iOS Human Interface Guidelines

Nov. 17 ’16 - Introduction to iOS SDK

Tien-Che Tsai

sodas@icloud.com / tctsai@nccu.edu.tw

iOS Human Interface Guidelines

- https://developer.apple.com/ios/human-interface-guidelines/
- An guidelines for app designers.
  But engineers should read this too.

iOS Human Interface Guidelines

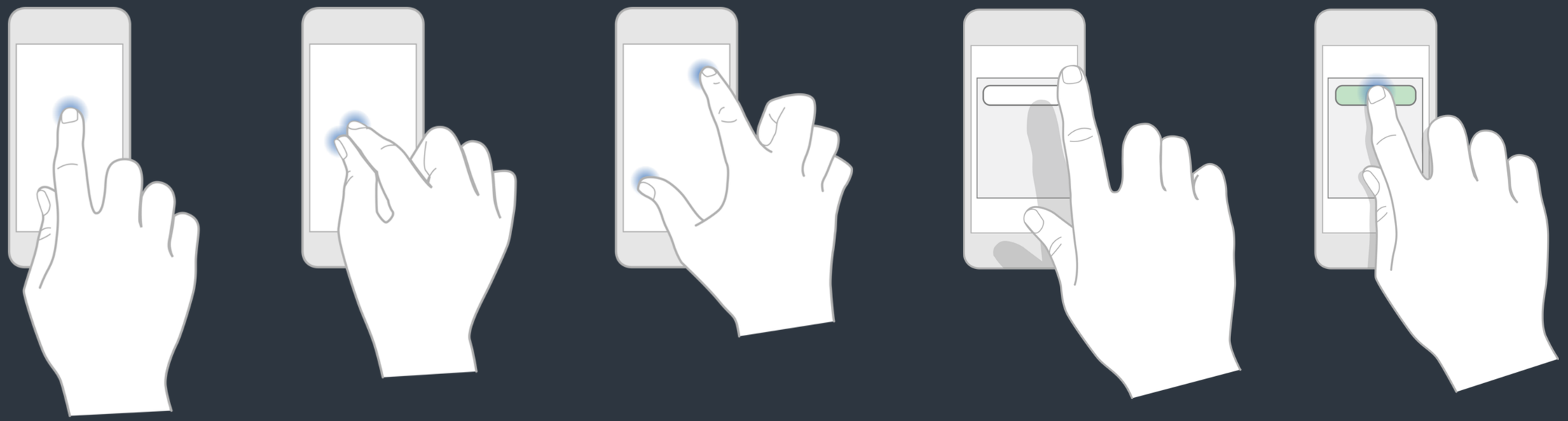
- Clarity
- Deference
- Depth
- Aesthetic Integrity
- Consistency
- Direct Manipulation
- Feedback
- Metaphors
- User Control

Aesthetic Integrity

Consistency

- Consistency lets people transfer their knowledge and skills from one part of an app's UI to another and from one app to another app.

Direct Manipulation & Feedback



Interface Essentials

- The interface elements provided by UIKit fit into three main categories:
  - Bars

    Tell people where they are in your app, provide navigation, and may contain buttons or other elements for initiating actions and communicating information.
  - Views

    Contain the primary content people see in your app, such as text, graphics, animations, and interactive elements. Views can enable behaviors such as scrolling, insertion, deletion, and arrangement.
  - Controls

    Initiate actions and convey information. Buttons, switches, text fields, and progress indicators are examples of controls.

Controls

- Button
- Label
- Text Field
- Slider
- Switch
- Stepper
- Segmented Control
- Page Control
- Refresh control
- Progress Indicator
- Edit Menu

Views

- Image View
- Text View
- Web View
- Map View
- Alert
- Action Sheet
- Activity View
- Popover
- Scroll View
- Table View
- Collection View
- Split View

Bars

- Navigation Bar
- Tab Bar
- Toolbar
- Status Bar
- Search Bar

Interaction

- First Launch & Empty State
- Navigation
- Modality - *creates focus by preventing people from doing other things until they complete a task or dismiss a message or view.*
- Gestures
- 3D Touch
- Data Entry
- Feedback
- Undo/Redo
- Requesting Permission
- Authentication
- Settings

