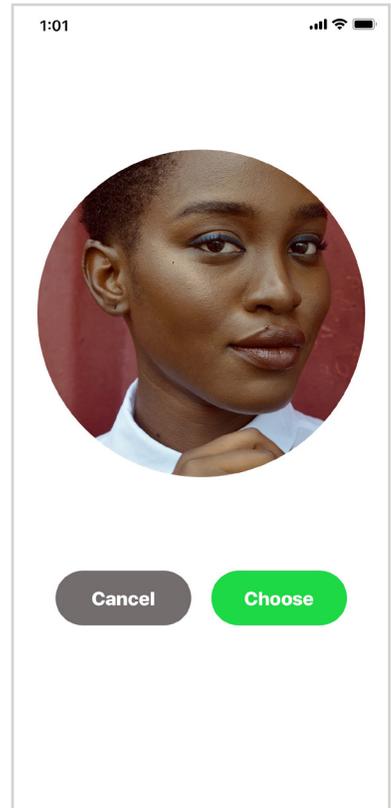
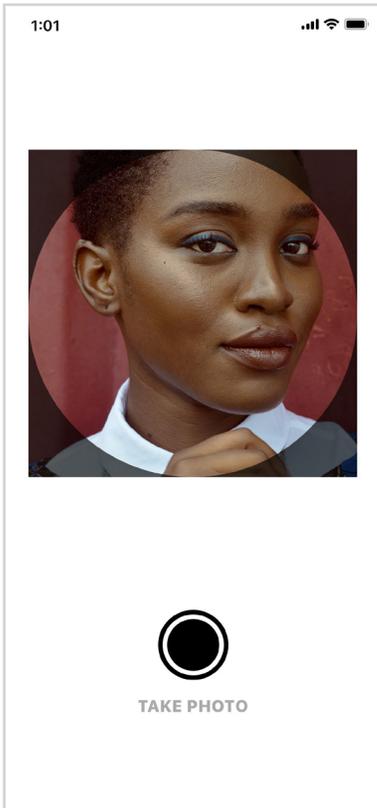
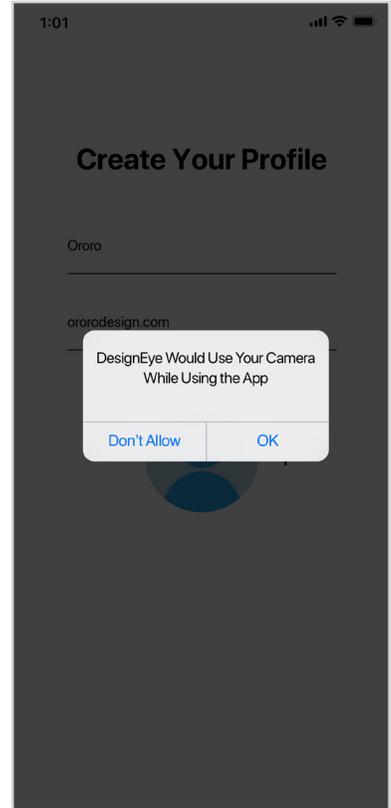
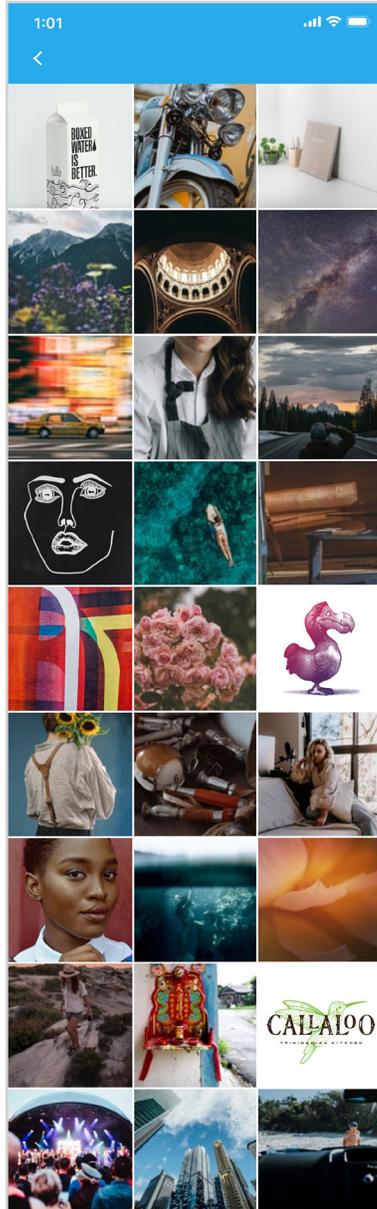
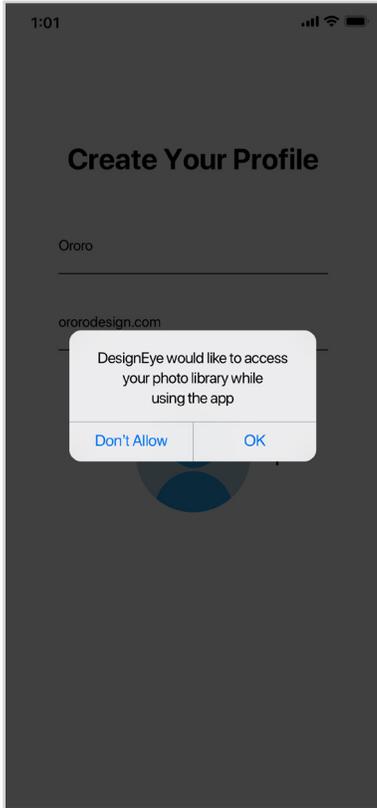
APPENDIX E: High Fidelity Prototype



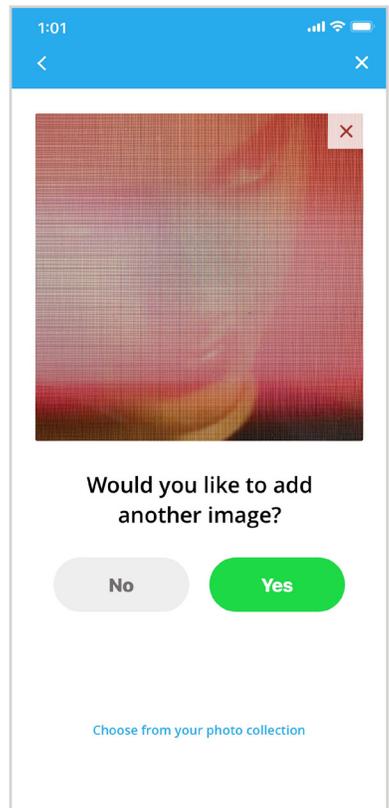
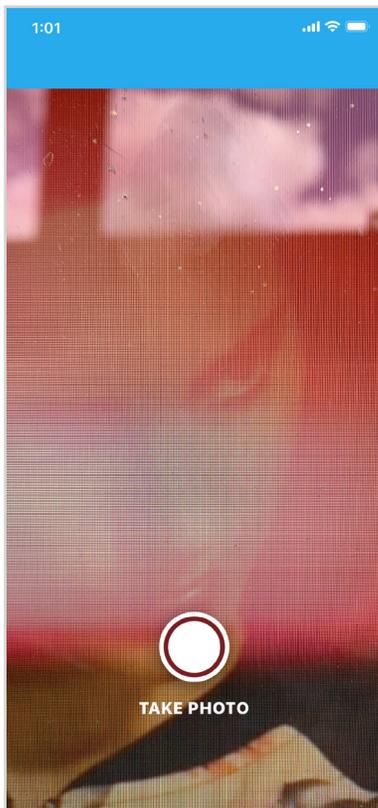
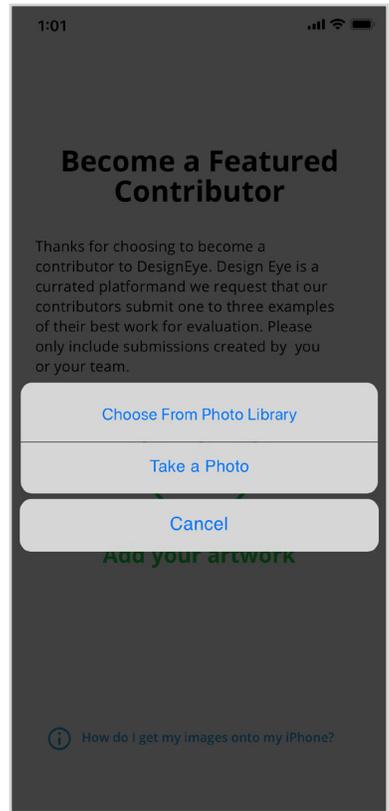
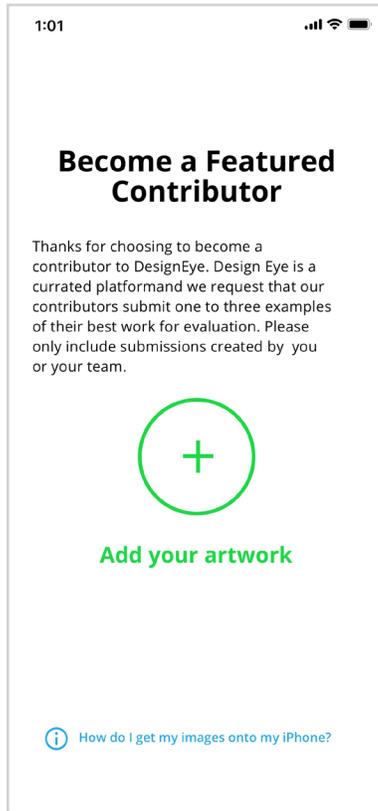
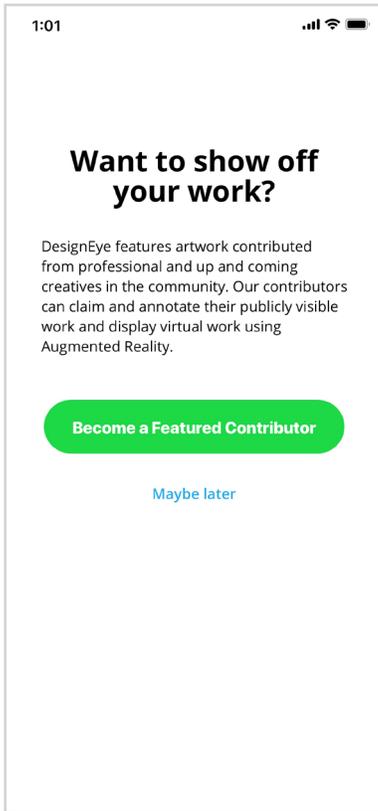
APPENDIX E: High Fidelity Prototype



