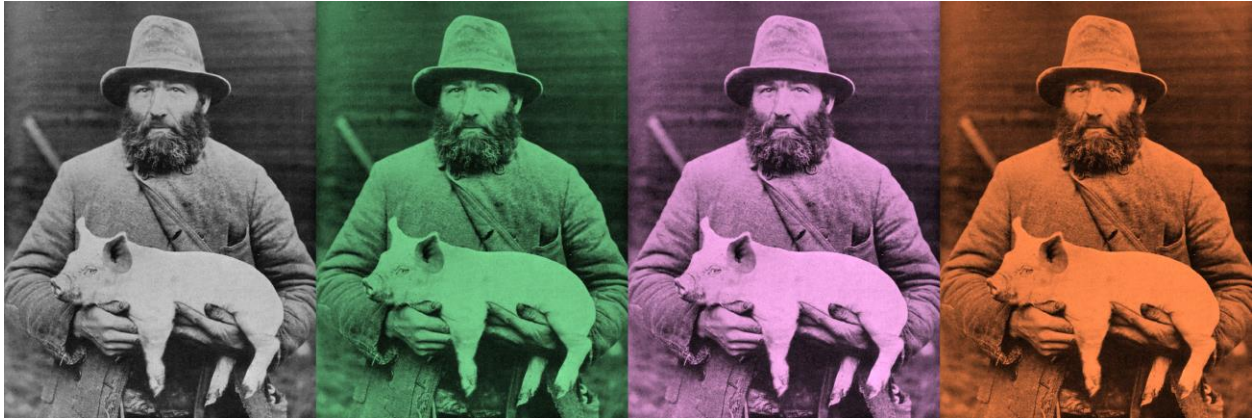







## Chapter 1: Setting Up Software and Hardware



Choose a template for your new project:

iOS				
Application	Master-Detail Application	Page-Based Application	Single View Application	Tabbed Application
Framework & Library				
watchOS				
Application				
Framework & Library				
tvOS				
Application				
Framework & Library				
OS X				
Application				
Framework & Library				
System Plug-in				
Other				



Game

**Single View Application**

This template provides a starting point for an application that uses a single view. It provides a view controller to manage the view, and a storyboard or nib file that contains the view.

Cancel Previous Next

Choose options for your new project:

Product Name: CoolPig

Organization Name: Nummist Media Corporation Limited

Organization Identifier: com.nummist

Bundle Identifier: com.nummist.CoolPig

Language: Objective-C

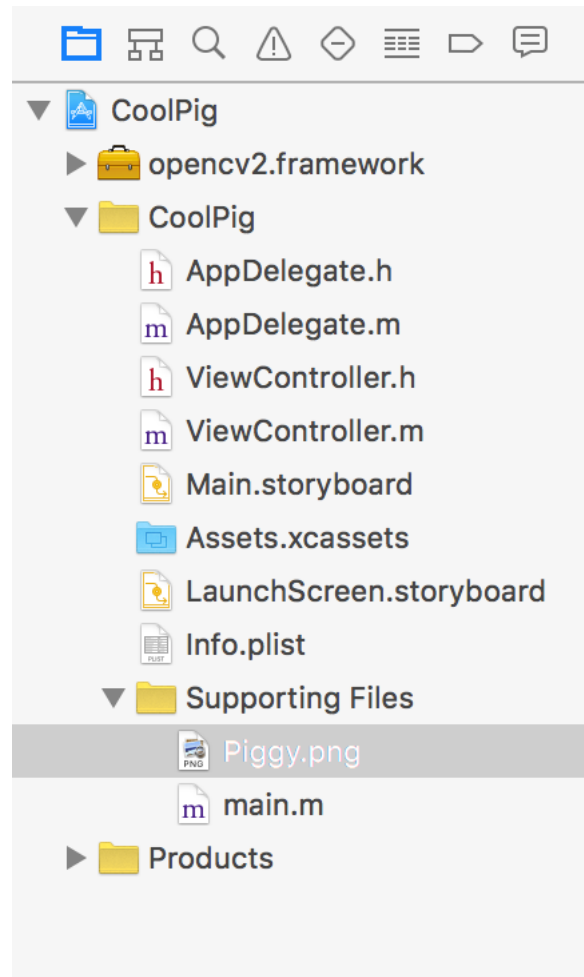
Devices: Universal

- ☐ Use Core Data
- ☐ Include Unit Tests
- ☐ Include UI Tests

Cancel

Previous

Next





General

Capabilities

Resource Tags

Info

Build Se

▼ **Deployment Info**

Deployment Target

Devices

Main Interface

Device Orientation

- ☒ Portrait
- ☐ Upside Down
- ☒ Landscape Left
- ☒ Landscape Right

Status Bar Style

- ☒ Hide status bar
- ☒ Requires full screen

Key		Type	Value
▼ Information Property List		Dictionary	(18 items)
Localization native development region	▲▼	String	en ▲▼
Executable file	▲▼	String	\$(EXECUTABLE_NAME)
Bundle identifier	▲▼	String	\$(PRODUCT_BUNDLE_IDENTIFIER)
InfoDictionary version	▲▼	String	6.0
Bundle name	▲▼	String	\$(PRODUCT_NAME)
Bundle OS Type code	▲▼	String	APPL
Bundle versions string, short	▲▼	String	1.0
Bundle creator OS Type code	▲▼	String	????
Bundle version	▲▼	String	1
Application requires iPhone environment	▲▼	Boolean	YES ▲▼
Launch screen interface file base name	▲▼	String	LaunchScreen
Main storyboard file base name	▲▼ + -	String	Main
► Required device capabilities	▲▼	Array	(1 item)
UIRequiresFullScreen	▲▼	Boolean	YES ▲▼
Status bar is initially hidden	▲▼	Boolean	YES ▲▼
► Supported interface orientations	▲▼	Array	(3 items)
► Supported interface orientations (iPad)	▲▼	Array	(4 items)
View controller-based status bar appearance	▲▼ + -	Boolean	NO ▲▼



 Filter

▶ Target Dependencies (0 items)

▶ Compile Sources (3 items) ×

▼ Link Binary With Libraries (4 items) ×

Name	Status
 Accelerate.framework	Required 
 CoreGraphics.framework	Required 
 UIKit.framework	Required 
 opencv2.framework	Required 
 	Drag to reorder frameworks

▶ Copy Bundle Resources (4 items) ×

Basic
 [All](#)
[Combined](#)
 Levels
 [+](#)

▼ Apple LLVM 7.0 - Language

Setting	CoolPig
'char' Type Is Unsigned	No ↕
Allow 'asm', 'inline', 'typeof'	Yes ↕
C Language Dialect	GNU99 [-std=gnu99] ↕
CodeWarrior/MS-Style Inline Assembly	Yes ↕

► Compile Sources As Objective-C++ ↕

Enable Linking With Shared Libraries	Yes ↕
Enable Trigraphs	No ↕
Generate Floating Point Library Calls	No ↕
Increase Sharing of Precompiled Headers	No ↕
Precompile Prefix Header	No ↕
Prefix Header	
Recognize Built-in Functions	Yes ↕
Recognize Pascal Strings	Yes ↕
Short Enumeration Constants	No ↕
Use Standard System Header Directory Searching	Yes ↕

Basic
 [All](#)
[Combined](#)
 Levels
 [+](#)

▼ Apple LLVM 7.0 - Preprocessing

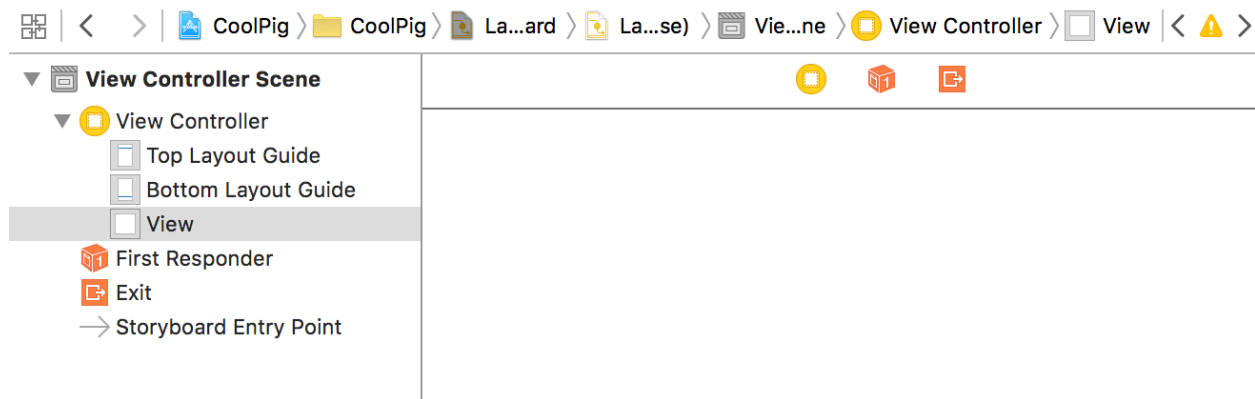
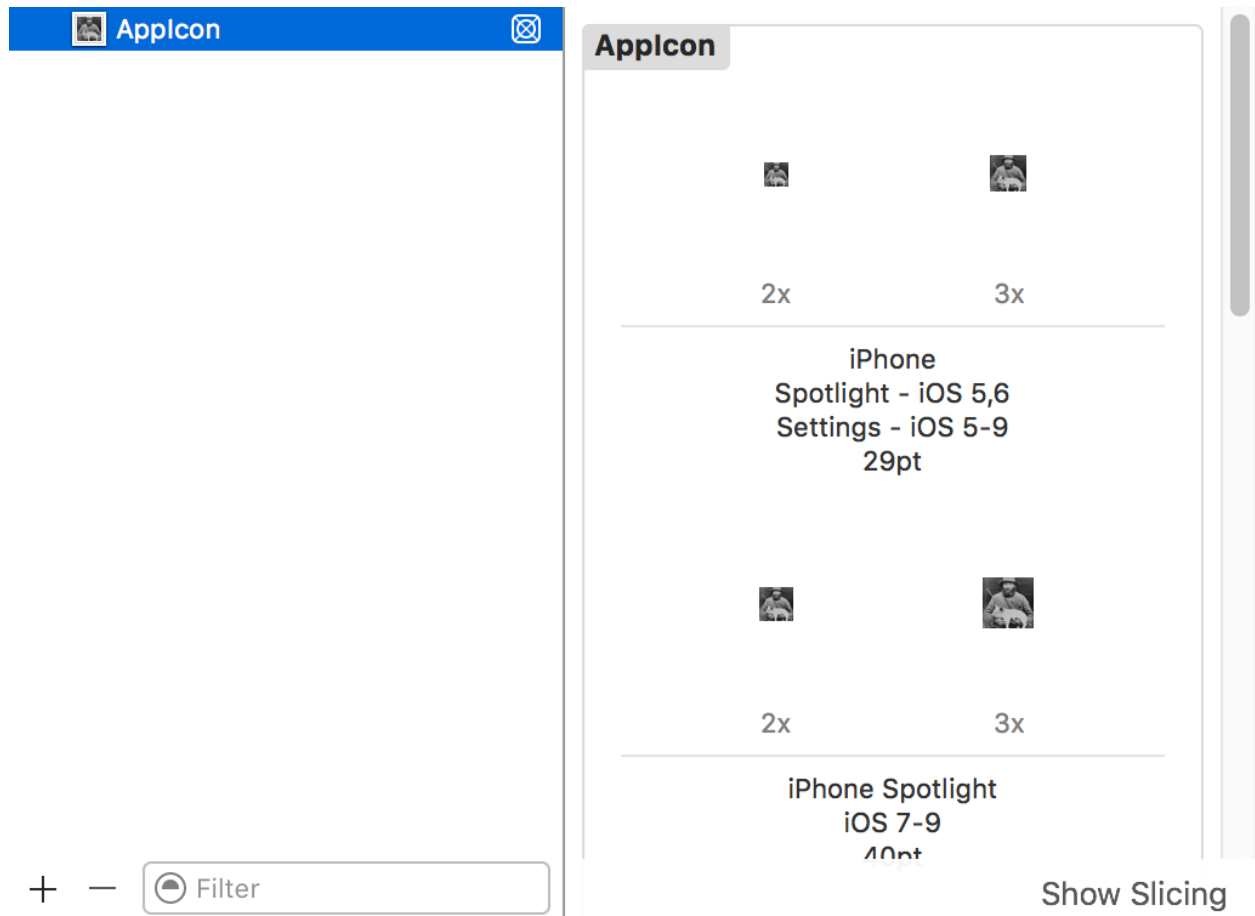
Setting	CoolPig
▼ Enable Foundation Assertions	<Multiple values> ↕
Debug	Yes ↕
Release	No ↕
Enable Strict Checking of objc_msgSend Calls	Yes ↕
▼ Preprocessor Macros	<Multiple values>

Debug WITH\_OPENCV\_CONTRIB DEBUG=1

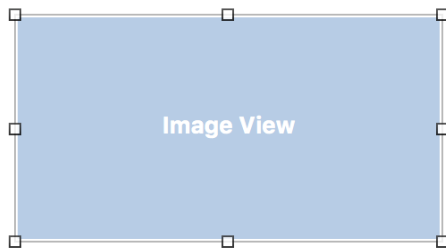
Release + WITH\_OPENCV\_CONTRIB

Any Architecture | Any SDK ↕

Preprocessor Macros Not Used In Precompiled Headers







## Identity and Type

Name LaunchScreen.storyboard

Type Default - Interface Builder...

Location Relative to Group

Base.lproj/  
LaunchScreen.storyboard

Full Path /Users/Joe/Projects/  
Nummist/ComputerVision/  
iOSApplicationDevelopment  
WithOpenCV3/CoolPig/  
CoolPig/Base.lproj/  
LaunchScreen.storyboard

## On Demand Resource Tags

Tags

## Interface Builder Document

Opens in Default (7.0)

Builds for Project Deployment Targ...