Misc

- Launch Screen *(Graphics)*
- Notification *(Features)*
- iCloud *(Technologies)*

Controls

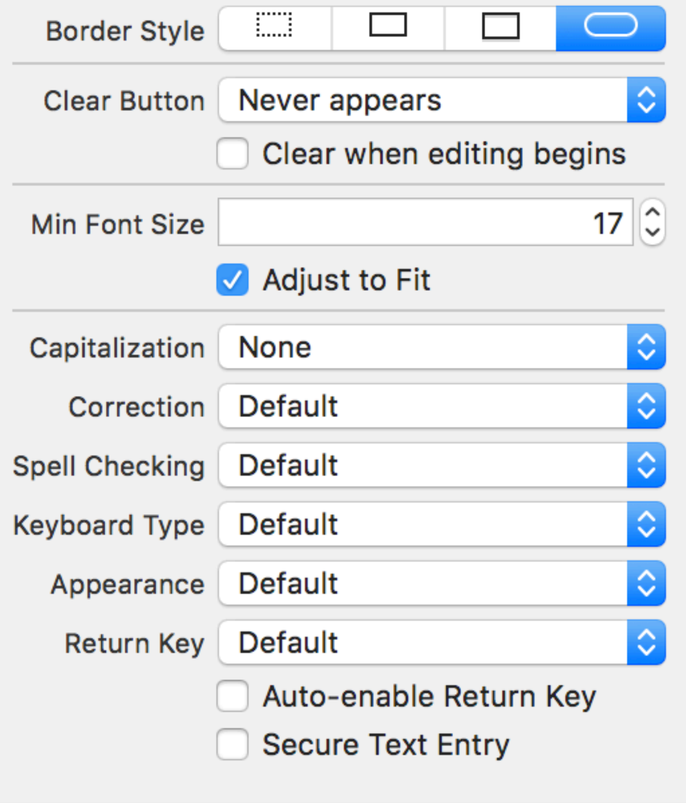
Label

- You can use `UIColor` and `UIFont` to change the style of all text in a label.
  Use `NSAttributedString` to change the styling of part of the text.

- Change the `numberOfLines` property to decide how many lines a label can show. Also you can set `minimumScaleFactor` for showing more texts.