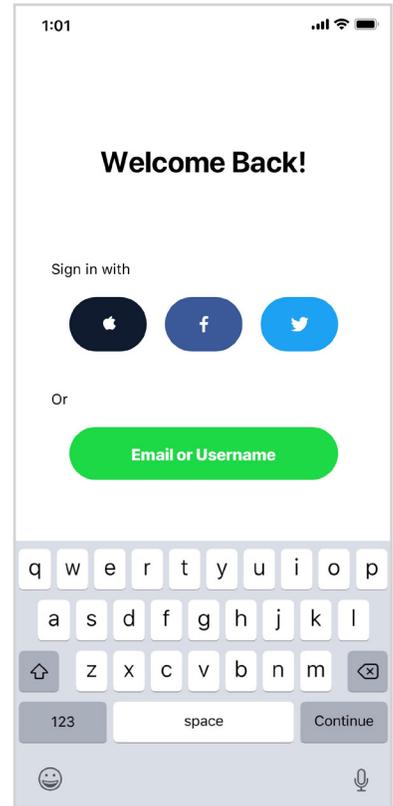
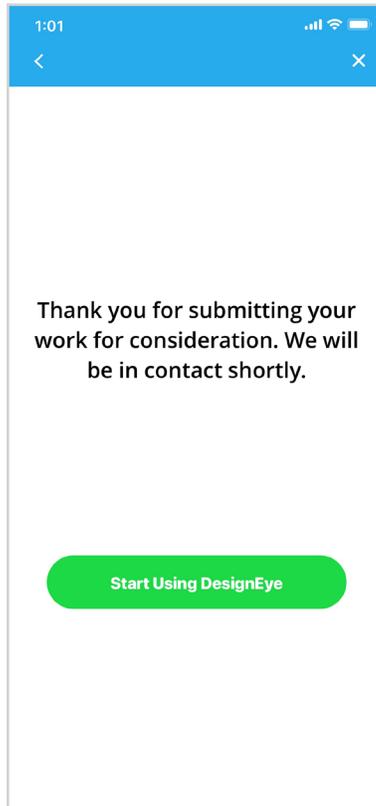
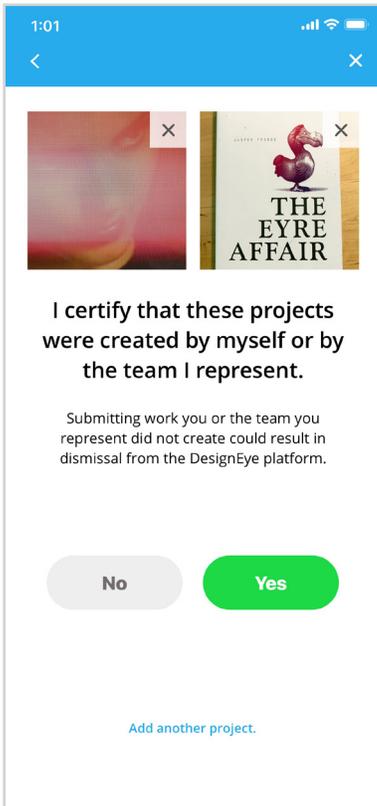
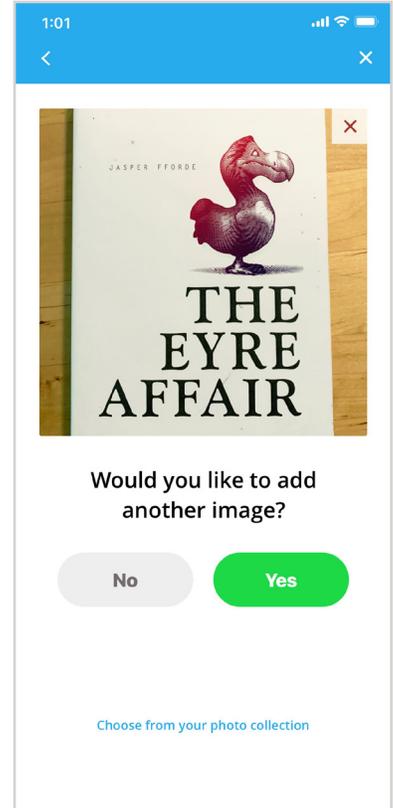
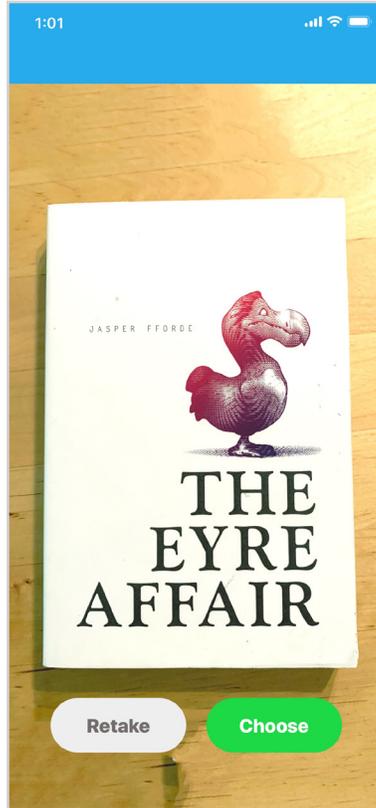
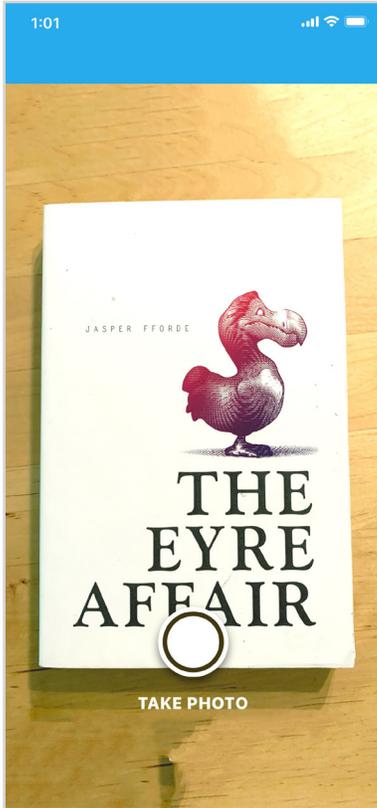
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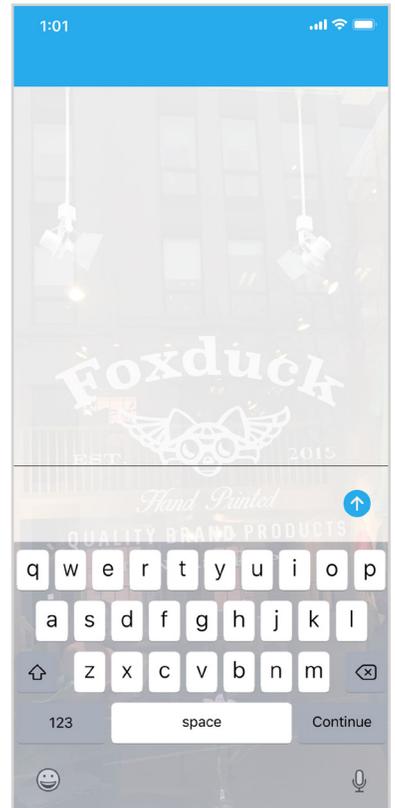
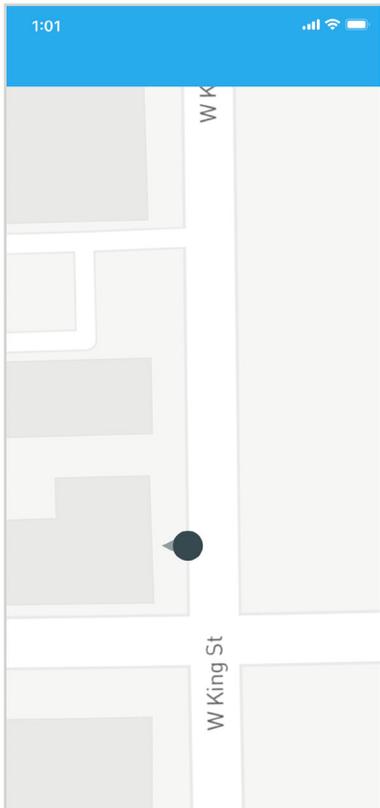
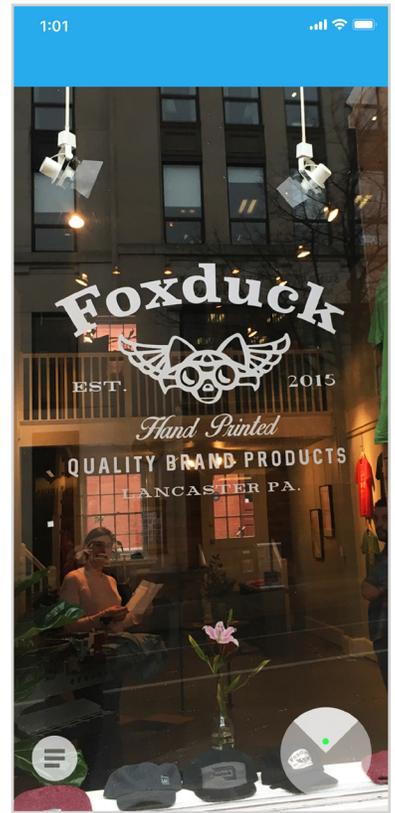
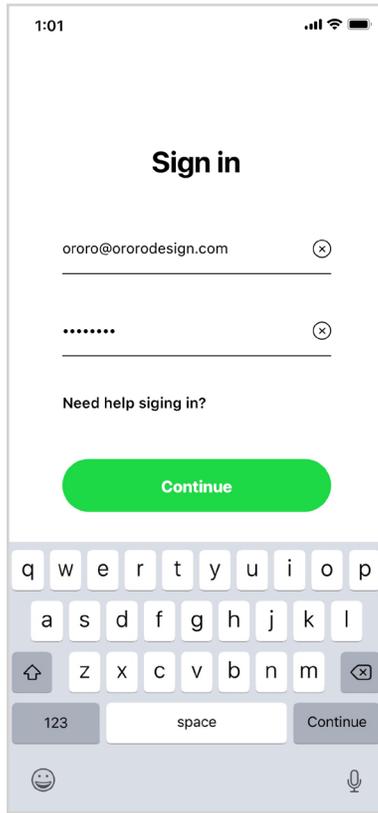
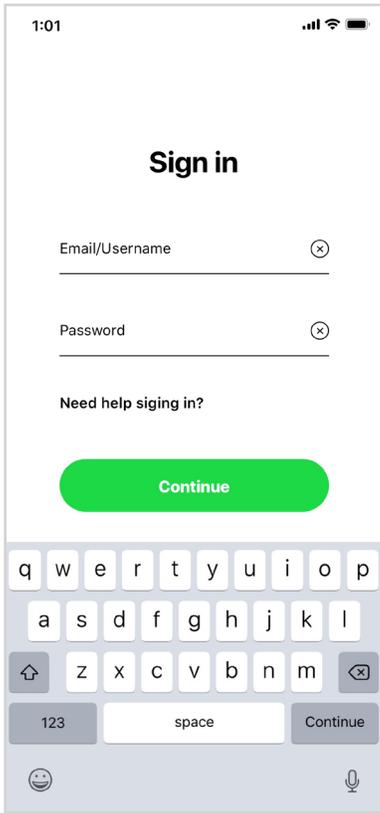
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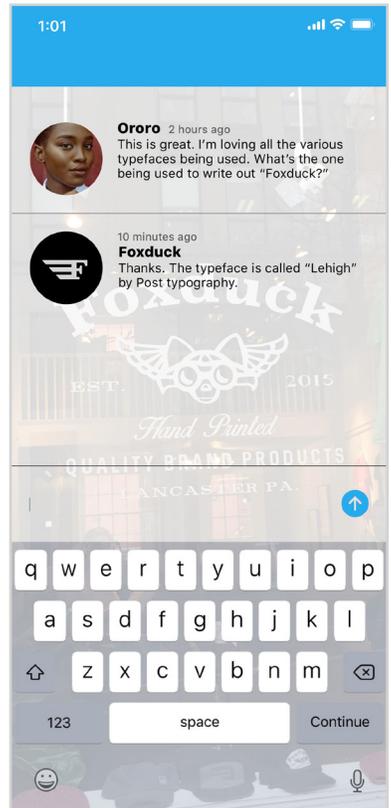
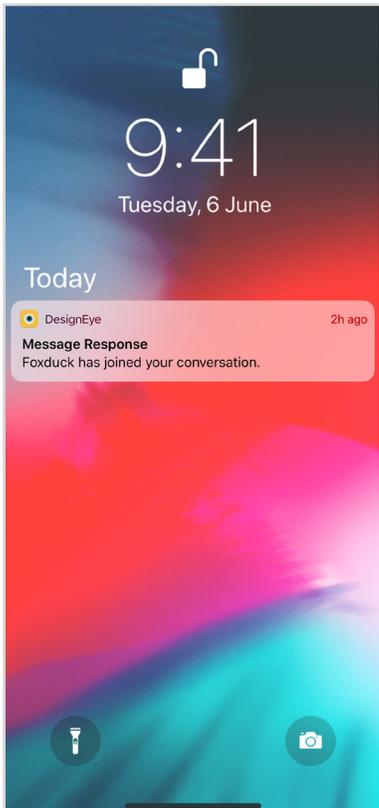
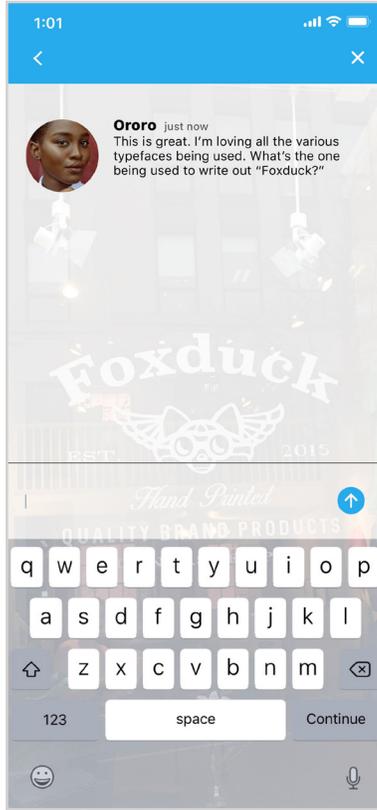
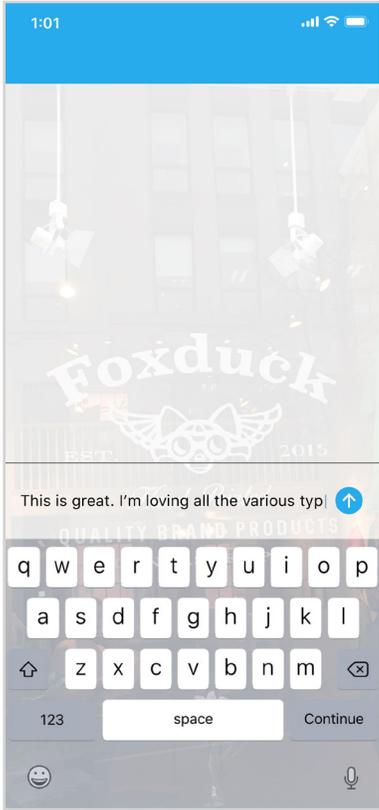
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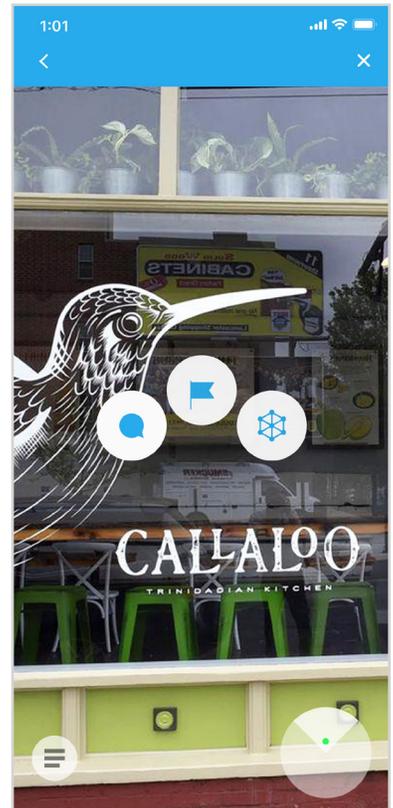
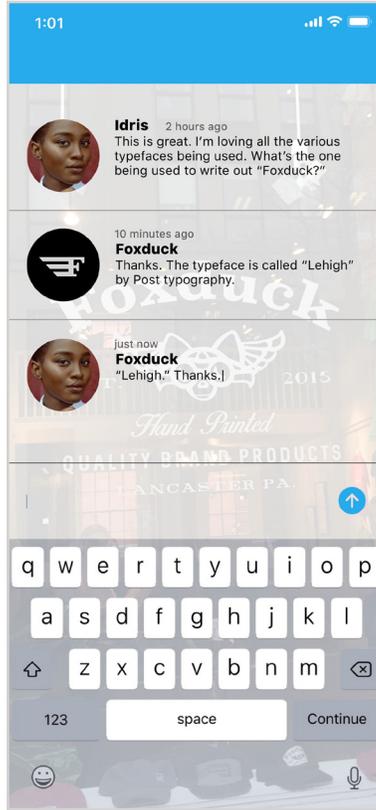
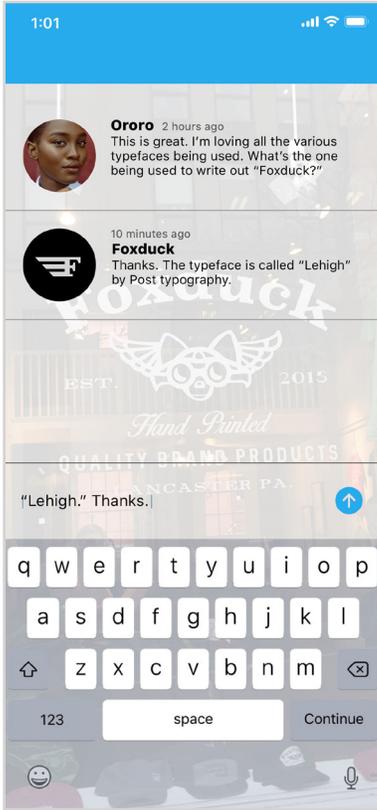
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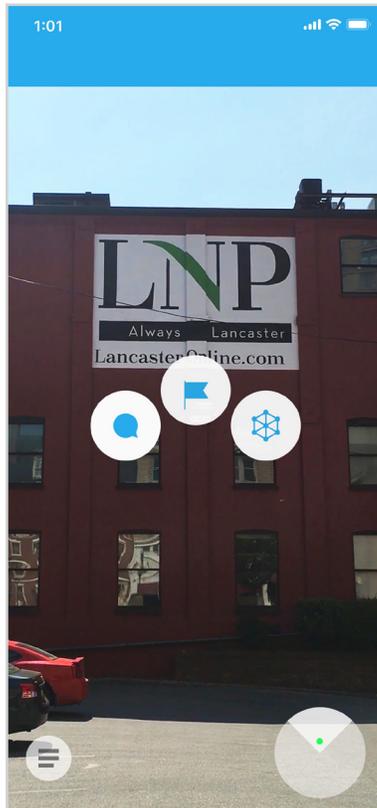
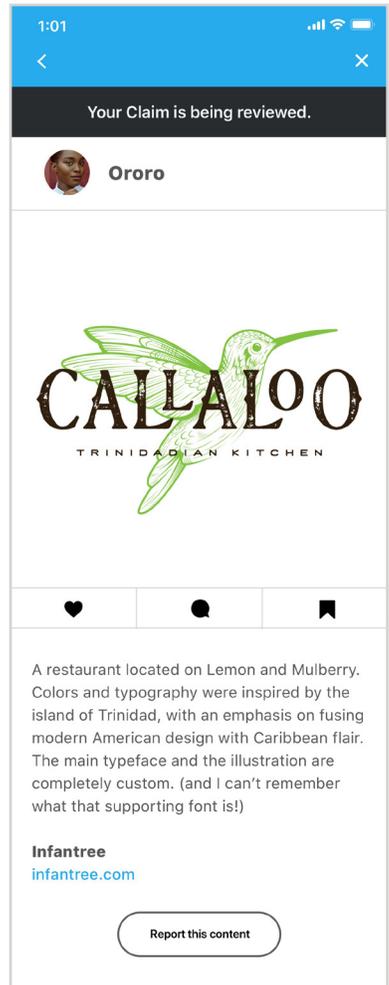
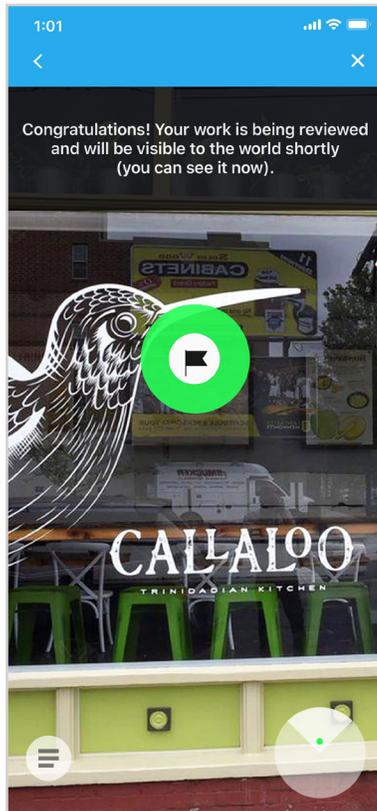
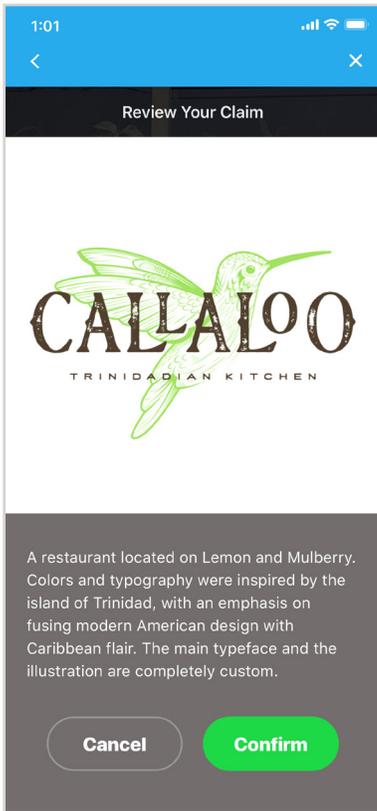
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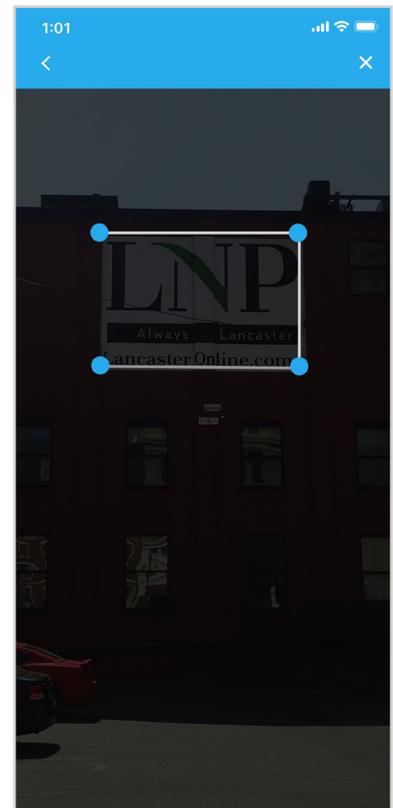
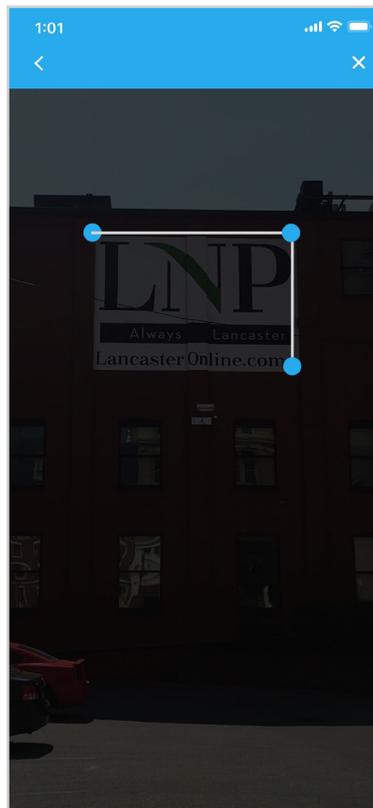
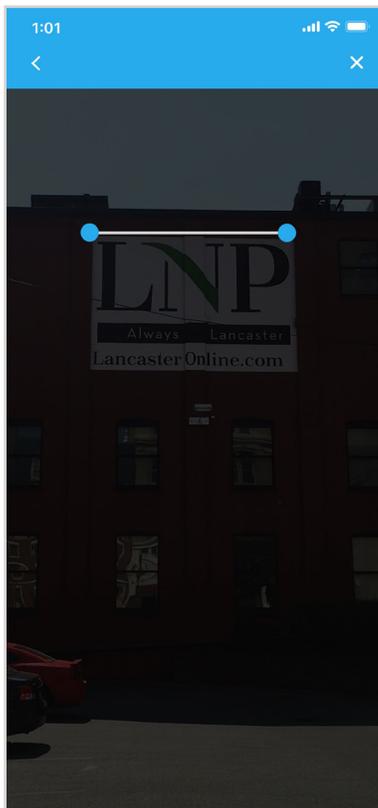
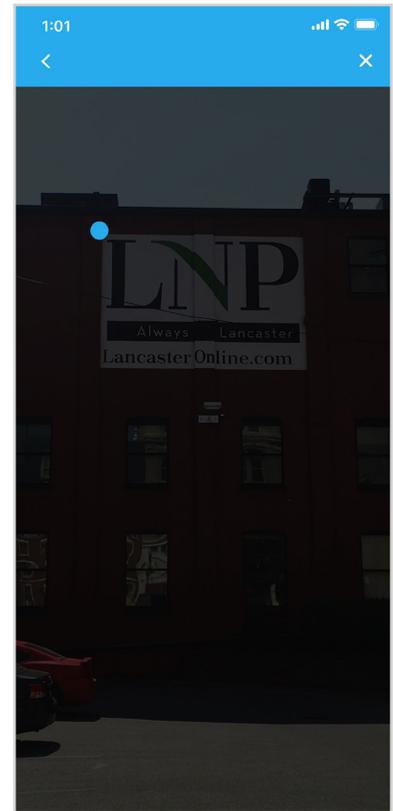
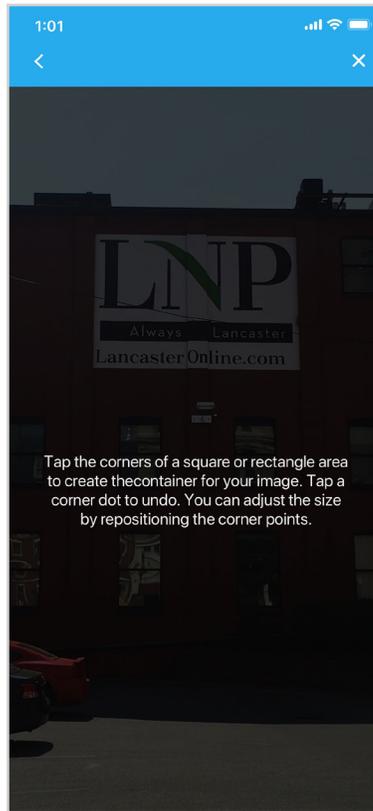
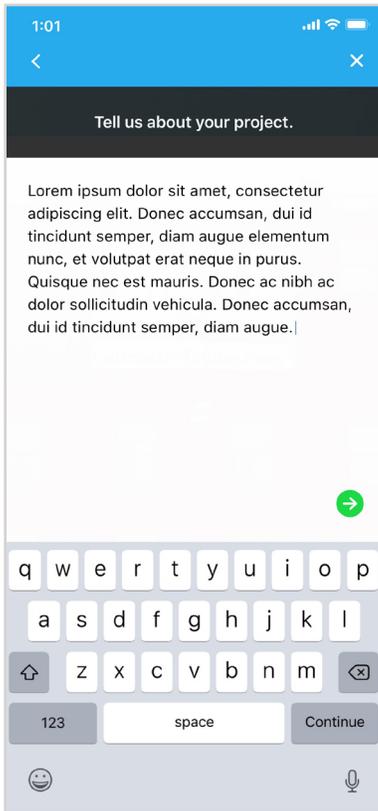
APPENDIX E: High Fidelity Prototype