View as iOS 7.0 and Later

☒ Use Auto Layout

☒ Use Size Classes

☒ Use as Launch Screen

Global Tint  Default

## Localization

☒ Base



**Table View Cell** - Defines the attributes and behavior of cells (rows) in a table view.

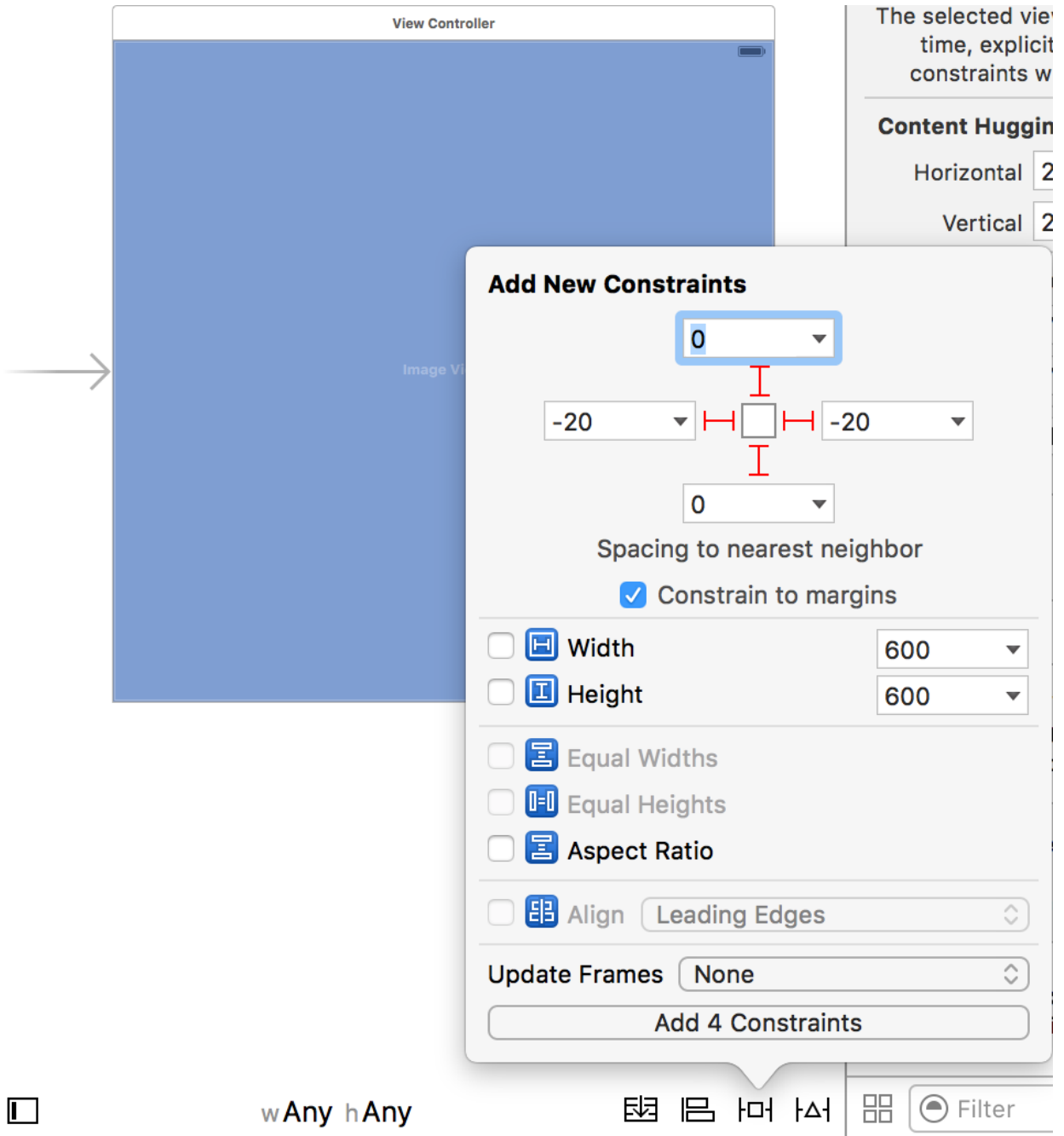


**Image View** - Displays a single image, or an animation described by an array of images.



**Collection View** - Displays data in a collection of cells.





ard > Lau...se) > Vie...ene > Vie...ller > View > Piggy.png

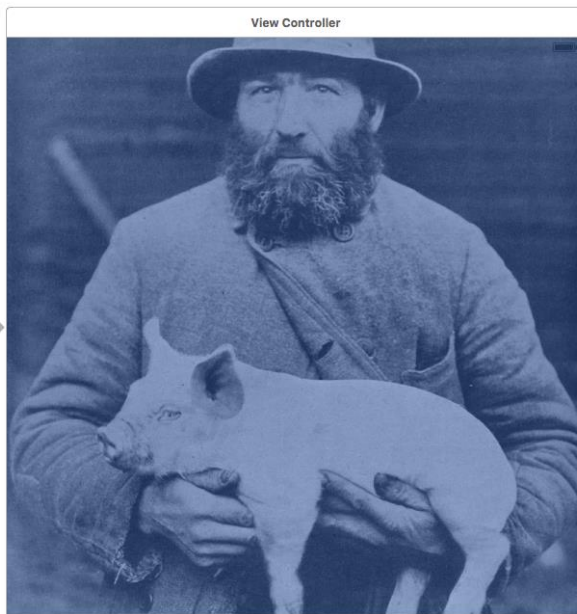


Image View

Image

Highlighted

State ☐ Highlighted

View

Mode

Semantic

Tag

Interaction ☐ User Interaction Enabled  
☐ Multiple Touch

Alpha

Background

Tint

Drawing ☒ Opaque ☐ Hidden  
☒ Clears Graphics Context  
☐ Clip Subviews  
☒ Autoresize Subviews

Stretching    
X Y  
   
Width Height

+ ☒ Installed

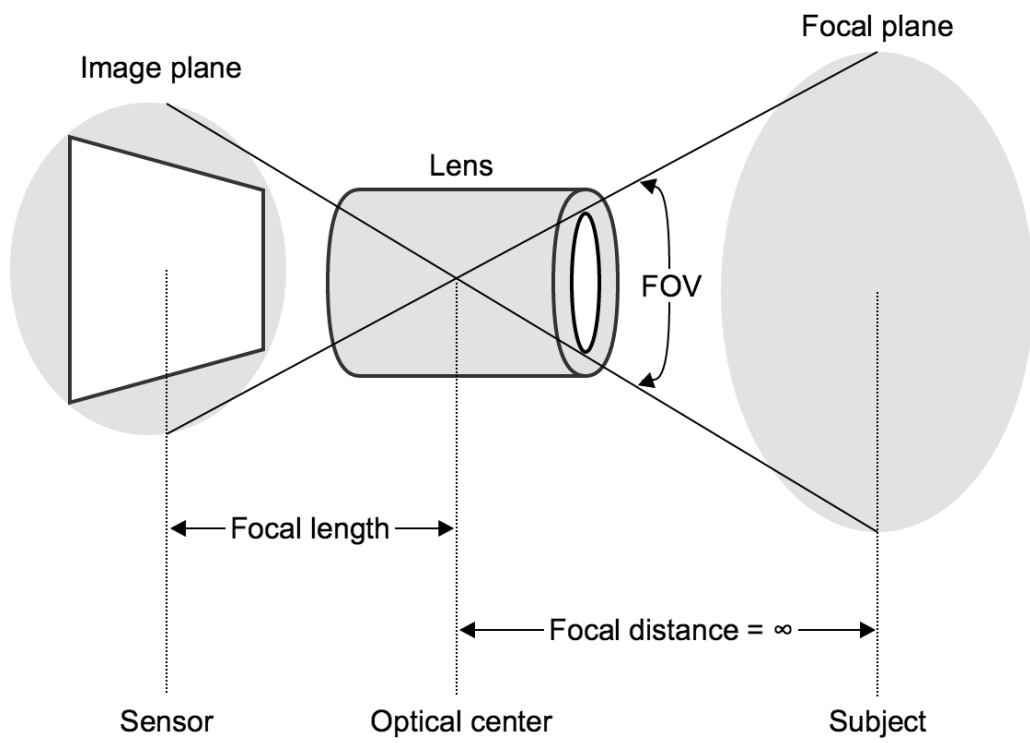
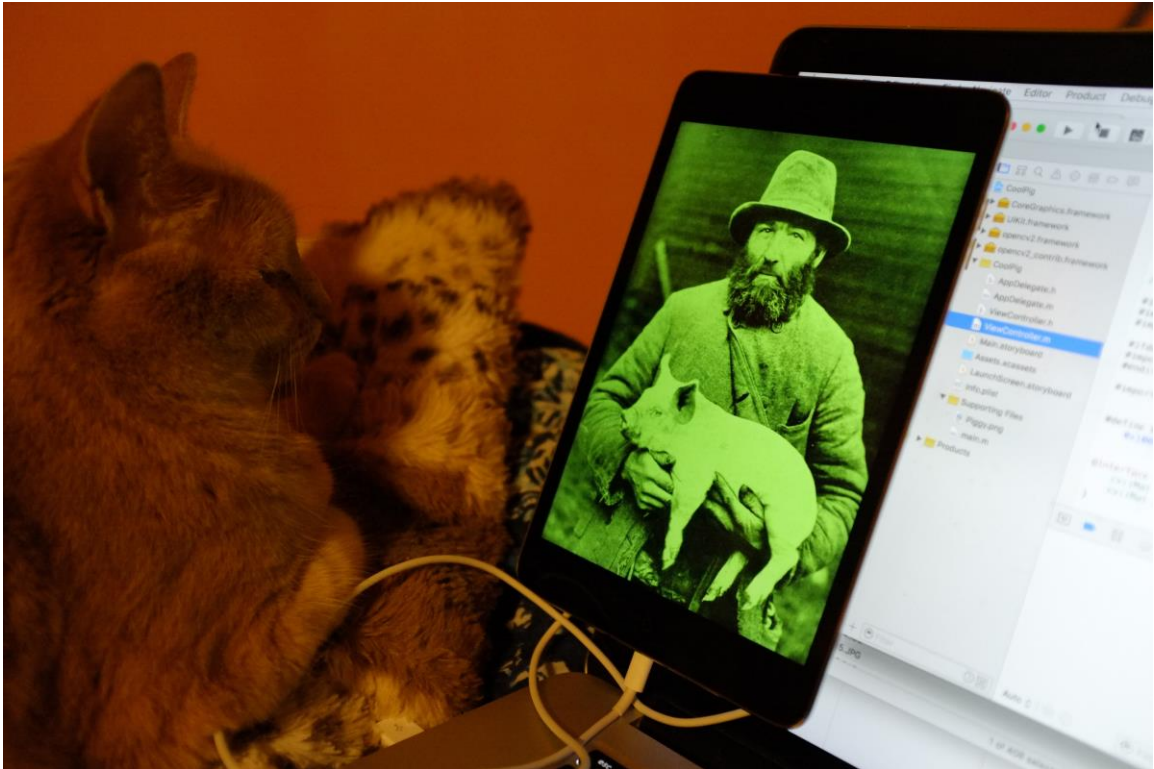
Table View Cell

- ▼ View Controller Scene
  - ▼ View Controller
    - Top Layout Guide
    - Bottom Layout Guide
    - ▼ View
      - Piggy.png
      - Constraints
      - First Responder
      - Exit
      - Storyboard Entry Point

View Controller

- ▼ Triggered Segues
  - manual ☐
- ▼ Outlets
  - imageView ☒
  - searchDisplayController ☐
  - view ☒ \* View
- ▼ Presenting Segues
  - Relationship ☐
  - Show ☐
  - Show Detail ☐
  - Present Modally ☐
  - Present As Popover ☐
  - Embed ☐
  - Push (deprecated) ☐
  - Modal (deprecated) ☐
  - Custom ☐
- ▼ Referencing Outlets
  - New Referencing Outlet ☐
- ▼ Referencing Outlet Collections
  - New Referencing Outlet Collection ☐





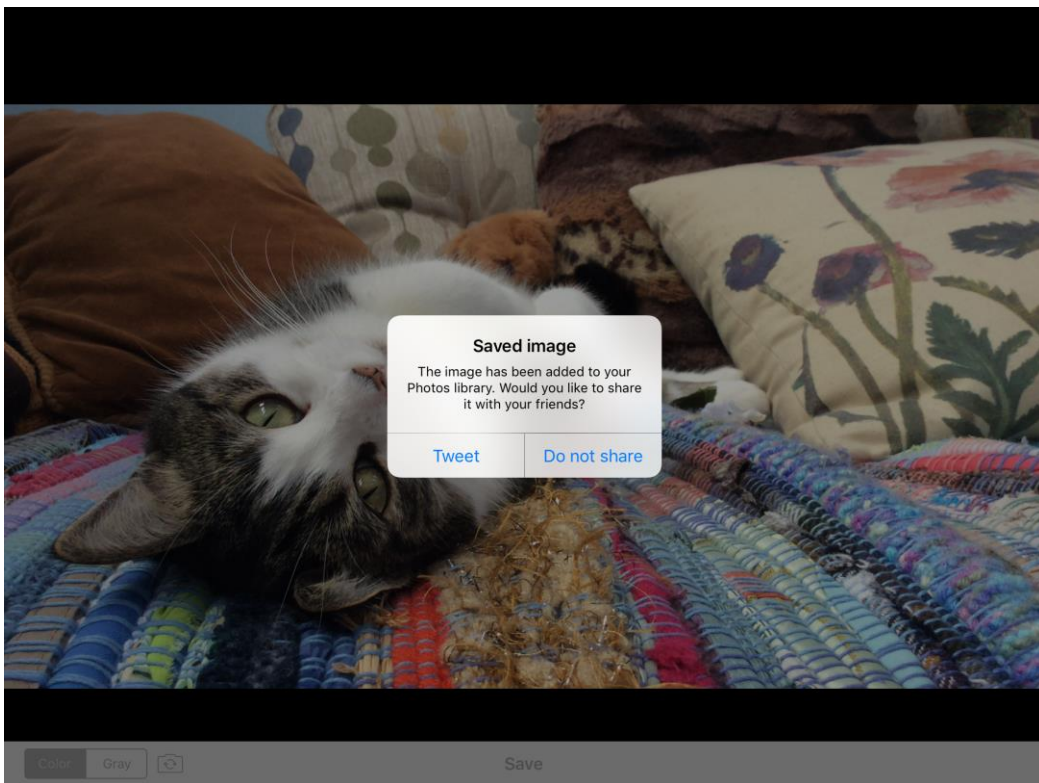
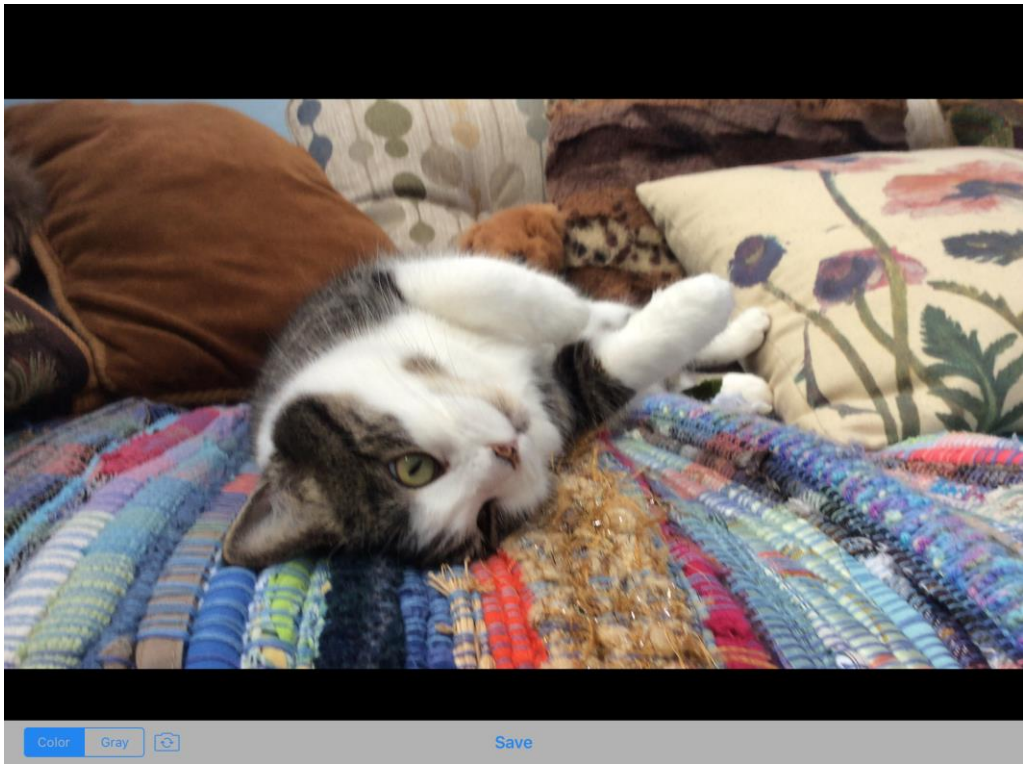