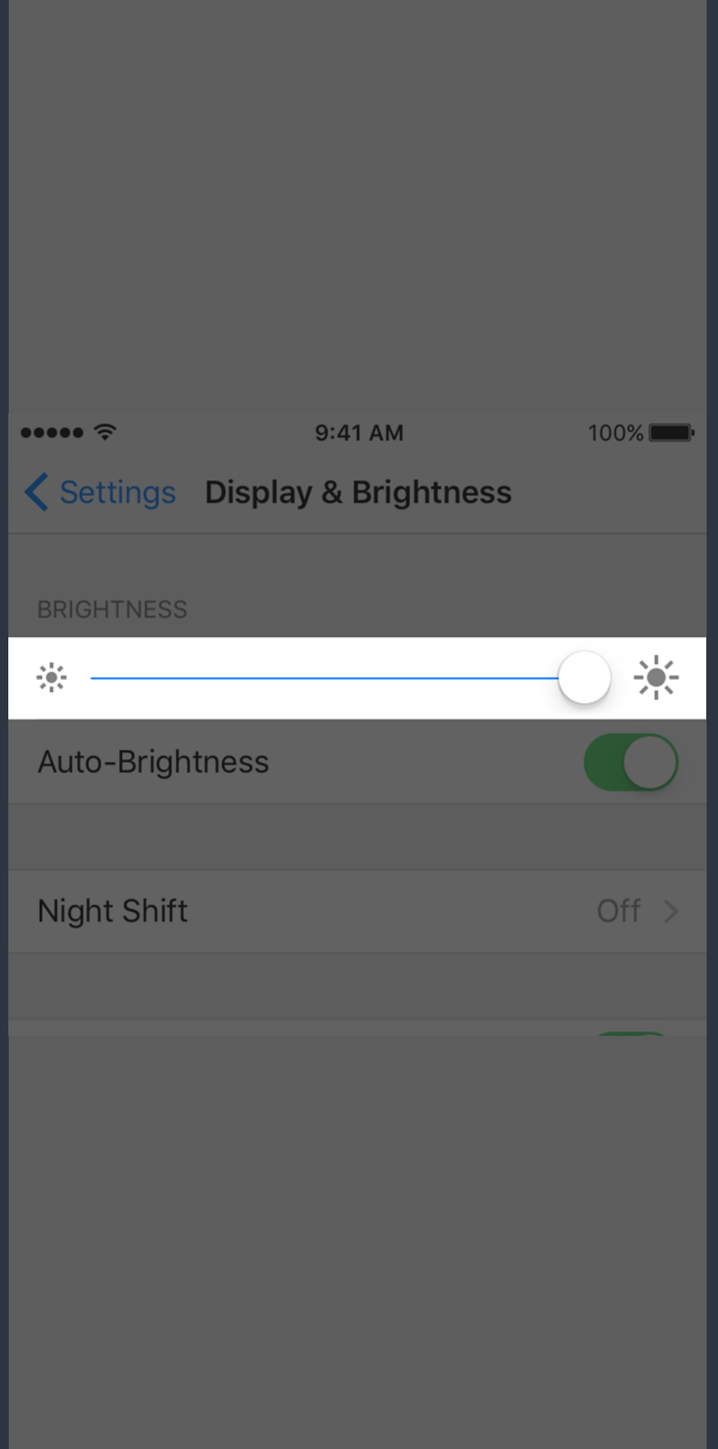
Text Field

- A text field can contain placeholder text to show a hint in a text field to help communicate purpose.
- Choose appropriate keyboard to help user input.
  You can use `inputAccessoryView` to provide an extra toolbar above the keyboard, and even use `inputView` to provide custom keyboard rather than using systems's one.



Slider

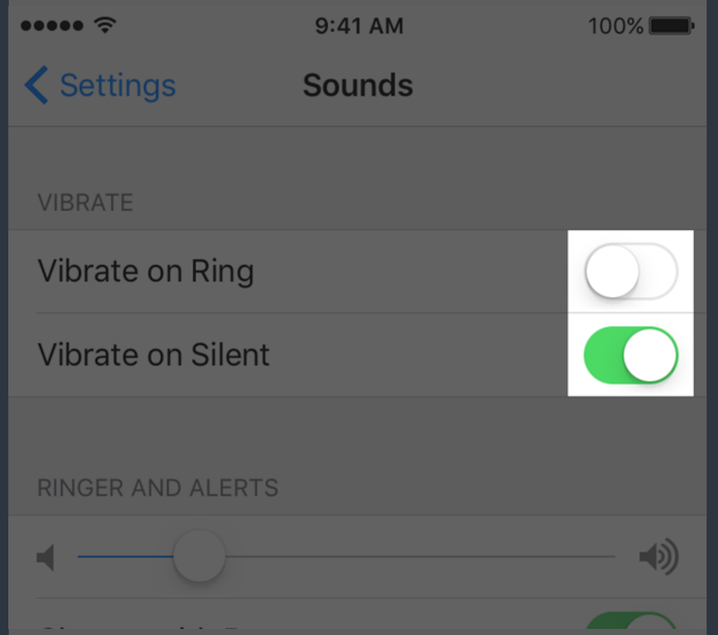
- Track `UIControlEvents.valueChanged` event to get the latest value of the control.



Switch

- Switches are *intended for use in tables*, such as in a list of settings that can be toggled on and off.
  If you need similar functionality in a toolbar or navigation bar, use a button instead.

- Track `UIControlEvents.valueChanged` event to get the latest on/off status of the switch.



Views

Image View

- An image view displays a single image or an animated sequence of images over a transparent or opaque background. The implementation class is `UIImageView`.
- Set `contentMode` property to decide how an image view shows larger picture than the view itself.
- Set `clipsToBounds` property when necessary.

Image View

- Performance tips:
  - Cache scaled versions of frequently used images.
  - Use images whose size is close to the size of the image view.
  - Make your image view opaque whenever possible.
- Use `xcasset` file to save images and make *resizable images*.

Web View

- A web view works like an embedded browser in your app. The implementation class is `UIWebView` and `WKWebView`.
  The later one is newer and faster.