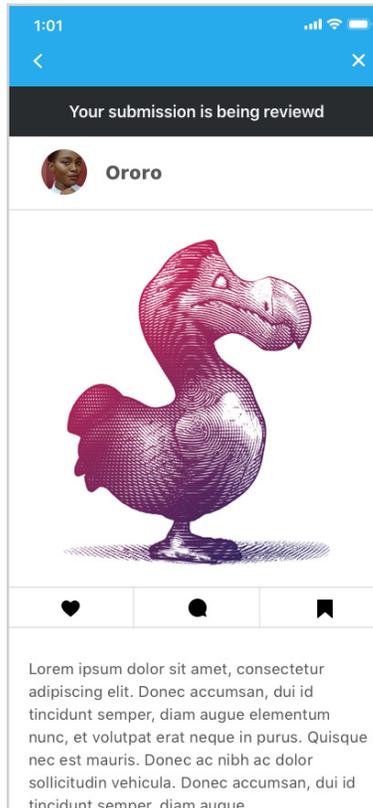
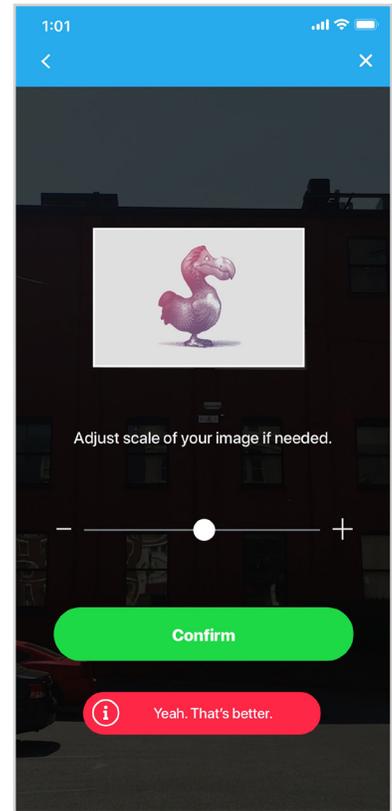
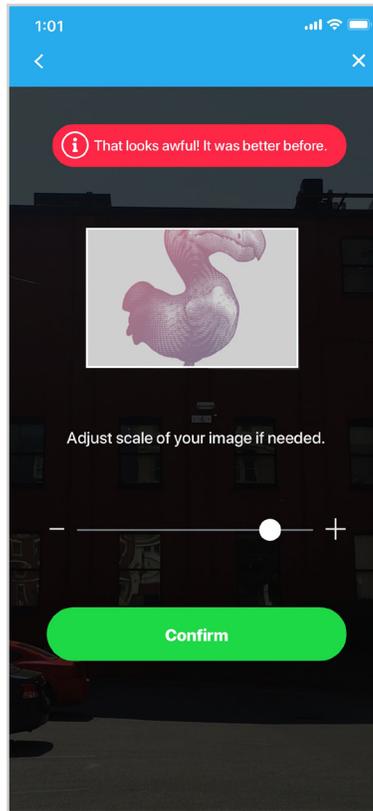
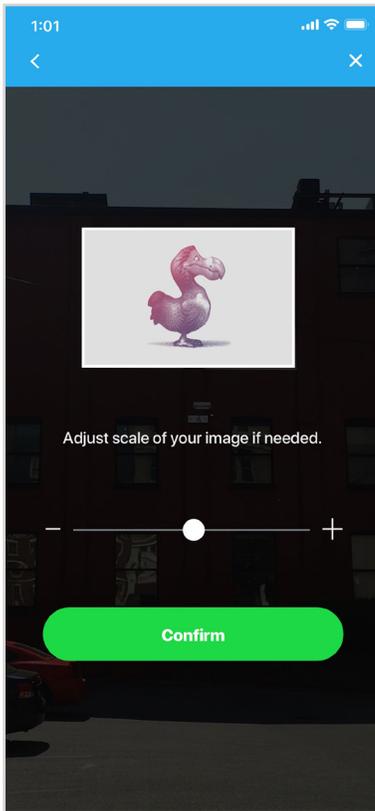
APPENDIX E: High Fidelity Prototype