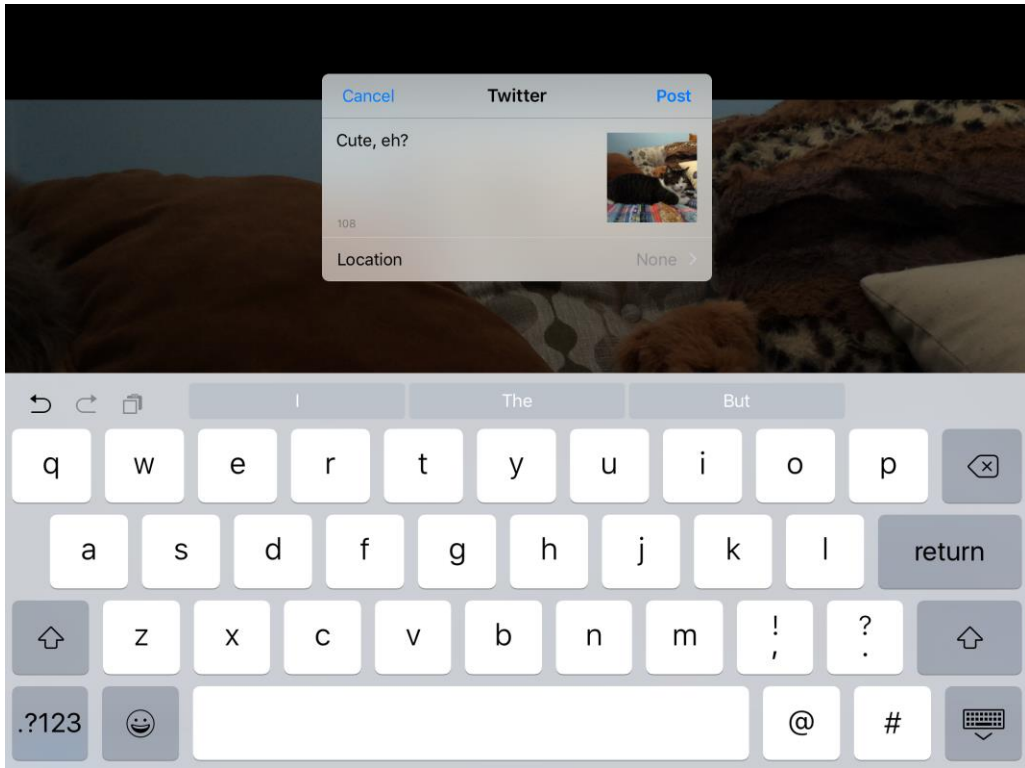


## Chapter 2: Capturing, Storing, and Sharing Photos

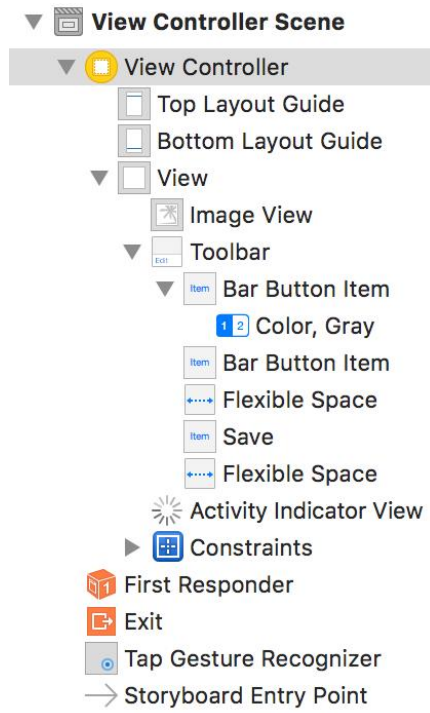


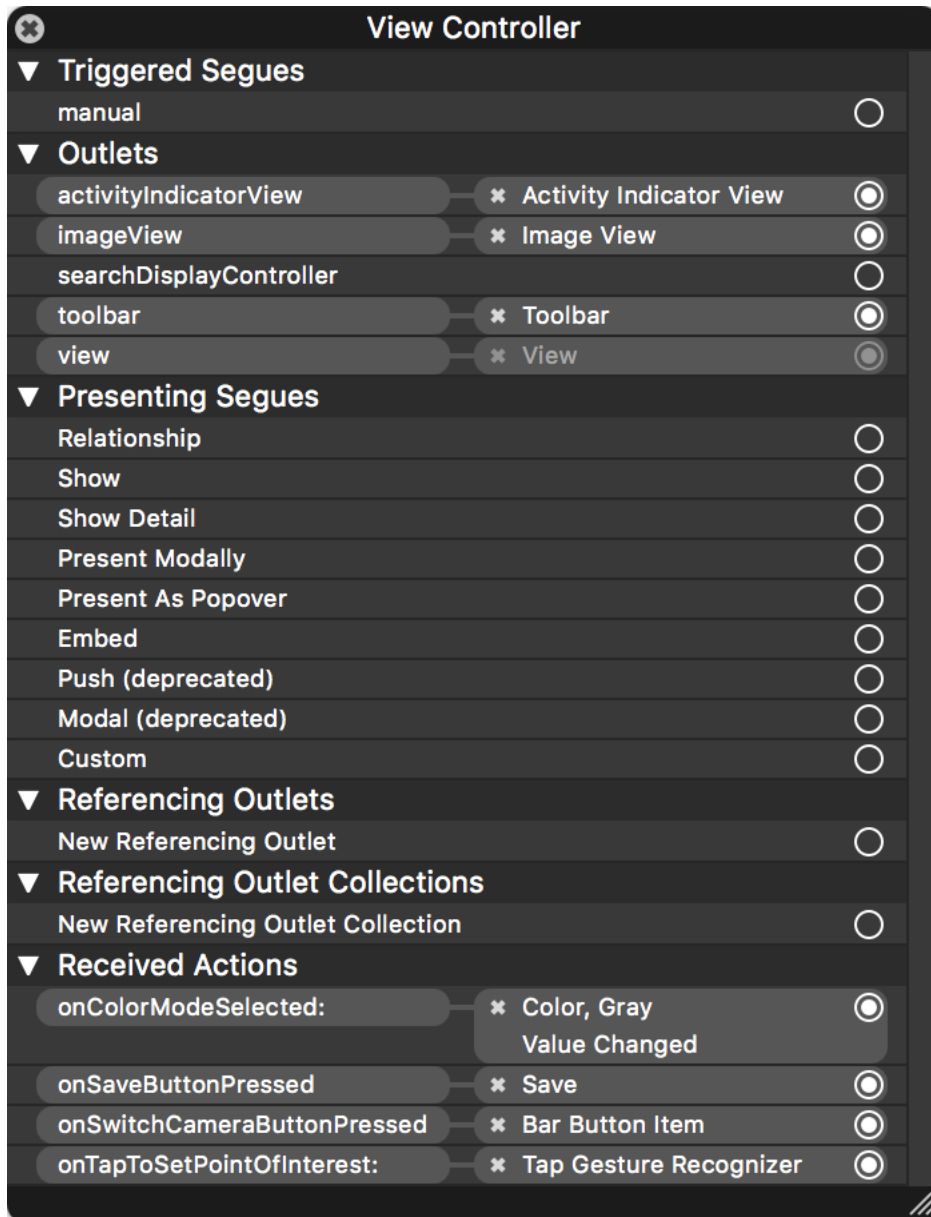






Key		Type	Value
▼ Information Property List		Dictionary	(18 items)
Localization native development re...	▲ ▼	String	en ▲ ▼
Executable file	▲ ▼	String	\$(EXECUTABLE_NAME)
Bundle identifier	▲ ▼	String	\$(PRODUCT_BUNDLE_IDENTIFIER)
InfoDictionary version	▲ ▼	String	6.0
Bundle name	▲ ▼	String	\$(PRODUCT_NAME)
Bundle OS Type code	▲ ▼	String	APPL
Bundle versions string, short	▲ ▼	String	1.0
Bundle creator OS Type code	▲ ▼	String	????
Bundle version	▲ ▼	String	1
Application requires iPhone enviro...	▲ ▼	Boolean	YES ▲ ▼
Launch screen interface file base...	▲ ▼	String	LaunchScreen
Main storyboard file base name	▲ ▼	String	Main
▼ Required device capabilities	▲ ▼	Array	(2 items)
Item 0		String	armv7
Item 1	+ -	String	video-camera ▲ ▼
UIRequiresFullScreen	▲ ▼	Boolean	YES ▲ ▼
Status bar is initially hidden	▲ ▼	Boolean	YES ▲ ▼
► Supported interface orientations	▲ ▼	Array	(3 items)
► Supported interface orientations (i...	▲ ▼	Array	(4 items)
View controller-based status bar a...	▲ ▼	Boolean	NO ▲ ▼





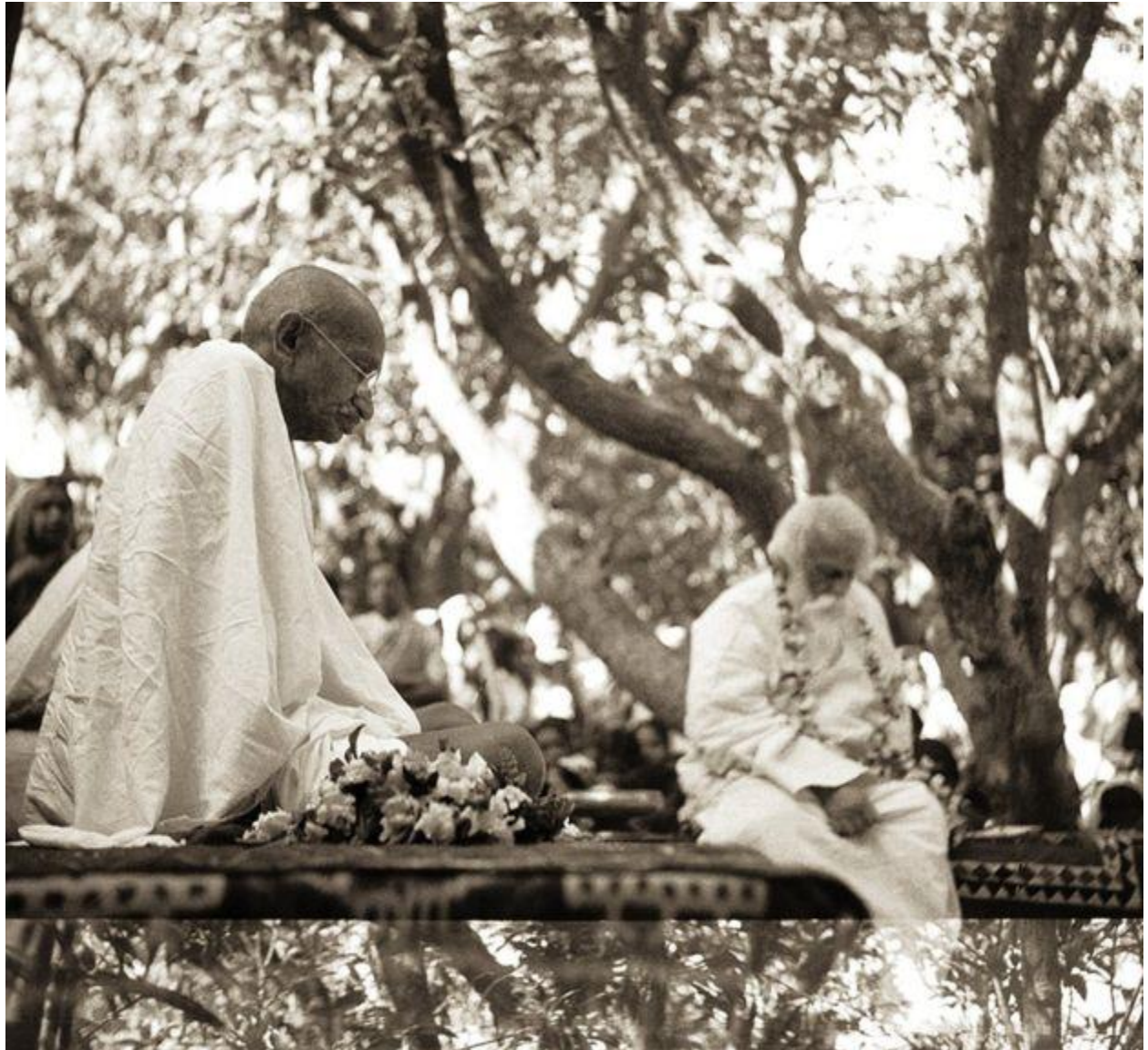


Did End On Exit  
Editing Changed  
Editing Did Begin  
Editing Did End  
Primary Action Triggered  
Touch Cancel  
Touch Down  
Touch Down Repeat  
Touch Drag Enter  
Touch Drag Exit  
Touch Drag Inside  
Touch Drag Outside  
Touch Up Inside  
Touch Up Outside  
Value Changed