- Use `SFSafariViewController` for showing web links within your app. It contains a toolbar which provides browser features.

- Web view is suitable for rendering rich-format contents.
  The performance of using NSAttributedString is better, but also harder to configure.

Scroll View

- The Photos app embeds an image view in a scroll view to show scaled pictures.
- Use the `contentSize` property to determine the size of the content to be scrolled.

Table View & Collection View

- To improve the performance, cells should be reused.
- Feed the table view with your data source.
- Storyboards provide a static mode for table views to show fixed data, like the settings page.
- Collection View is more generic than table view. It provides custom layout capability for cells.

Bars

Tab Bar

- A tab bar is used to organize features at app level.
  Segmented controls are usually used to provide different views of the same data/task.

Interaction

First Launch & Empty State

- A change to let user understand how your app works.
- Ref: http://emptystat.es
- The launch screen is quickly replaced with the first screen of your app, giving the impression that your app is fast and responsive.

- Interactions
  Accessibility, Audio, and Terminology.
- Features
  Multi-tasking (iPad), and Siri.
- Visual Design
  Animation, branding, color, layout, and typography.
- Extensions
  Custom Keyboards, Document Providers, Home Screen Quick Actions, Messaging, Photo Editing, Sharing, and Widgets.
- Technologies
  Apply Pay and Wallet, GameKit, HealthKit, HomeKit, In-App Purchase, and ResearchKit.
- Graphics
  Sections about icons and graphic elements in your app.
- Resources
  Templates of icons and other materials.

- There are also human interface design guidelines for macOS, tvOS and watchOS.
- You can also reference Android’s design guidelines to see the difference between these 2 platforms.

Graphical Design

Graphical Design

- Contrast
  對比：差異化與凸顯性
- Repetition
  重複：一致性與關聯性
- Alignment
  對齊：張力與整節性
- Proximity
  相近：分組與歸納

Bad Contrast Example

- Contrast
  對比：差異化與凸顯性
- Repetition
  重複：一致性與關聯性
- Alignment
  對齊：張力與整節性
- Proximity
  相近：分組與歸納

Bad Alignment Example

- Contrast
  對比：差異化與凸顯性
  - Repetition
    重複：一致性與關聯性
  - Alignment
    對齊：張力與整節性
- Proximity
  相近：分組與歸納

Bad Repetition Example

- Contrast
  對比：差異化與凸顯性
- Repetition
  重複：一致性與關聯性
- *Alignment*
  對齊：張力與整節性
- Proximity
  相近：分組與歸納

Bad Proximity Example

- Contrast
  對比：差異化與凸顯性
- Repetition

  重複：一致性與關聯性

- Alignment

  對齊：張力與整節性

- Proximity
  相近：分組與歸納

Proximity

Proximity

Panel of elevator

Proximity

Proximity

Proximity

- Proximity creates related meaning
  Elements that are related should be grouped together, whereas separate design elements should have enough space in between to communicate they are different.

Proximity

1. Loomings

Call me Ishmael. Some years ago—never mind how long precisely—having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen and regulating the circulation. Whenever I find myself growing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involuntarily pausing before coffin warehouses, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately