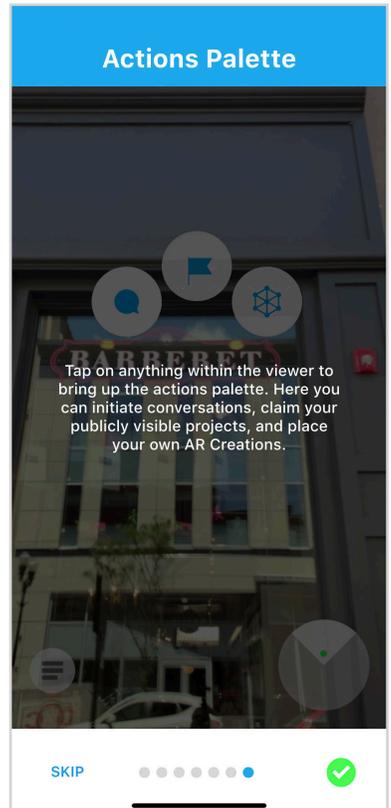
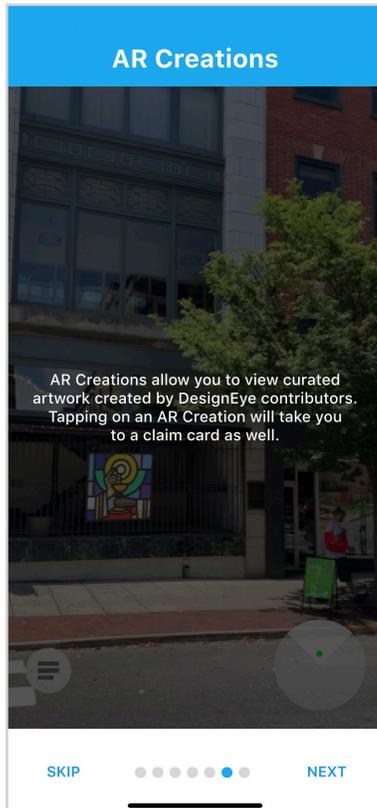
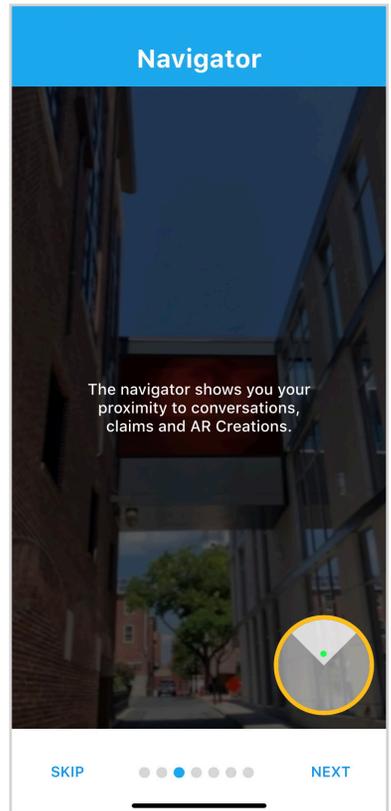
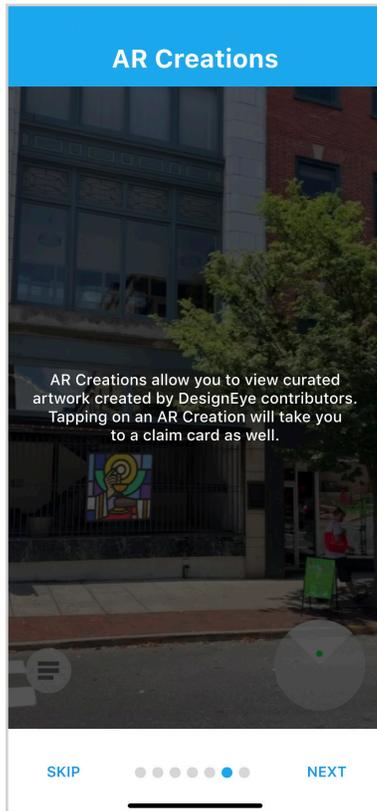
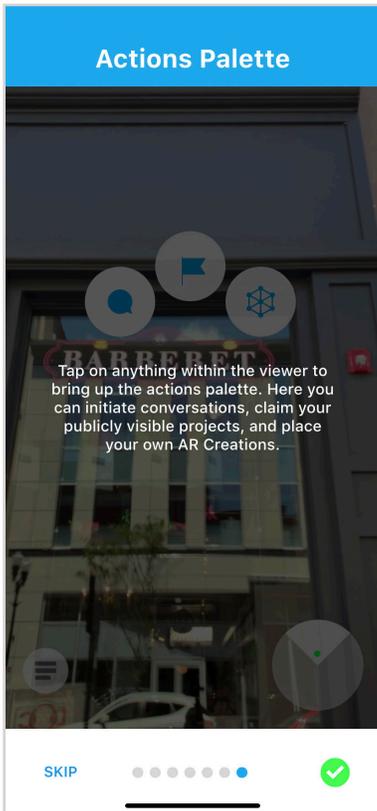
APPENDIX E: High Fidelity Prototype