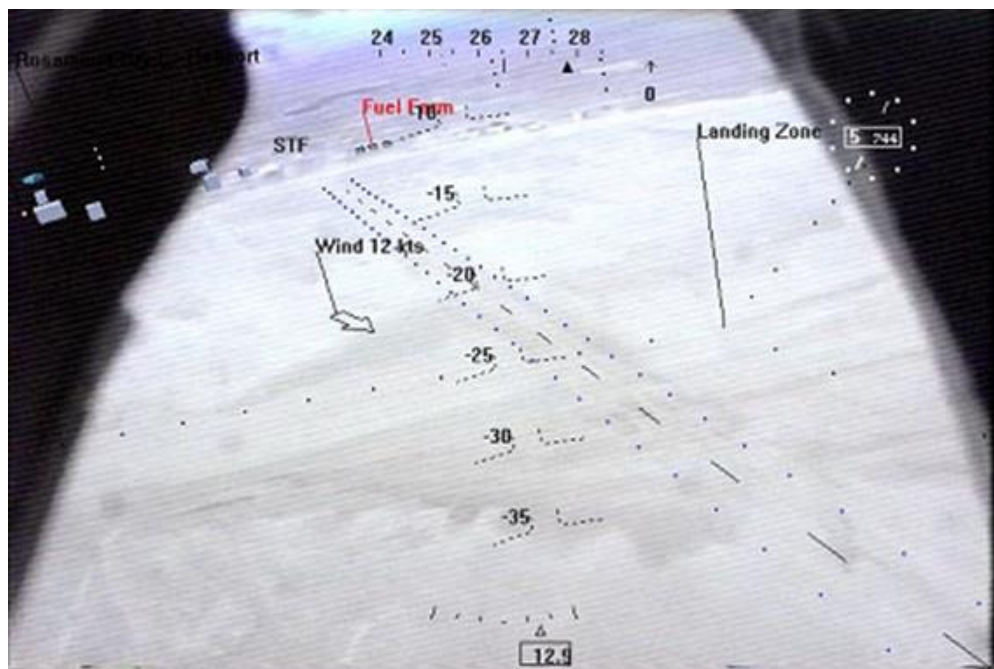





## Chapter 3: Blending Images









Color Gray 

Save

Blend Src Blend Mode

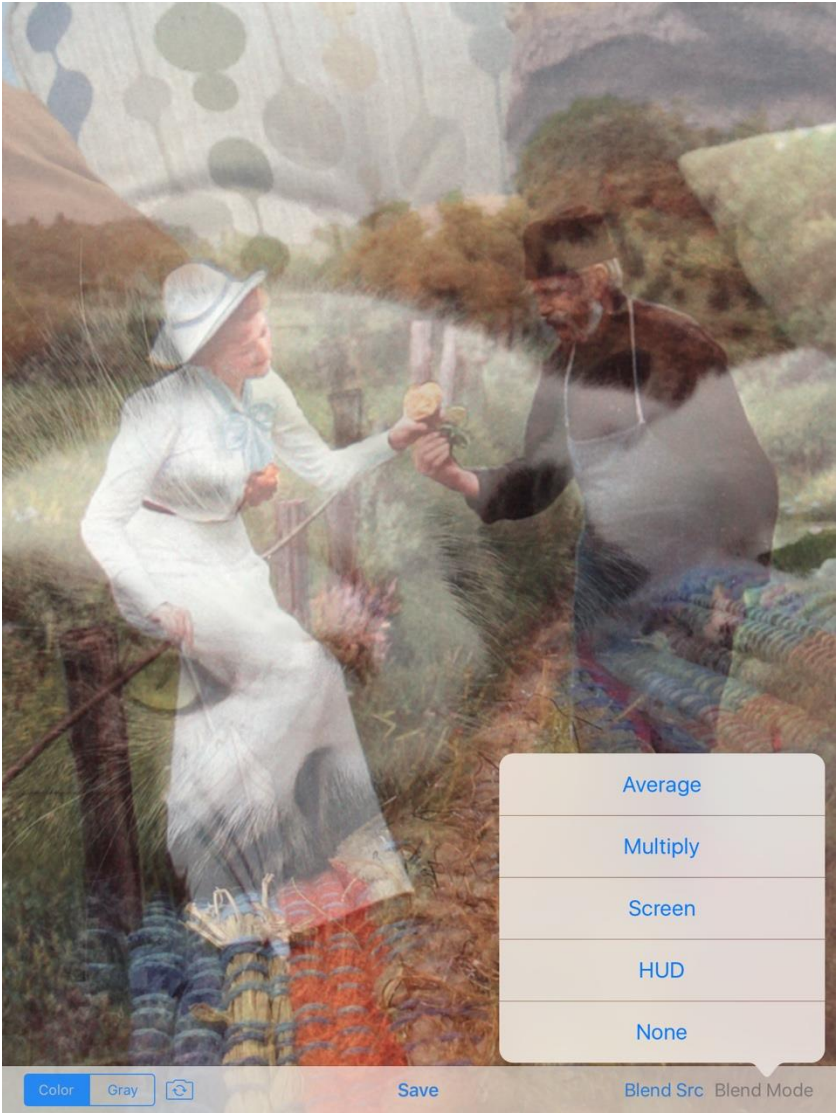
Cancel

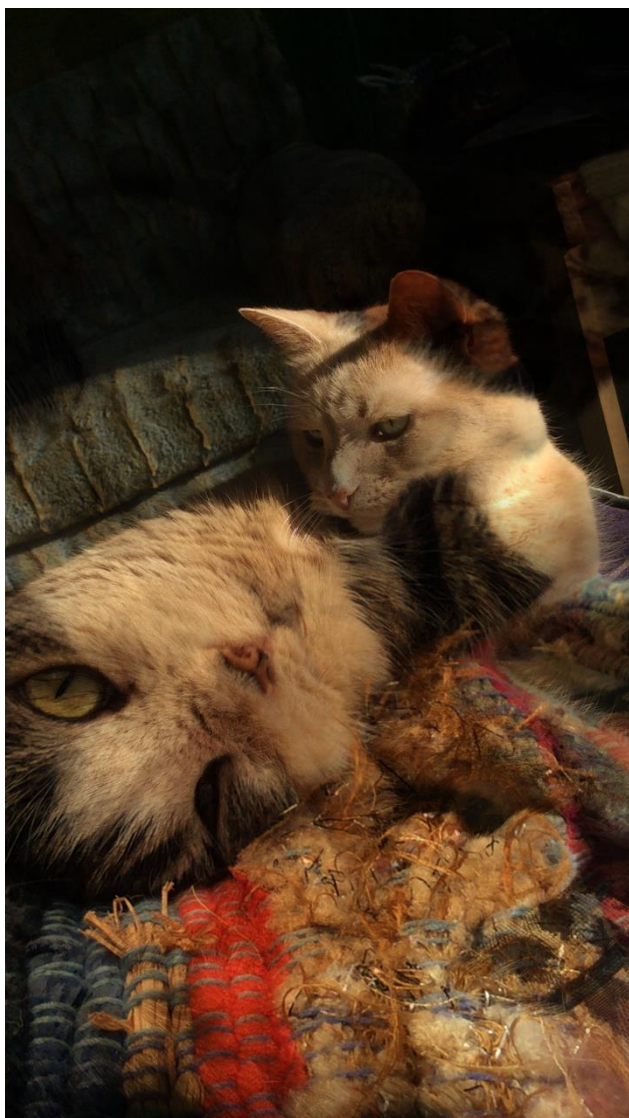
December 21, 2015

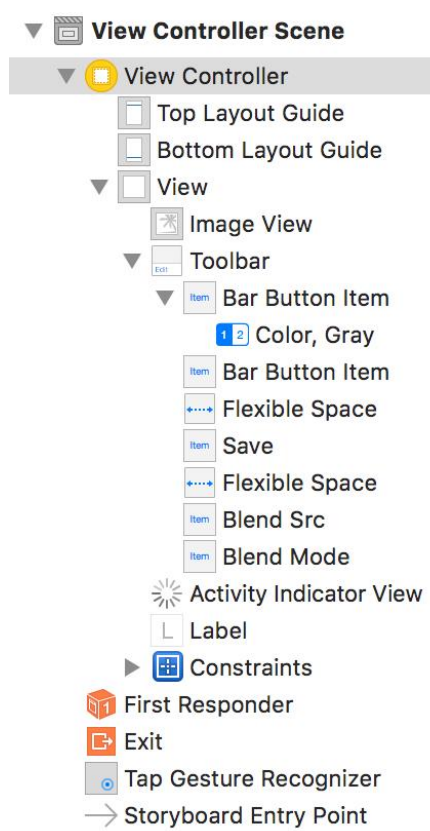




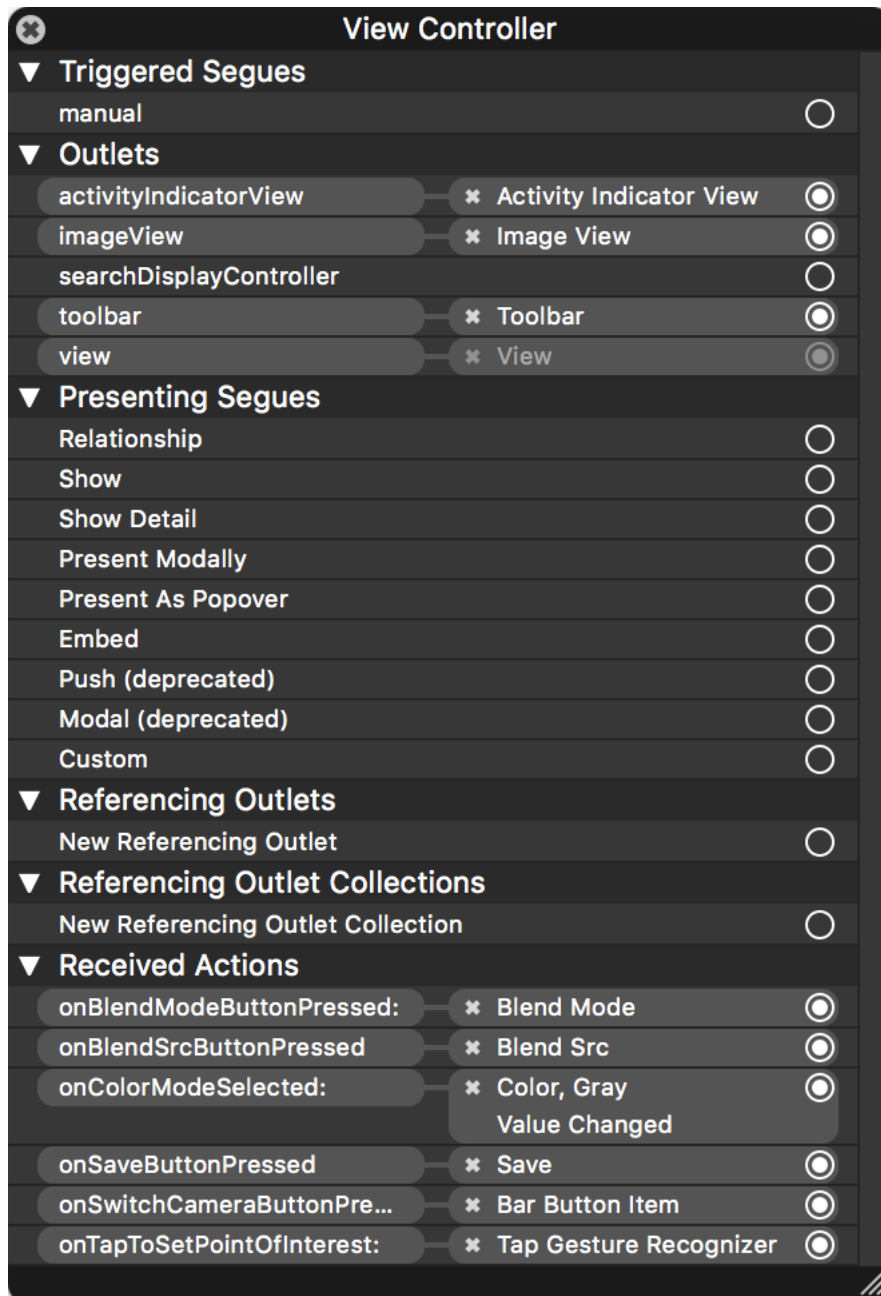






















Очи чёрные, очи страстные,  
Очи жгучие и прекрасные!  
Как люблю я вас, как боюсь я вас!  
Знать, увидел вас я в недобрый час!

Black eyes, passionate eyes,  
Burning and beautiful eyes!  
How I love you, how I fear you!  
Truly, I saw you in an evil hour!

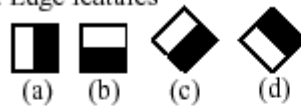
Очи чёрные, очи страстные,  
Очи жгучие и прекрасные!  
Как люблю я вас, как боюсь я вас!  
Знать, увидел вас я в недобрый час!

Black eyes, passionate eyes,  
Burning and beautiful eyes!  
How I love you, how I fear you!  
Truly, I saw you in an evil hour!

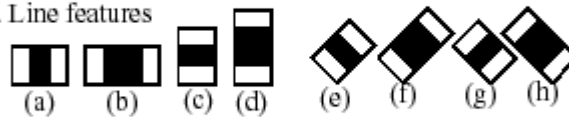
## Chapter 4: Detecting and Merging Faces of Mammals