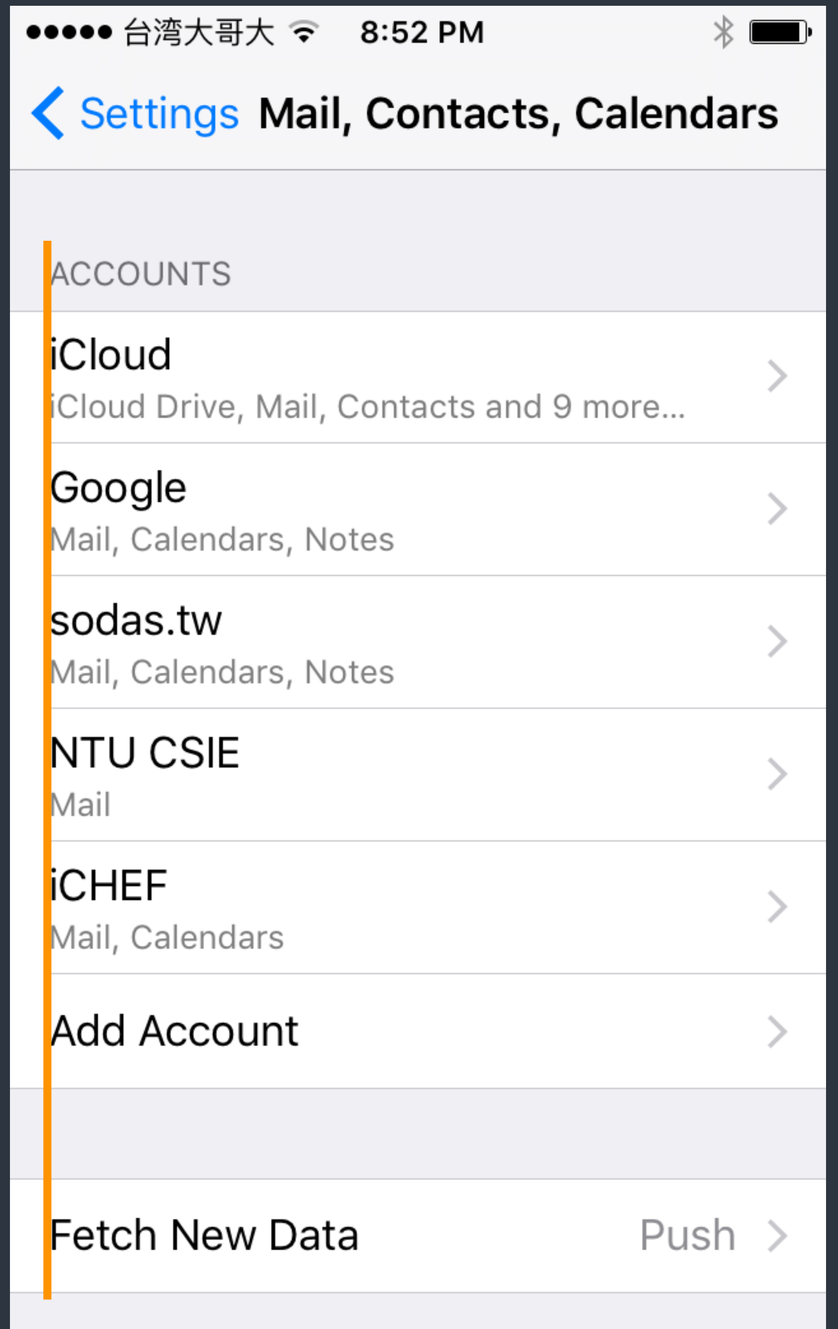
is washed by waves, and cooled by breezes, which a few hours previous were out of sight of land. Look at the crowds of water-gazers there.

Circumambulate the city of a dreamy Sabbath afternoon. Go from Corlears Hook to Coenties Slip, and from thence, by Whitehall, northward. What do you see?—Posted like silent sentinels all around the town, stand thousands upon thousands of mortal men fixed in ocean reveries. Some leaning against the spiles; some seated upon the pier-heads; some looking over the bulwarks of ships from China; some high aloft in the rigging, as if striving to get a still better