APPENDIX E: High Fidelity Prototype



APPENDIX E: High Fidelity Prototype



APPENDIX E: High Fidelity Prototype

1:01

Craig Forbes



With this self-initiated project, I set out to pay tribute to Jasper Fforde's cult novel *The Eyre Affair*. The pen and ink image drawing of Pickwick, the Dodo bird, who is featured in the series is manipulated through a combination of radial halftones, gradients, and clipping masks. I'm particularly fond of how the serifs in Goudy Old Style mirror the beak and claws of the Dodo bird.

Michael Rothermel
michaelrothermel.com

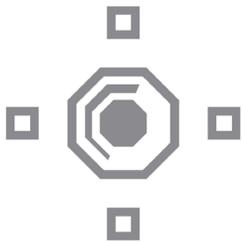
More by Scott Summers



Report this content

1:01

Ned Bustard



THE TRUST
PERFORMING ARTS CENTER

In 1912, Lancaster's largest bank, the Lancaster Trust Company, finished construction on its new downtown headquarters. Sparing no expense in the process, the Lancaster Trust Company built one of the region's most stunning buildings, a Beaux-Arts masterpiece from the imagination of Lancaster's leading architect, C. Emlen Urban. A century later, Mr. Urban's architectural treasure is being re-imagined as The Trust Performing Arts Center – a stunning venue for music, theater, art, ideas, and dance in the heart of downtown Lancaster.

The logo mark simultaneously references the spaces past as a banking building and present as a Christian focused performance space.

Ned Bustard
worldsendimages.com

More by Ned Bustard



SQUARE HALO GALLERY

Report this content

1:01

Michael Rothermel



This is my favorite houseplant. I created this effect in-camera by shooting through the eyepiece of an old film camera (Argoflex 75).