### 1. Edge features



### 2. Line features

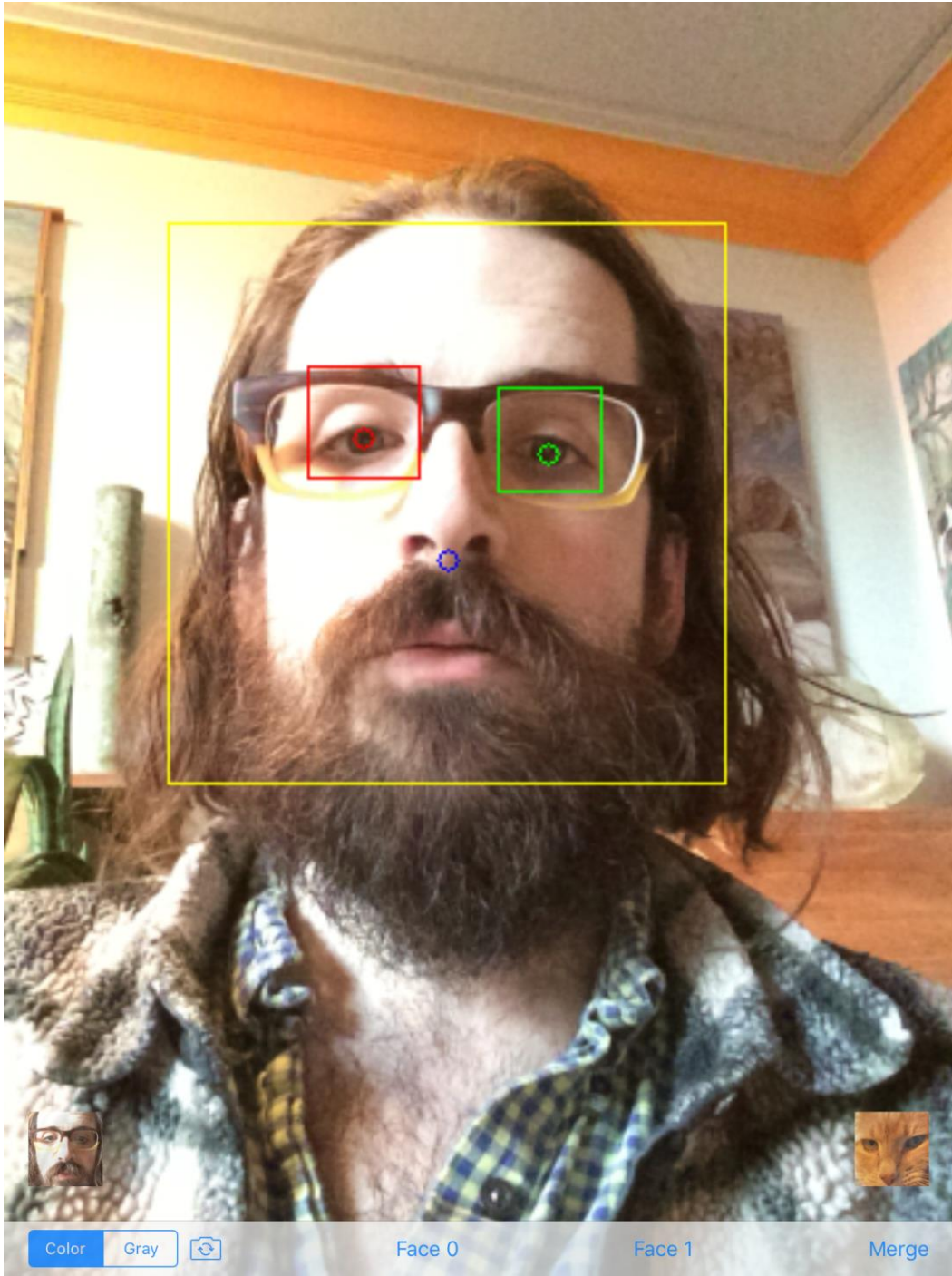


### 3. Center-surround features



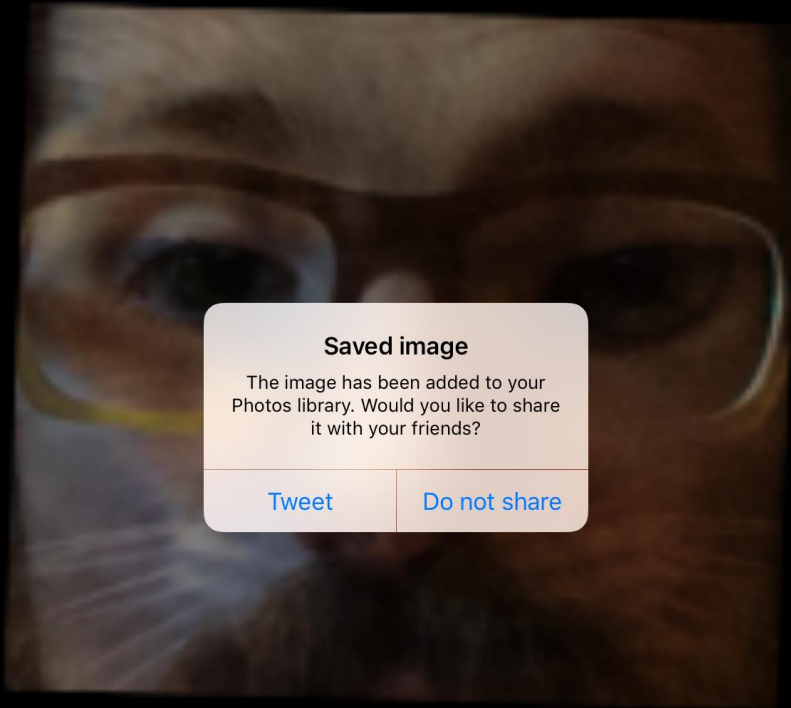








Save



**Saved image**

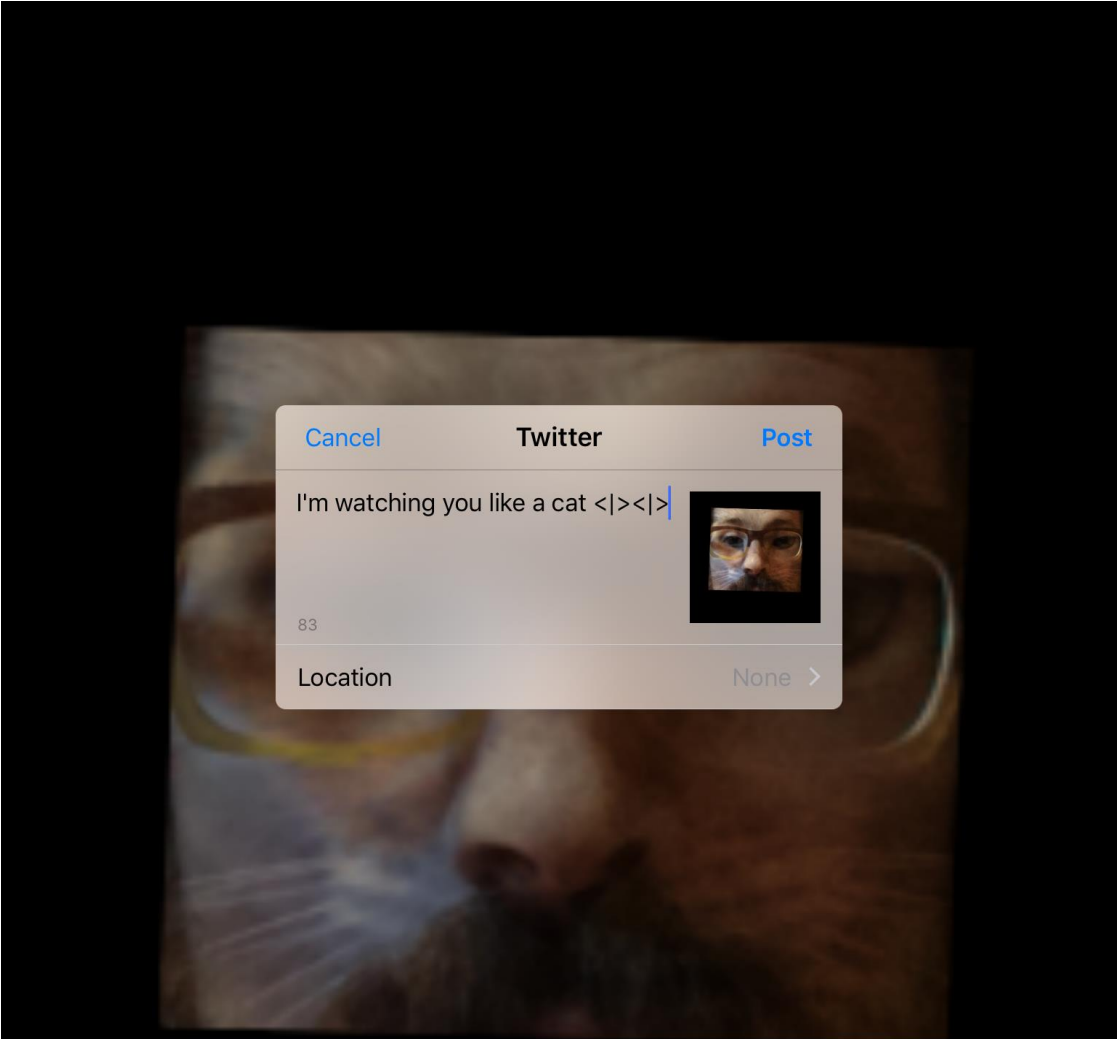
The image has been added to your  
Photos library. Would you like to share  
it with your friends?

[Tweet](#)

[Do not share](#)



Save

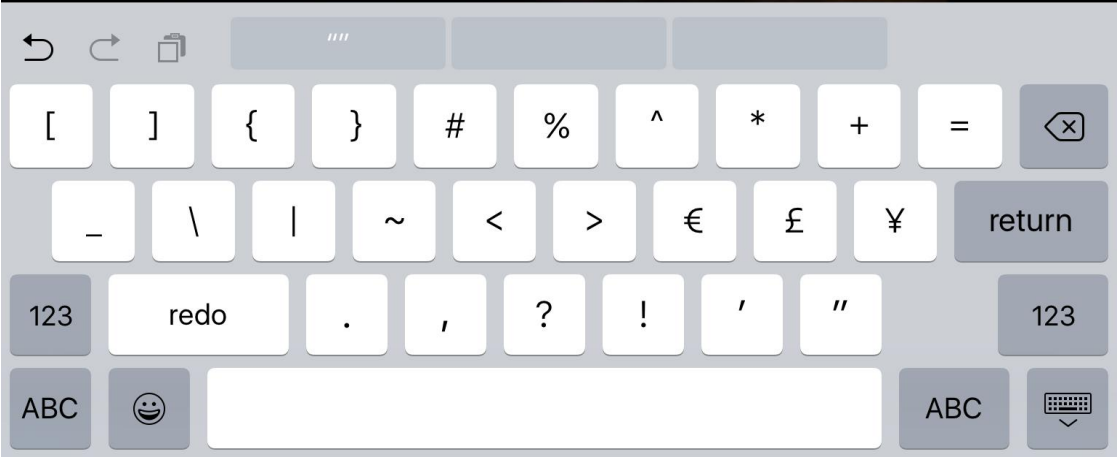


CancelTwitterPost







I'm watching you like a cat <|><|>

83

LocationNone >











**Custom Class**


Class


Module


- ▼  **Capture View Controller Scene**
- ▼  **Capture View Controller**
-  Top Layout Guide


 Bottom Layout Guide

▼ 


 View


 Background View


▶  Face0 Image View


▶  Face1 Image View


▼ 


 Toolbar


▶  Bar Button Item


 Bar Button Item


 Flexible Space


 Face0 Button


 Flexible Space


 Face1 Button


 Flexible Space


 Merge Button


▶  Constraints

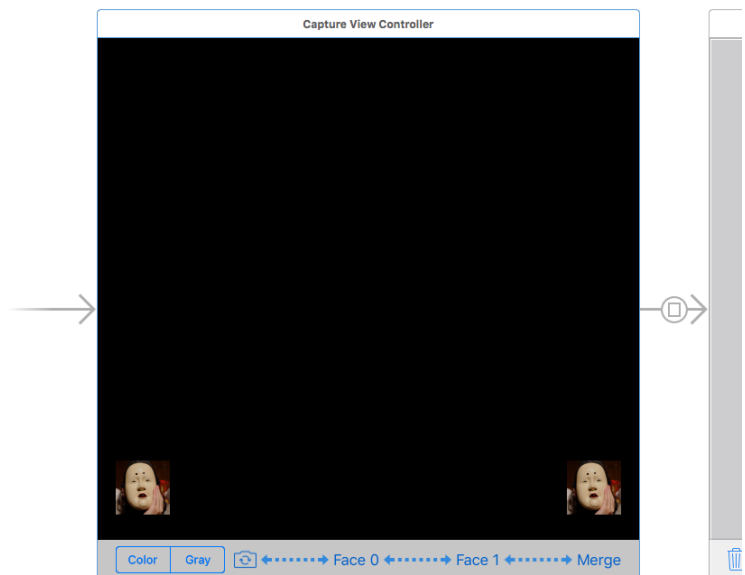
 First Responder

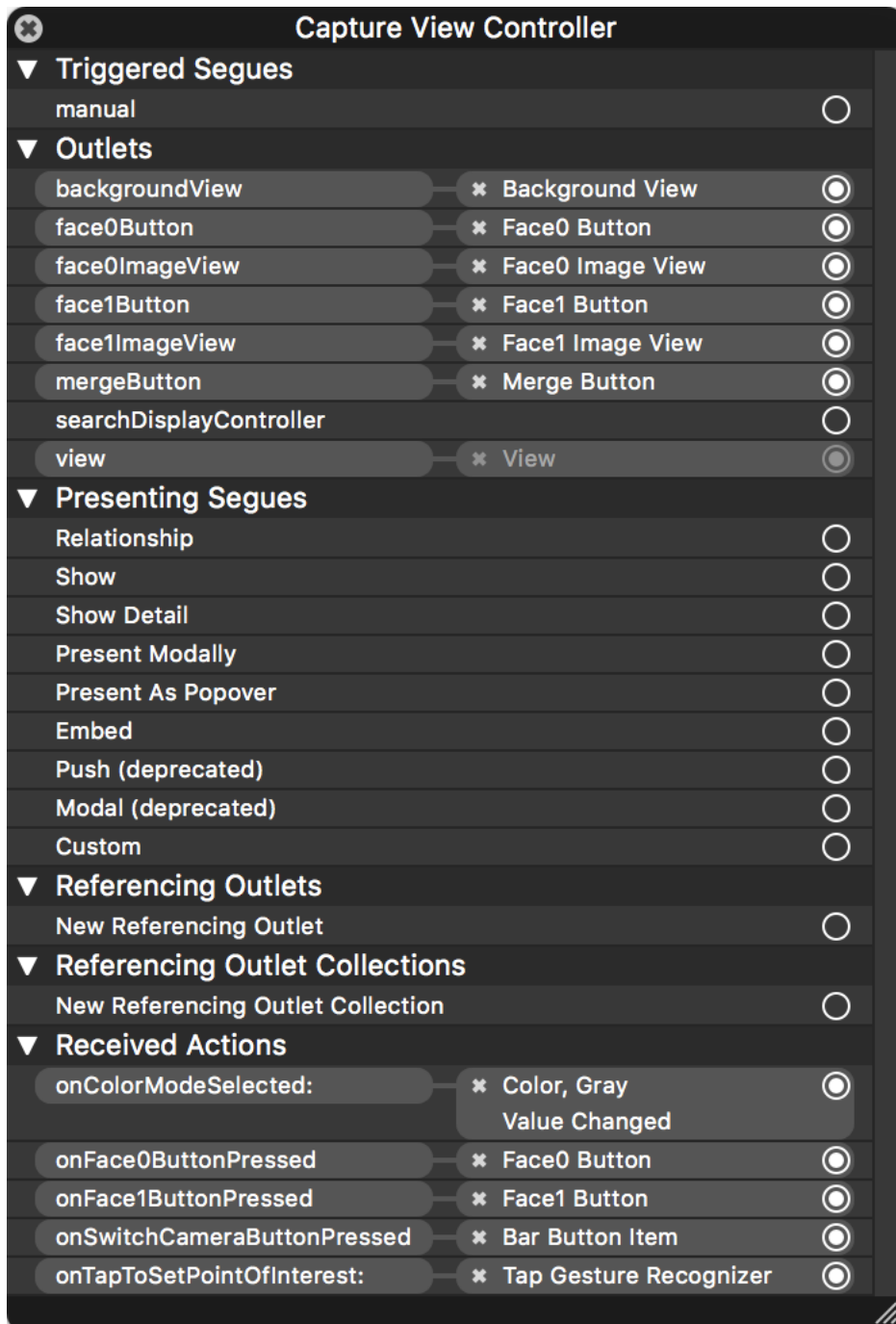
 Exit







 Tap Gesture Recognizer

 Storyboard Entry Point

 Present Modally segue "showRevi...