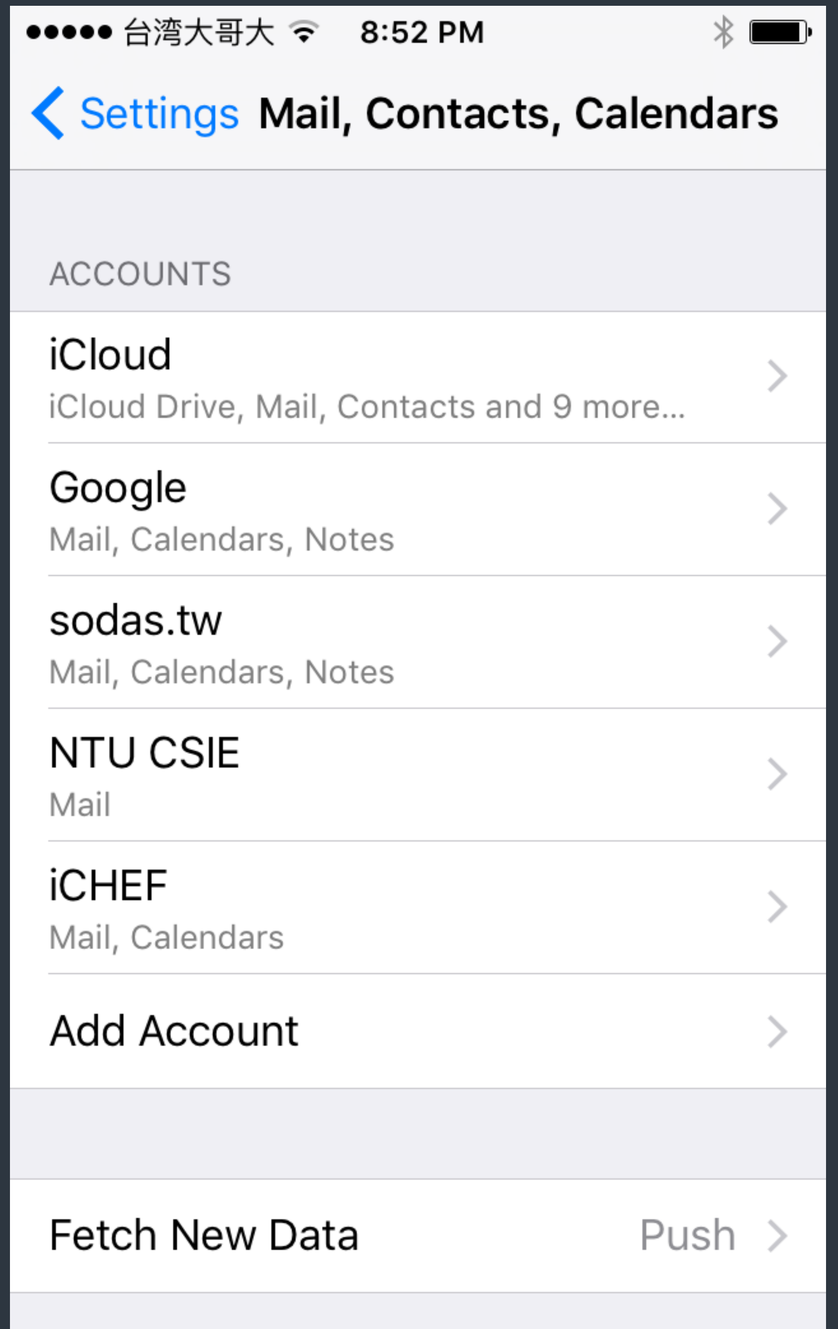
will content them but the extremest limit of the land; loitering under the shady lee of yonder warehouses will not suffice. No. They must get just as nigh the water as they possibly can without falling in. And there they stand—miles of them—leagues. Inlanders all, they come from lanes and alleys, streets and avenues—north, east, south, and west. Yet here they all unite. Tell me, does the magnetic virtue of the needles of the compasses of all those ships attract them thither?

Once more. Say you are in the country; in some high land of lakes. Take almost any path you please, and ten to one it