Michael Rothermel
michaelrothermel.com

More by Michael Rothermel



THE TRUST
PERFORMING ARTS CENTER

Report this content

APPENDIX E: High Fidelity Prototype

1:01

 **Michael Rothermel**



7

I created this self-portrait using a lighting technique I learned from Nick Fancher, an accomplished portrait photographer. Using three colored gels (Cyan, Yellow, and Magenta) you get white ("natural") light where the three colored light sources overlap.

Michael Rothermel
michaelrothermel.com

More by Michael Rothermel



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1:01

 **Craig Forbes**



7

This is a portrait of Alice Morgan portrayed by Ruth Wilson on BBC's *Luther*. My process for this piece involved layering colored pencil drawings over frames from the series in photoshop and further manipulating it with various layered bend modes in. Film grain and other grunge like elements were applied in Final Cut Pro.

Craig Forbes
craigforbesdesign.com

More by Craig Forbes



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1:01

 **Ned Bustard**



SQUARE HALO GALLERY

7

In Christian art, the square halo identified a living person presumed to be a saint. Square Halo Gallery is a space for contemporary art inspired by the Christian faith. The typography in the logo is a combination of weights of P22 Johnston Underground and the saint illustration is based on a Byzantine mosaic depicting Pope John VII.

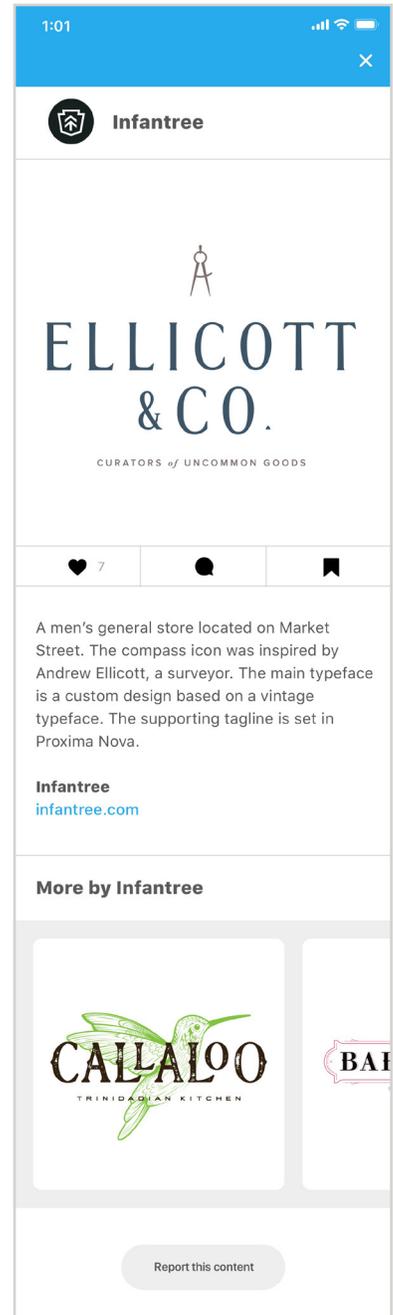
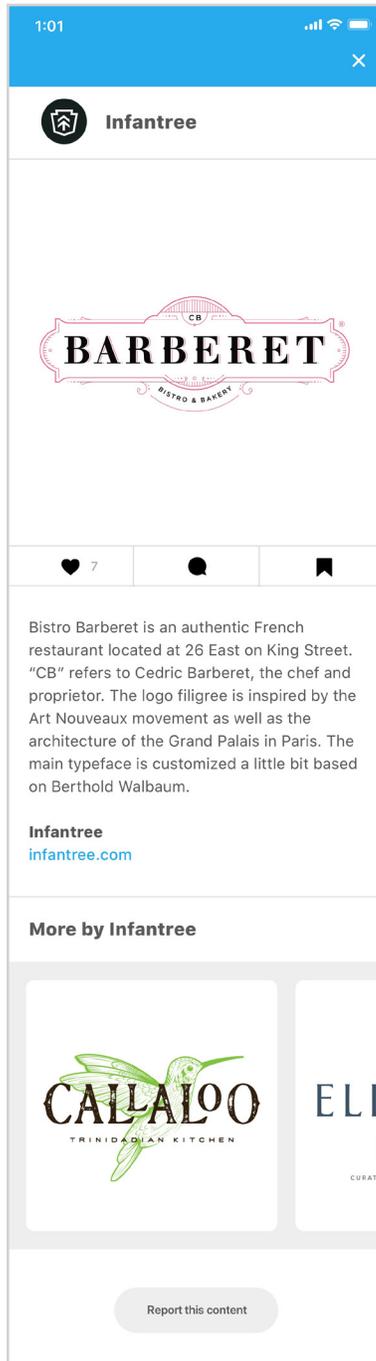
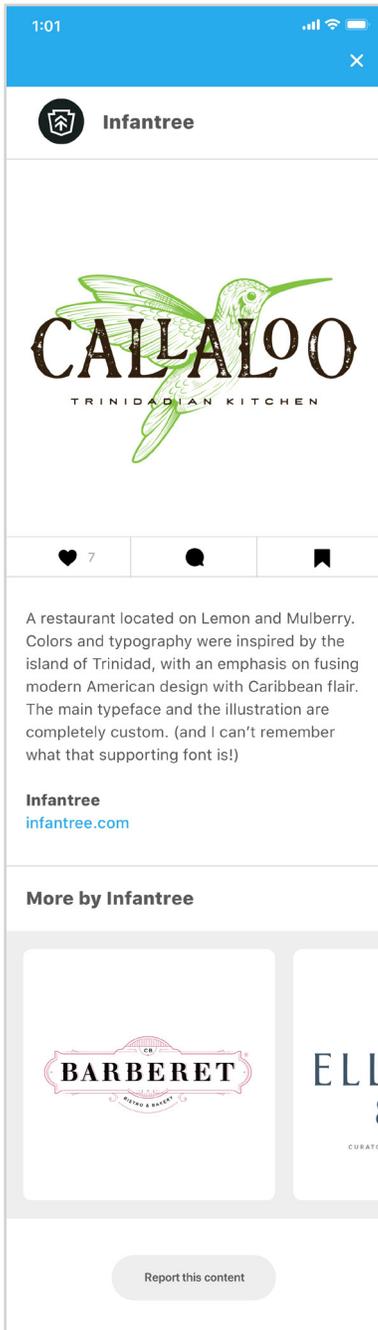
Ned Bustard
worldsendimages.com

More by Ned Bustard

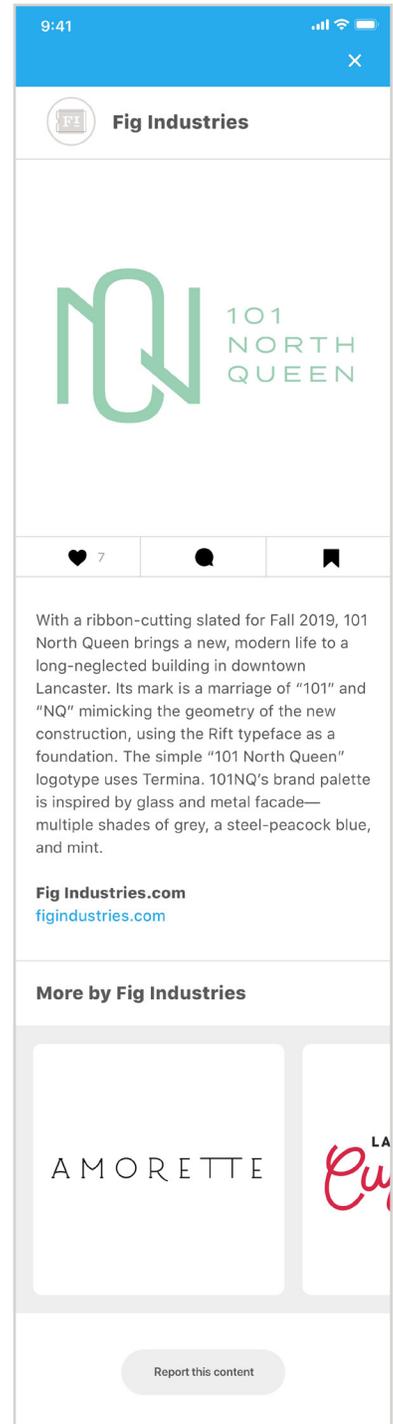
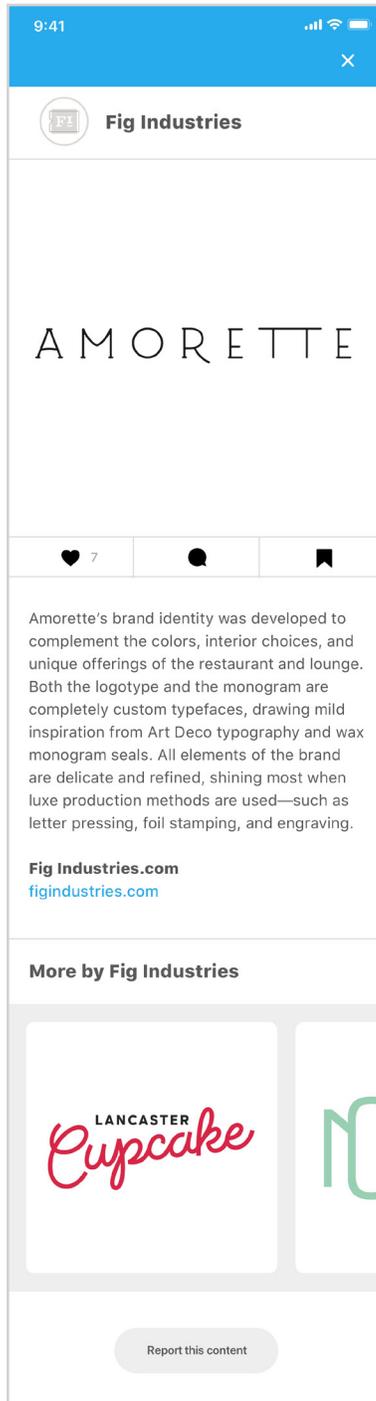