**Custom Class**

Class

ReviewViewController

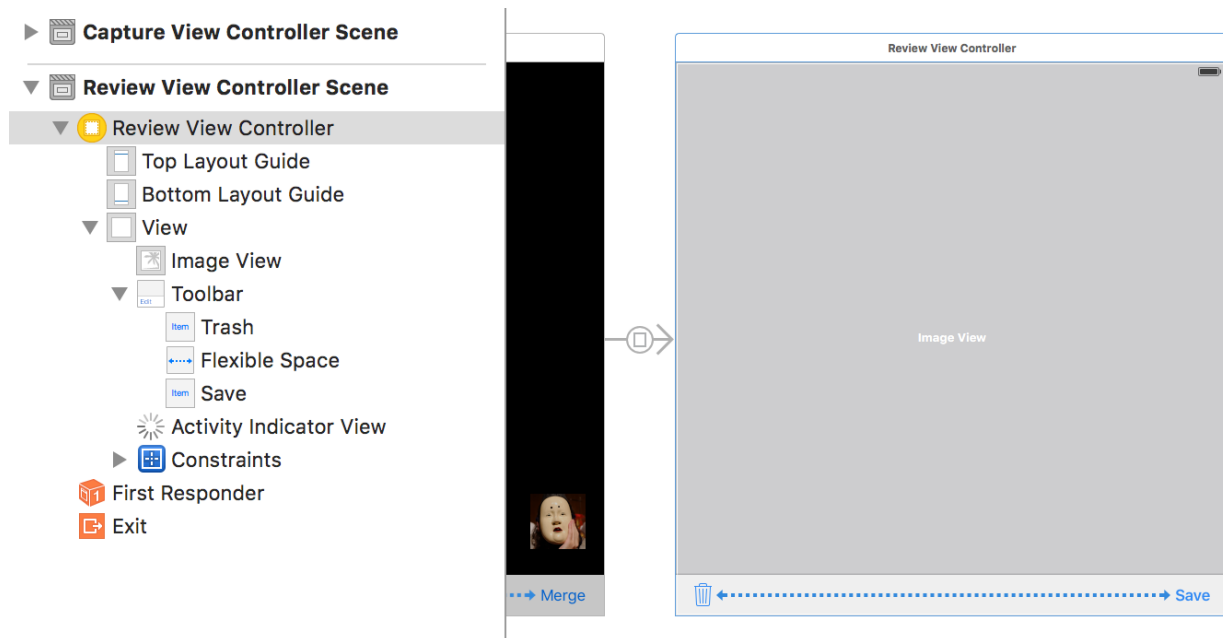
→

▼

Module

None

▼



Review View Controller

▼ Triggered Segues

manual

▼ Outlets

activityIndicatorView

✕ Activity Indicator View

imageView

✕ Image View

searchDisplayController

toolbar

✕ Toolbar

view

✕ View

▼ Presenting Segues

Relationship

Show

Show Detail

Present Modally

✕ Merge Button action

Present As Popover

Embed

Push (deprecated)

Modal (deprecated)

Custom

▼ Referencing Outlets

New Referencing Outlet

▼ Referencing Outlet Collections

New Referencing Outlet Collection

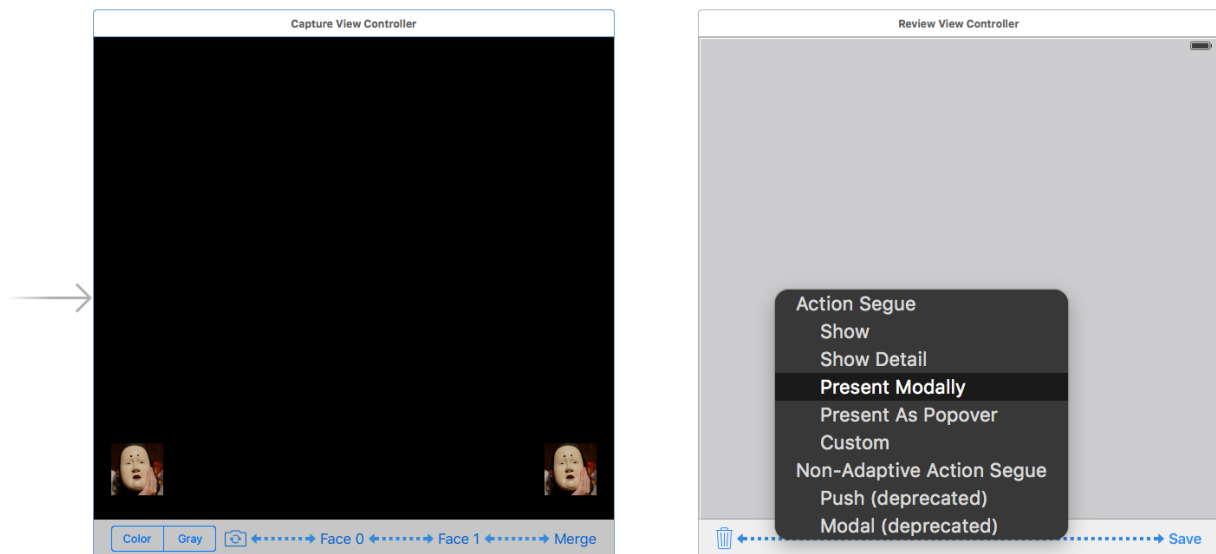
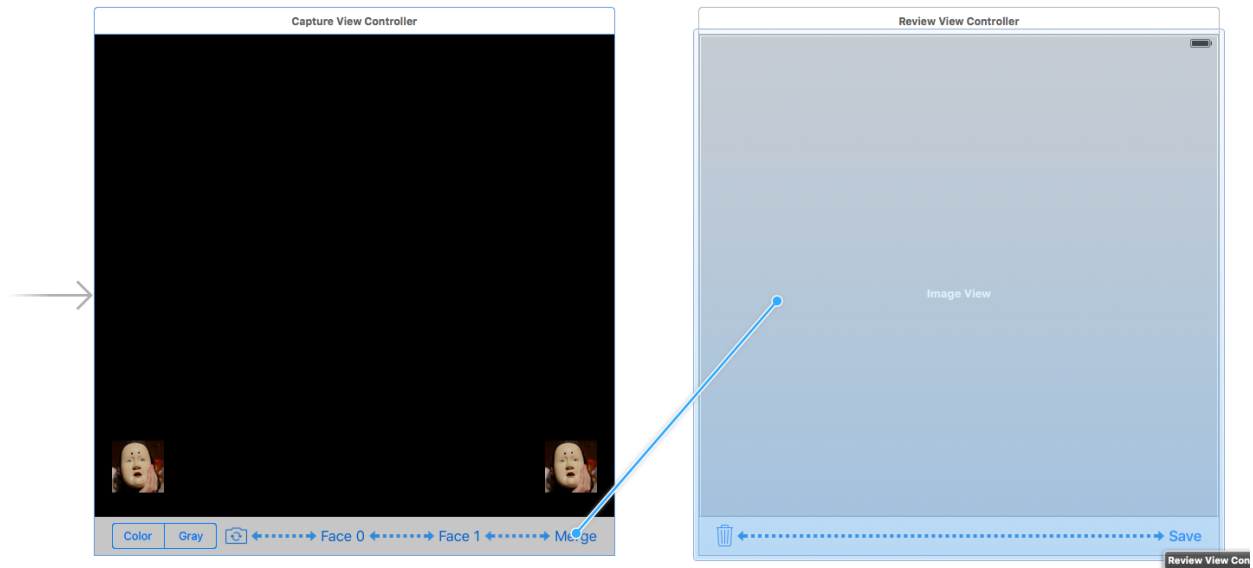
▼ Received Actions

onDeleteButtonPressed

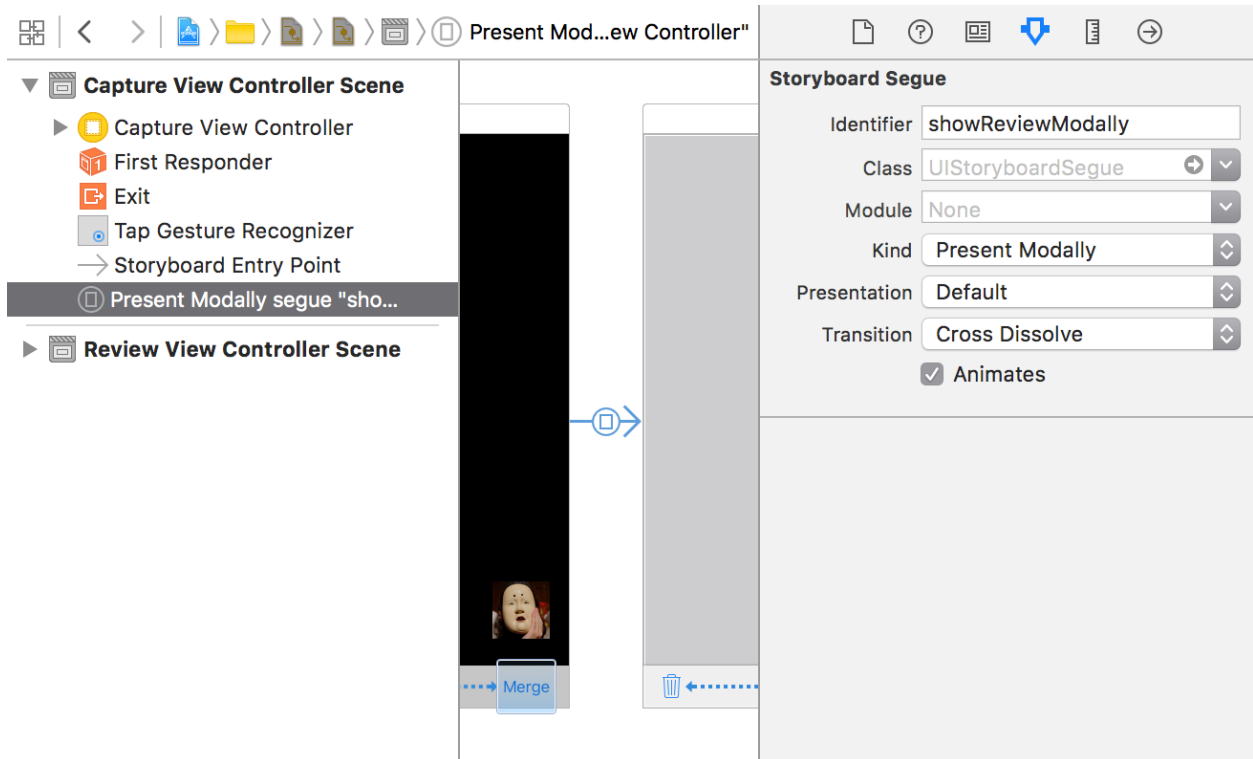
✕ Trash

onSaveButtonPressed

✕ Save







## Chapter 5: Classifying Coins and Commodities



Training classifier...