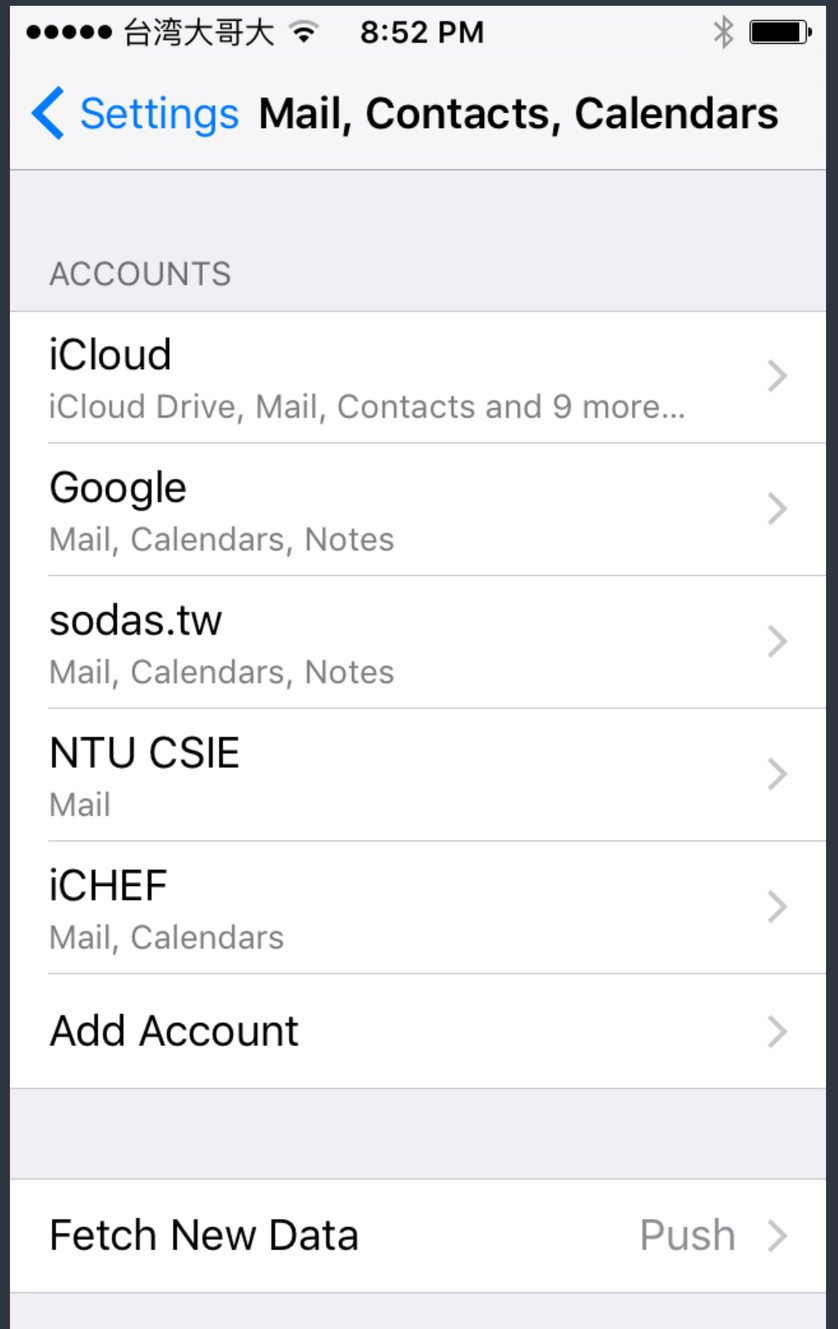
Alignment


●●●●● 台湾大哥大
8:52 PM
Settings
Mail, Contacts, Calendars
ACCOUNTS
iCloud
iCloud Drive, Mail, Contacts and 9 more...
Google
Mail, Calendars, Notes
sodas.tw
Mail, Calendars, Notes
NTU CSIE
Mail
iCHEF
Mail, Calendars
Add Account
Fetch New Data
Push