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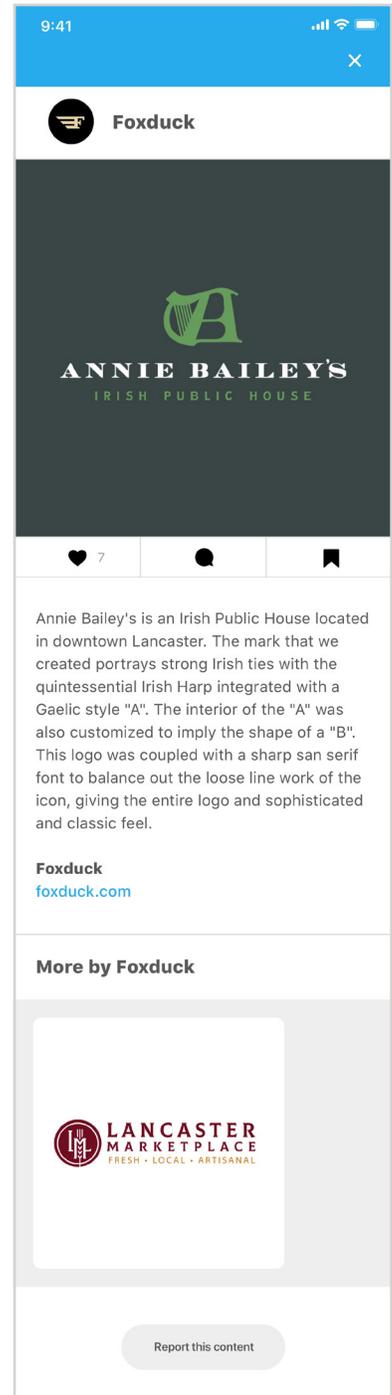
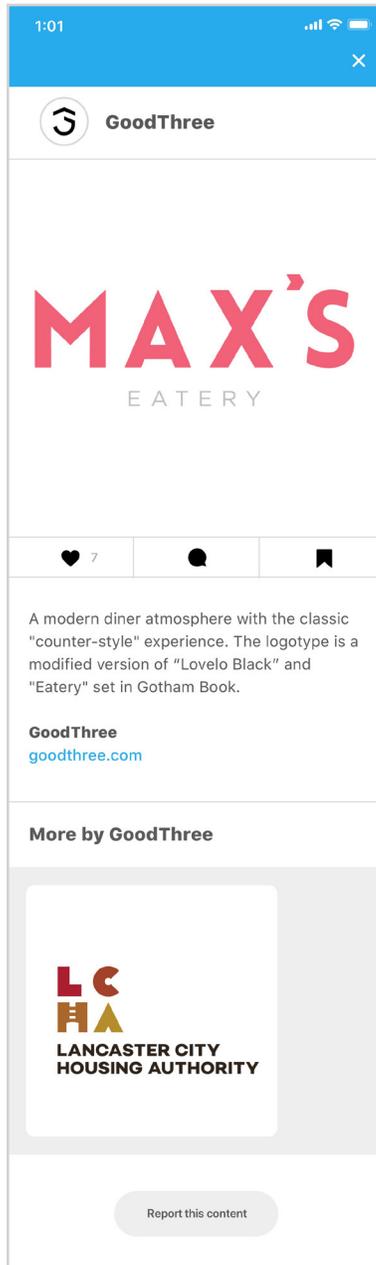
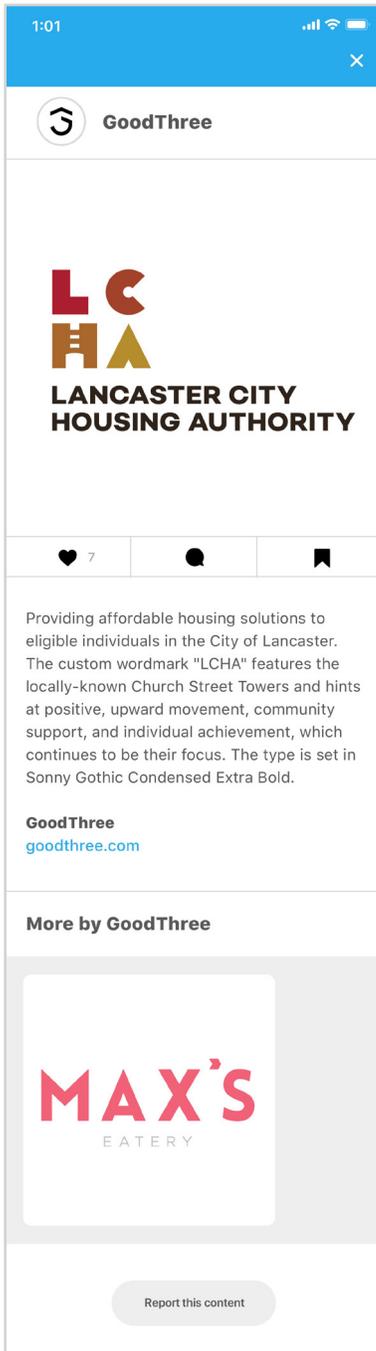
APPENDIX E: High Fidelity Prototype



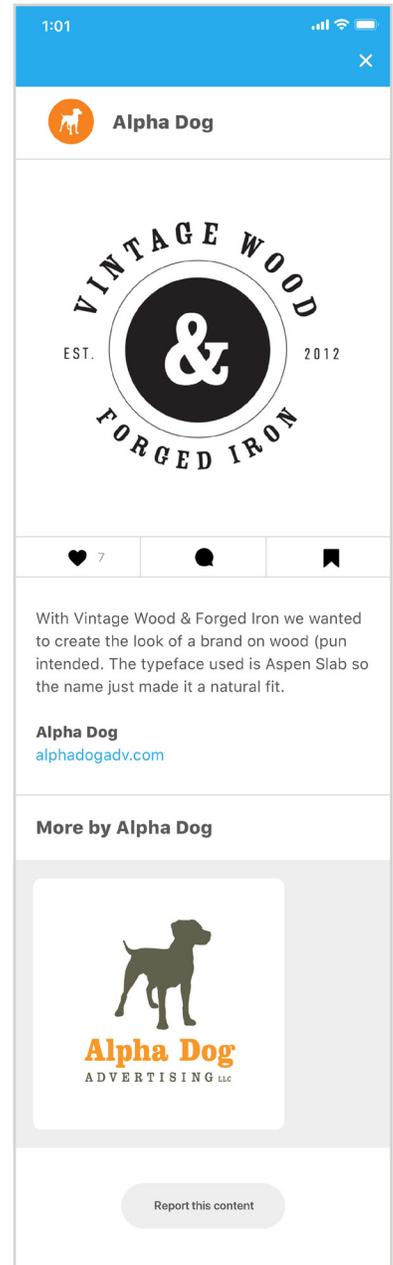
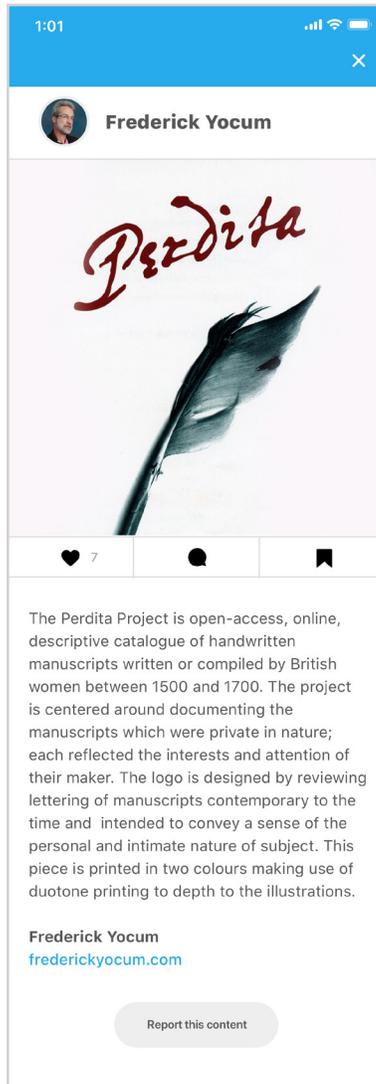
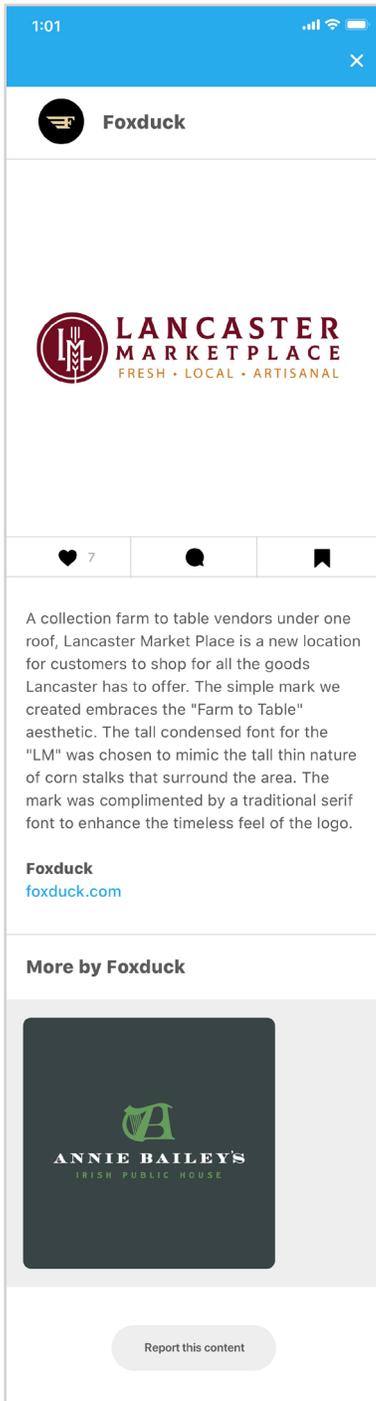
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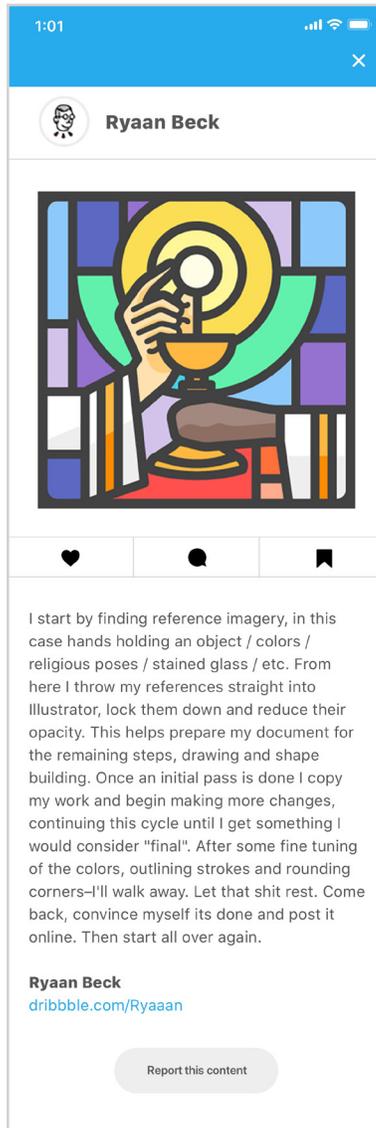
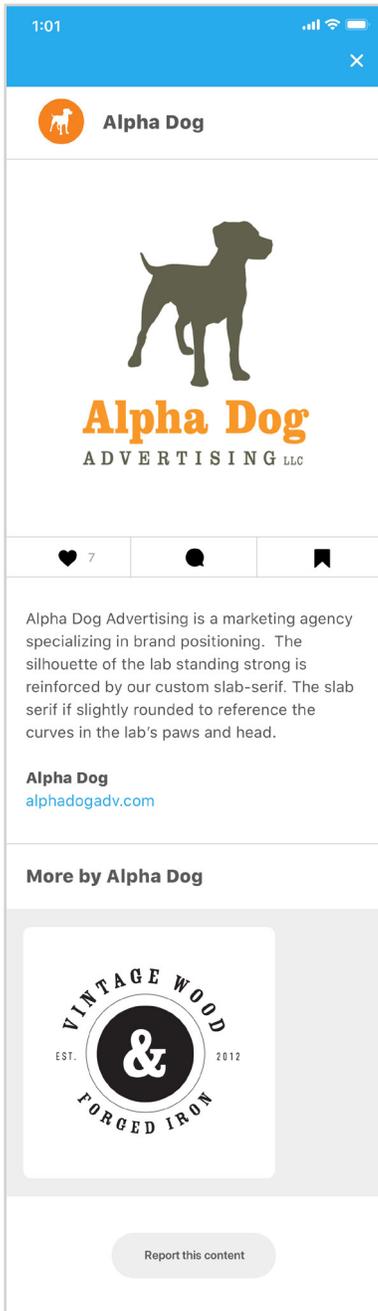
APPENDIX E: High Fidelity Prototype