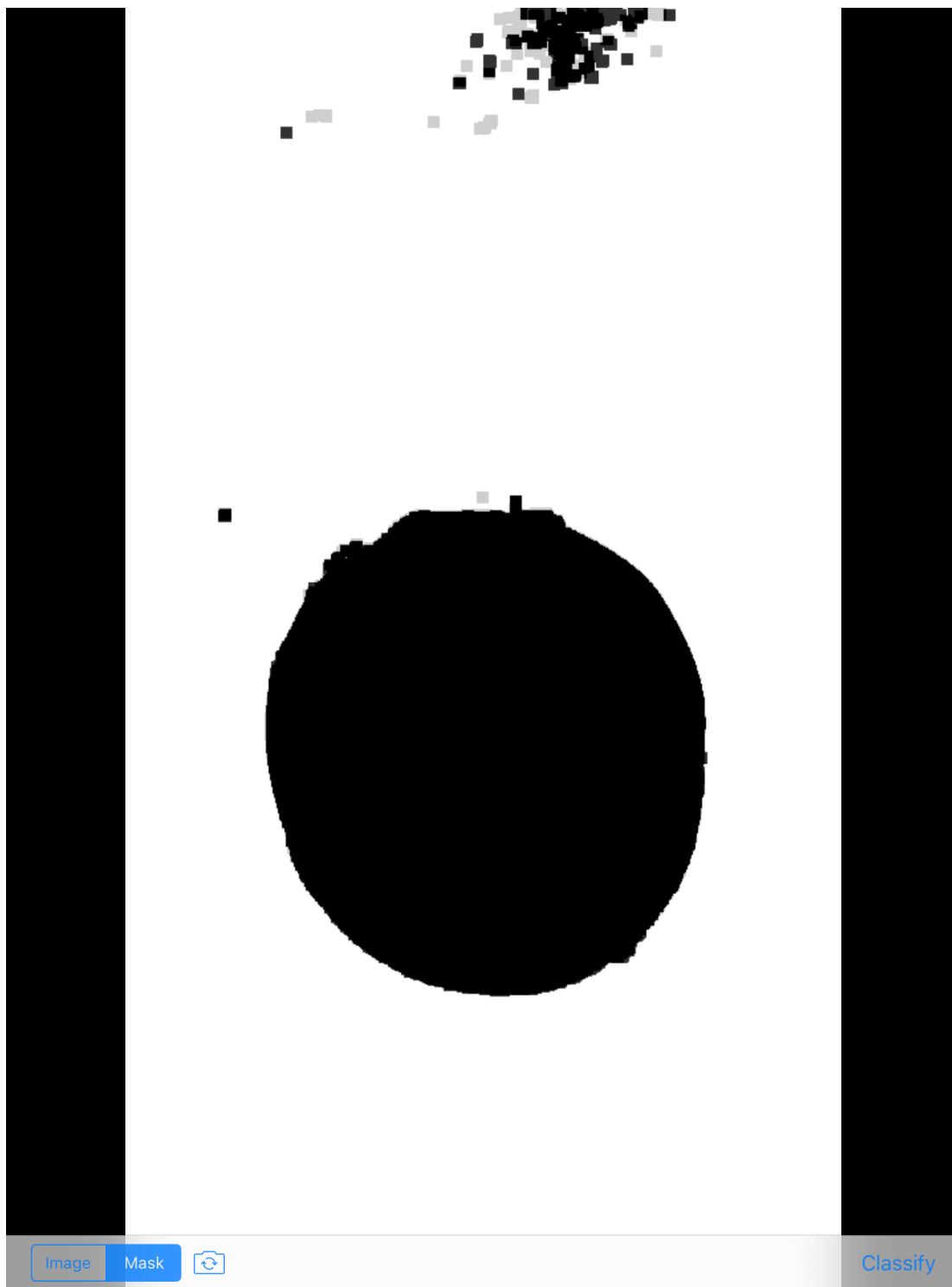


Image

Mask



Classify







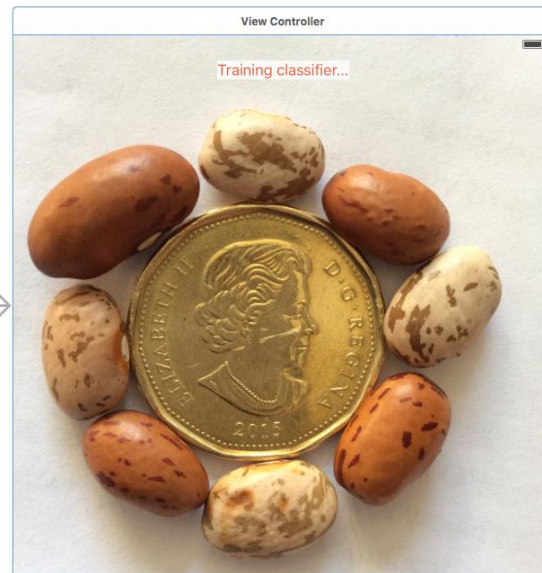
loonie, Canadian dollar



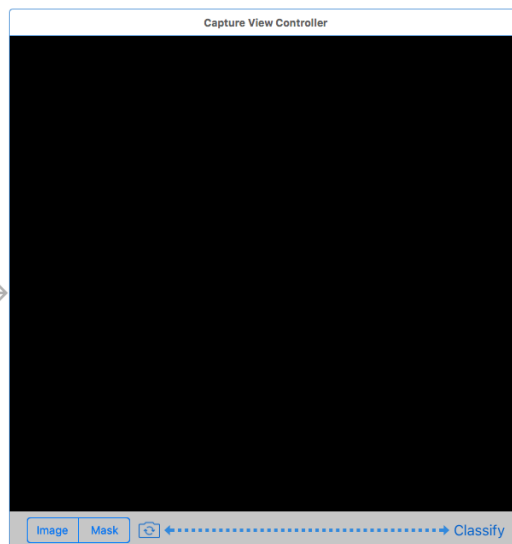
[Save](#)

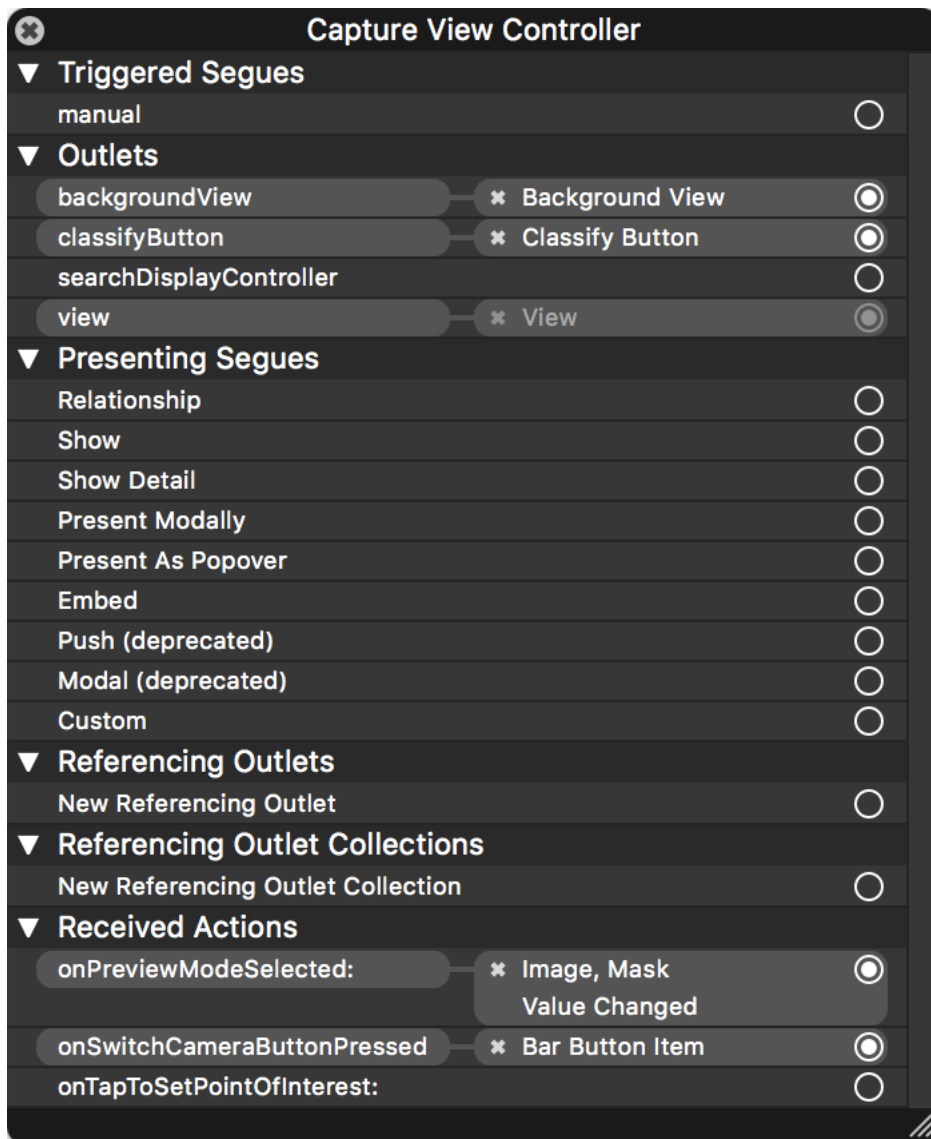
Key	Type	Value
▼ Root	Dictionary	(2 items)
▼ labelDescriptions	Array	(9 items)
Item 0	String	unidentified
Item 1	String	Canadian penny
Item 2	String	Canadian nickel
Item 3	String	Canadian dime
Item 4	String	Canadian quarter
Item 5	String	loonie, Canadian dollar
Item 6	String	toonie, Canadian two-dollar
Item 7	String	pinto bean
Item 8	String	romano bean
▼ blobs	Array	(12 items)
▼ Item 0	Dictionary	(2 items)
imageFilename	String	CanadianNickel_Heads_000.png
label	Number	2
▶ Item 1	Dictionary	(2 items)
▶ Item 2	Dictionary	(2 items)
▶ Item 3	Dictionary	(2 items)
▶ Item 4	Dictionary	(2 items)
▶ Item 5	Dictionary	(2 items)
▶ Item 6	Dictionary	(2 items)
▶ Item 7	Dictionary	(2 items)
▶ Item 8	Dictionary	(2 items)
▶ Item 9	Dictionary	(2 items)
▶ Item 10	Dictionary	(2 items)
▶ Item 11	Dictionary	(2 items)

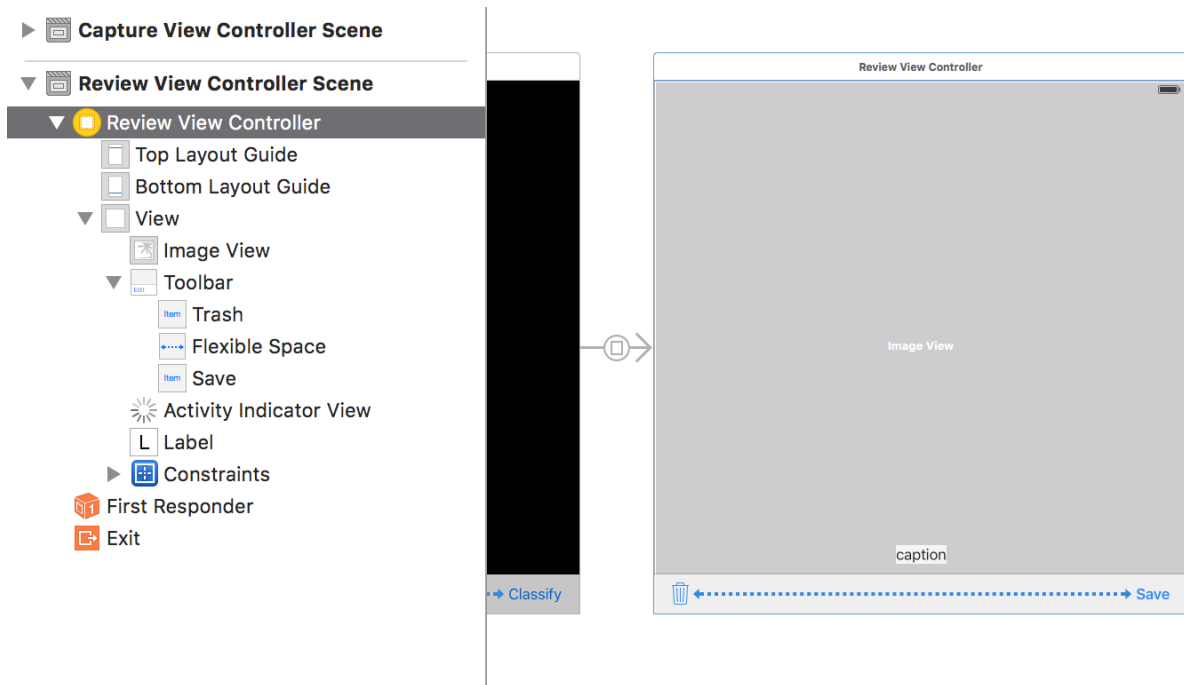
- View Controller Scene
  - View Controller
    - Top Layout Guide
    - Bottom Layout Guide
    - View
      - TheQueen'sBeans.jpg
      - Training classifier...
    - Constraints
    - First Responder
    - Exit
    - Storyboard Entry Point



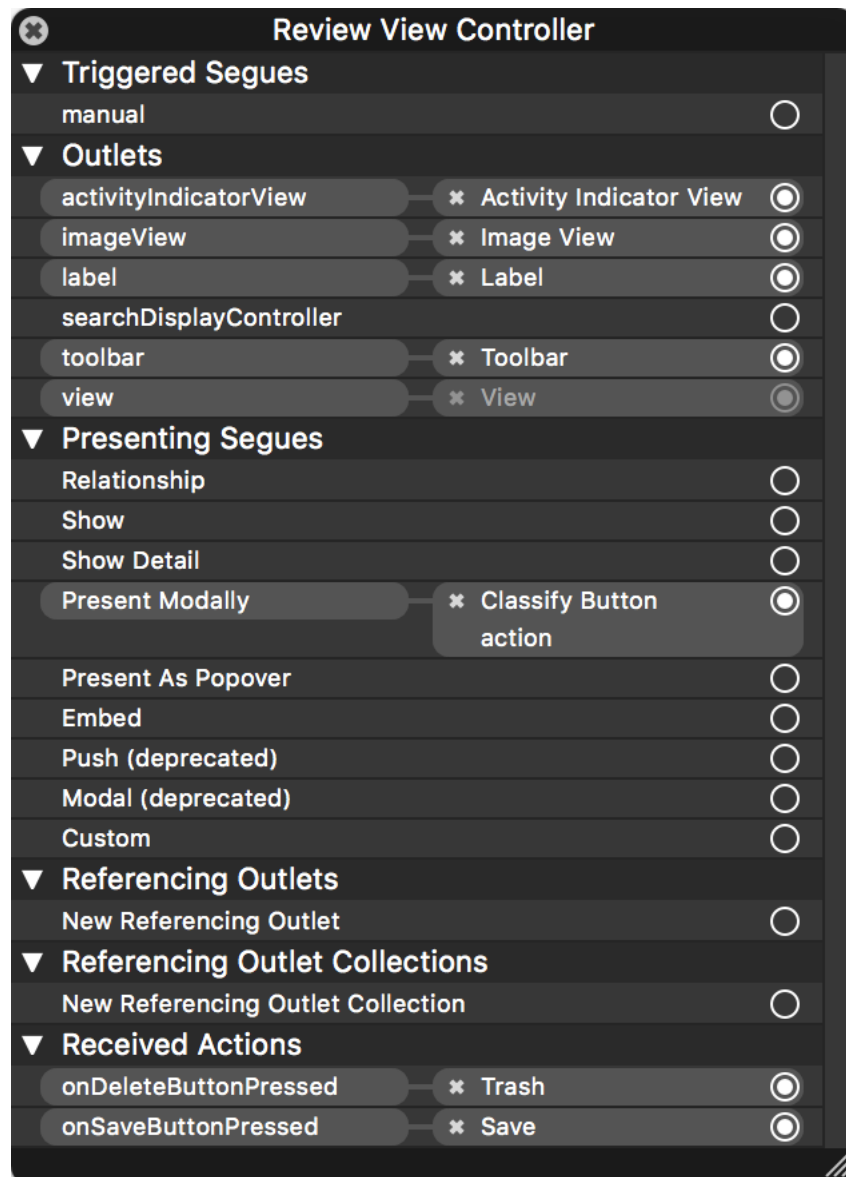
- Capture View Controller Scene
  - Capture View Controller
    - Top Layout Guide
    - Bottom Layout Guide
    - View
      - Background View
      - Toolbar
        - Bar Button Item
        - Bar Button Item
        - Flexible Space
        - Classify Button
      - Constraints
    - First Responder
    - Exit
    - Tap Gesture Recognizer
    - Storyboard Entry Point
    - Present Modally segue "showRevi..."
- Review View Controller Scene