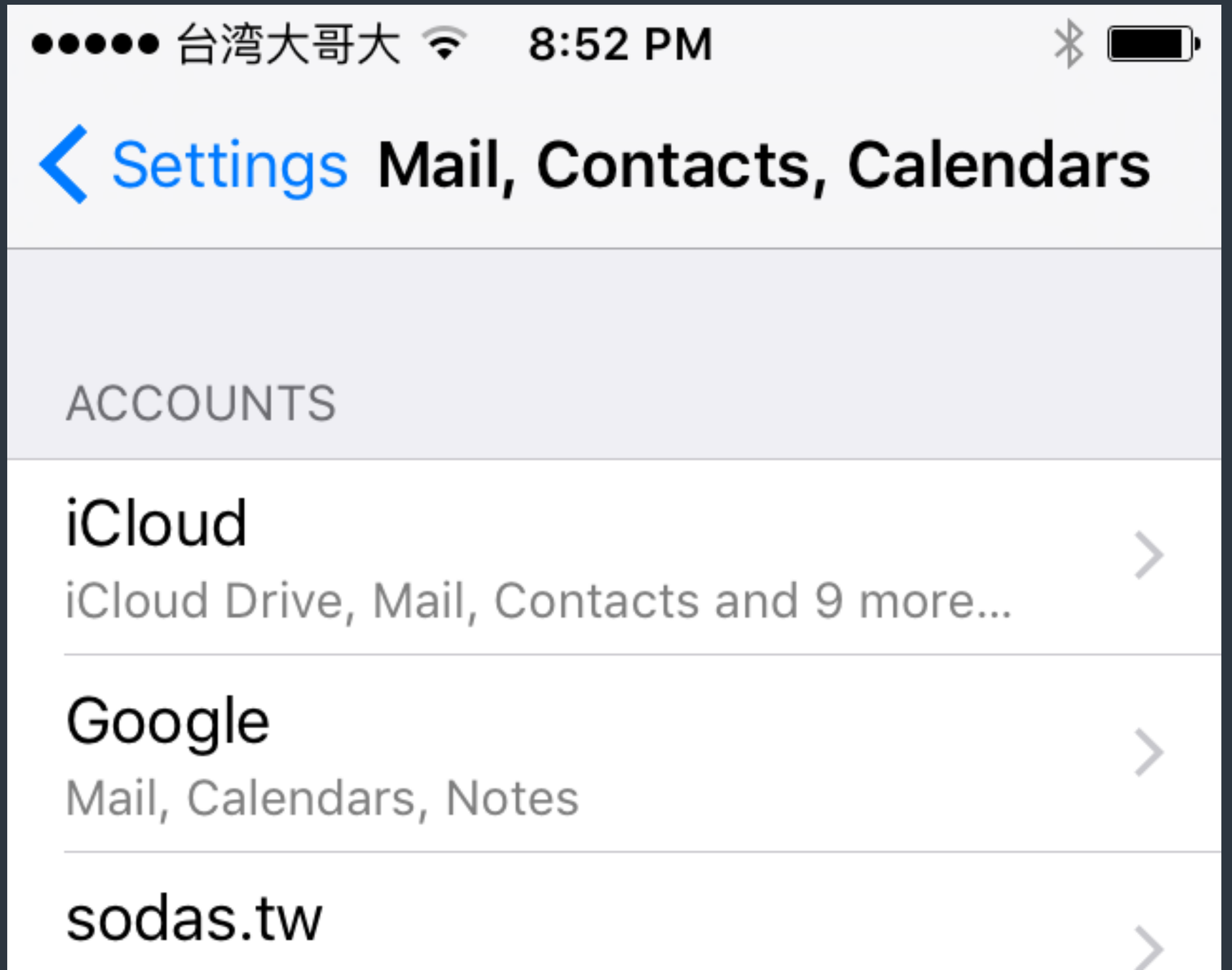
Repetition


●●●●● 台湾大哥大
8:52 PM
Settings
Mail, Contacts, Calendars
ACCOUNTS
iCloud
iCloud Drive, Mail, Contacts and 9 more...
Google
Mail, Calendars, Notes
sodas.tw
Mail, Calendars, Notes
NTU CSIE
Mail
iCHEF
Mail, Calendars
Add Account
Fetch New Data
Push

Contrast


●●●●● 台湾大哥大 8:52 PM
Settings Mail, Contacts, Calendars
ACCOUNTS
iCloud
iCloud Drive, Mail, Contacts and 9 more...
Google
Mail, Calendars, Notes
sodas.tw
Mail, Calendars, Notes
NTU CSIE
Mail
iCHEF
Mail, Calendars
Add Account
Fetch New Data
Push

Proximity


●●●●● 台湾大哥大
8:52 PM
Settings
Mail, Contacts, Calendars
ACCOUNTS
iCloud
iCloud Drive, Mail, Contacts and 9 more...
Google
Mail, Calendars, Notes
sodas.tw

"It is in Apple's DNA that technology alone is not enough – it's technology married with liberal arts, married with the humanities, that yields us the results that make our heart sing."

- Steve Jobs, March '11

Swift Meetup #15

- 6:30 PM, Tuesday, November 22, 2016
- At iCHEF Office, 台北市信義區松山路132號3樓（捷運/台鐵 松山站）
- https://www.meetup.com/Swift-Taipei-User-Group/events/235210516/