APPENDIX E: High Fidelity Prototype



APPENDIX E: High Fidelity Prototype



APPENDIX F: Logo & Style Guide



RGB 57,68,223

RGB 117,92,67

RGB 254,192,38

RGB 238,51,75

RGB 255,255,255

RGB 239,238,237

RGB 212,212,211

RGB 92,91,91

RGB 0,0,0

SF Pro Display Black

SF Pro Display Semibold

SF Pro Text Medium

APPENDIX G: Promotional Website

DesignEye

Contact View Prototype

Introducing DesignEye

DesignEye is a new way to explore the work of creatives in your city.

Converse. Claim. Create.

DesignEye is the thesis project of **Craig Forbes**, an MFA in Integrated Design candidate at University of Baltimore. The project centers around the use of an Augmented Reality enabled iOS app to view and annotate the work of creatives in and around Lancaster, Pennsylvania. DesignEye users will be able to converse with other designers, claim their publicly visible works, and create new works visible through the lens of AR.

Converse

Ask and answer questions about the work you see around you. Engage with the DesignEye community to cultivate design literacy.

Claim

Mark your turf and take credit for your publicly visible work. Tell the DesignEye community about your projects and share your process.

Create

The world is your canvas. Display your projects using augmented reality. Show the DesignEye community what you've been working on.

Explore the Prototype

We can't bring you to Lancaster but we can bring Lancaster to you. Use our guided demo to explore some of the work created by our contributors.

Click anywhere to interact with this prototype.

Mark with Mouse

DesignEye | © 2019 All rights reserved.

DesignEye

Contact

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Explore the Prototype

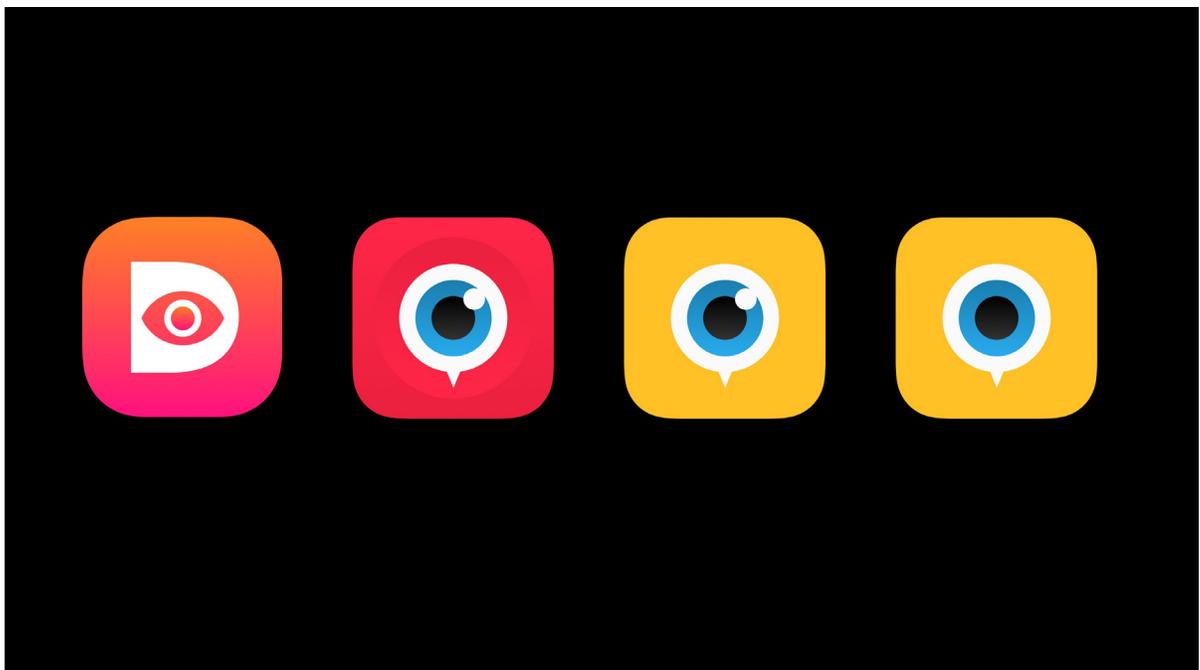
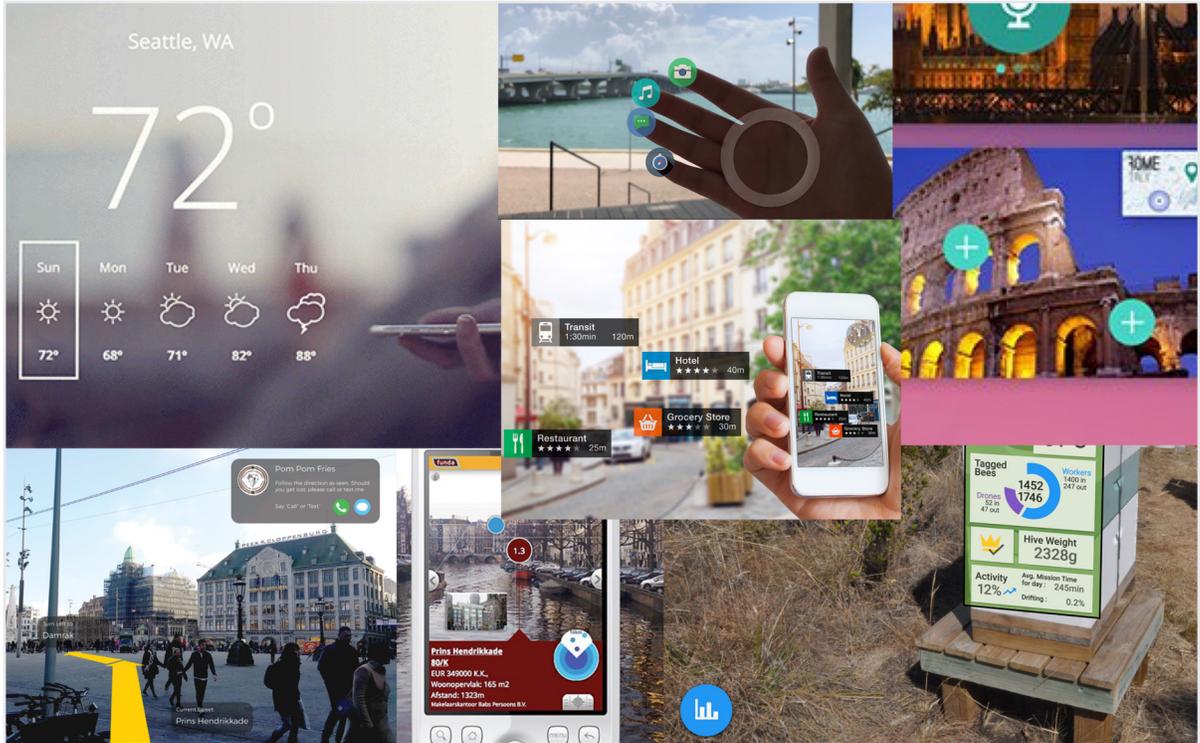
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Mark with Mouse

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APPENDIX H: Moodboard & Application Icon Development



APPENDIX I: Promotional Video