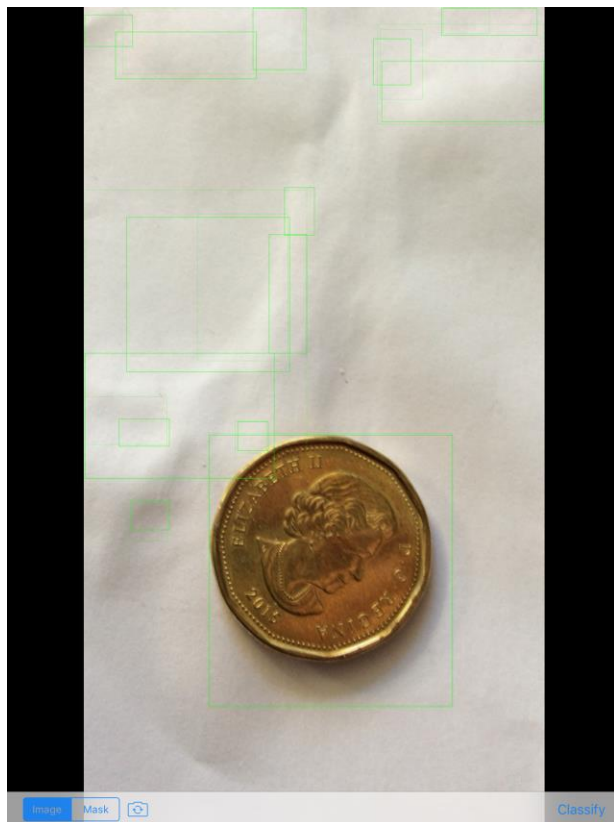
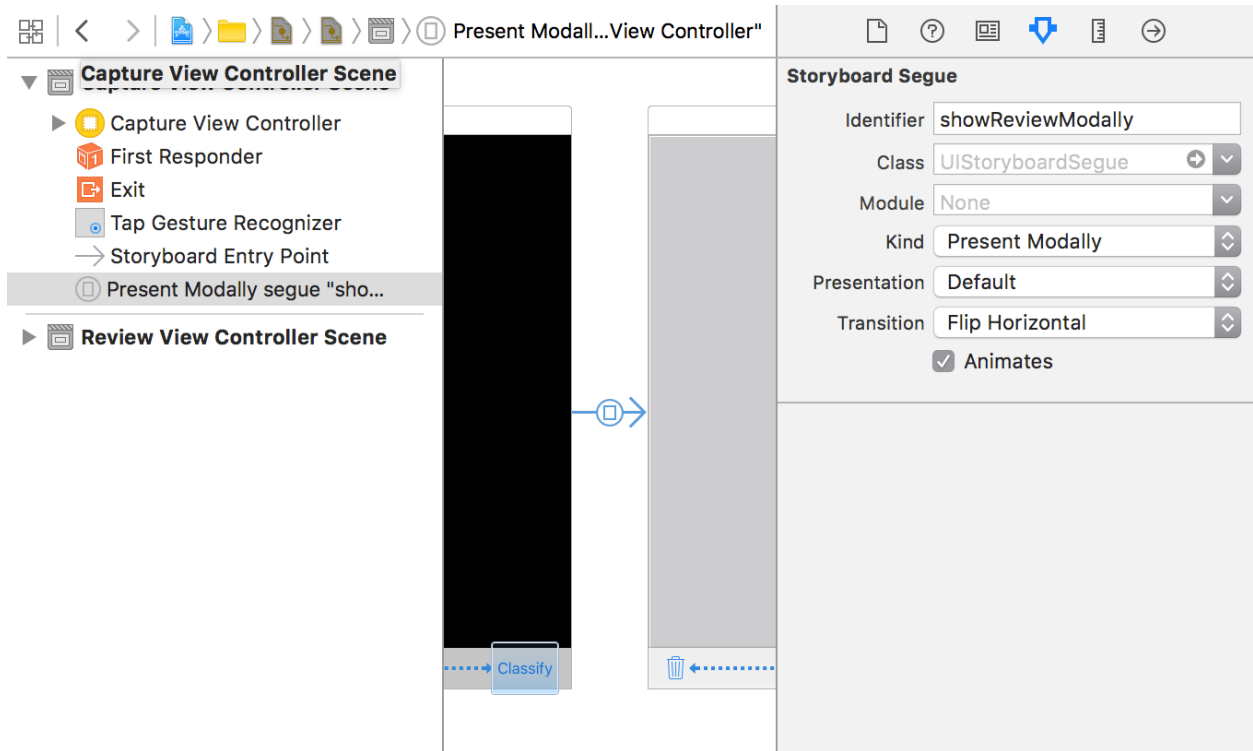


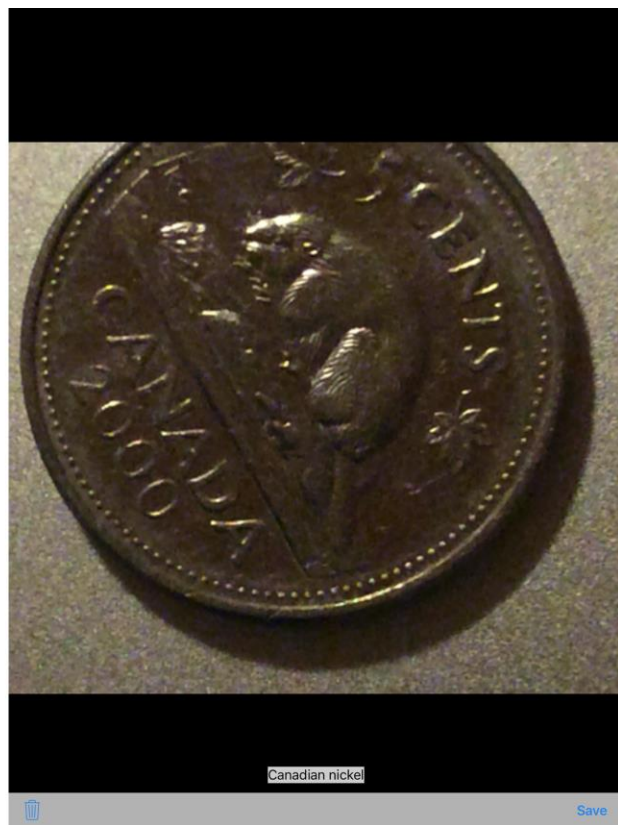


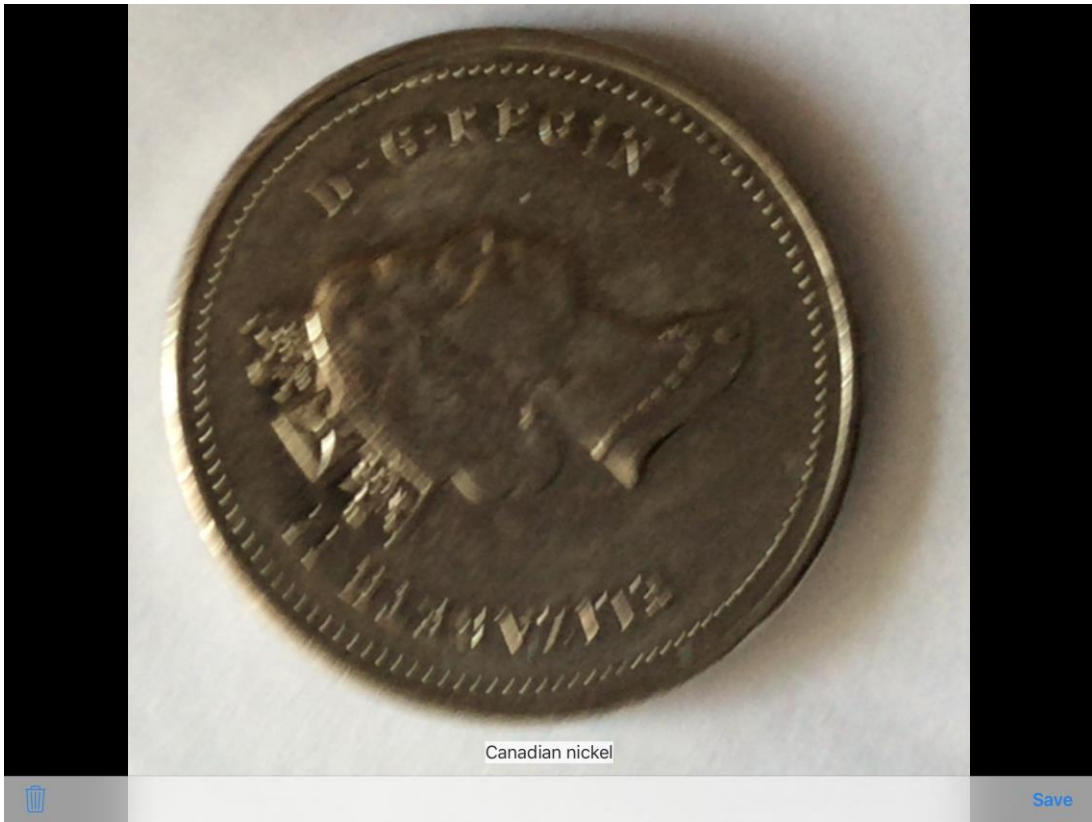












Canadian nickel



Save

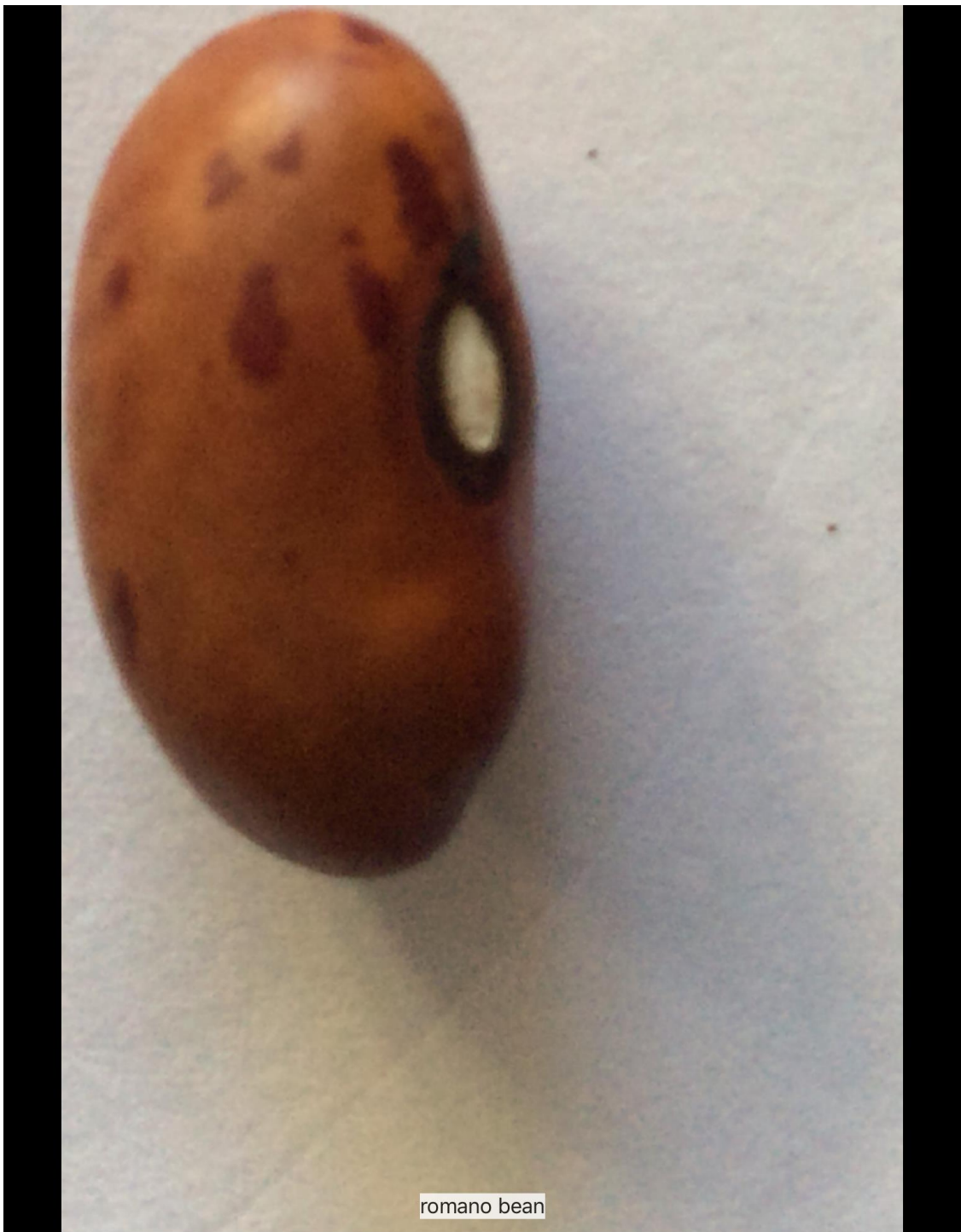


loonie, Canadian dollar



[Save](#)





romano bean



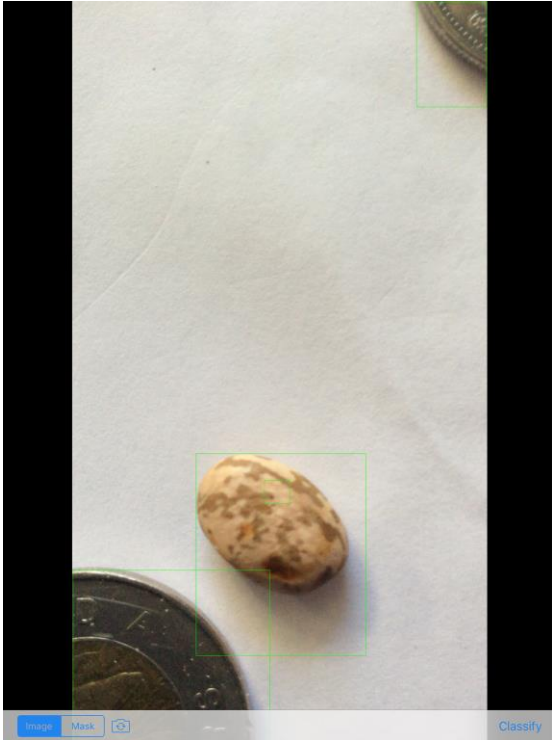
Save



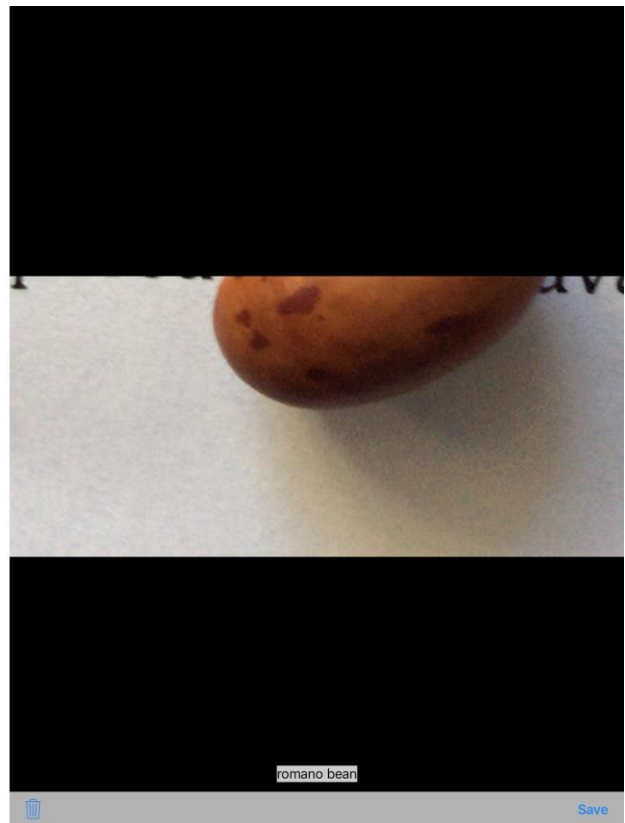
Canadian dime



[Save](#)



pinto bean



romano bean