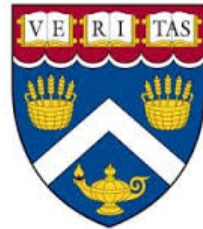


Final Project  
Workout Tracking iOS App

Hilton, Christian



**Harvard University Extension School**  
**DGMD S-14: Wearable Devices and**  
**Computer Vision**

# Introduction

- Interest: Fitness & workout tracker apps
- Goal: Create iOS Workout tracker app for tracking Runs and bike rides



# Team



- Christian Hilton
- Team role: CTO, Product Manager, Engineer

# Data

- iOS Frameworks provided several options for data objects

- CLLocation: latitude, longitude, and course information

`<+37.76843873,-122.44815369> +/- 14.20m (speed 0.42 mps / course 148.29) @ 7/31/21, 3:45:25 PM Pacific Daylight Time`

- CMDeviceMotion: measurements of the attitude, rotation rate, and acceleration of a device

`Optional(x -0.144440 y 0.224274 z 0.360016 @ 177439.619961)`

- CMPedometerData: Information about the distance traveled by a user on foot.

`CMPedometerData,<startDate 2021-08-01 00:49:02 +0000 endDate 2021-08-01 00:49:29 +0000 steps 18 distance 16.49390449002385 floorsAscended 0 floorsDescended 0 currentPace (null) currentCadence (null) averageActivePace 0.6389671109332803>`

# Technology

- Software & Dev Tools:  
Language: Swift  
IDE: Xcode
- Hardware:  
iPhone XR,  
MacBook Pro, USB-C cable
- Frameworks:  
Coremotion  
Corelocation

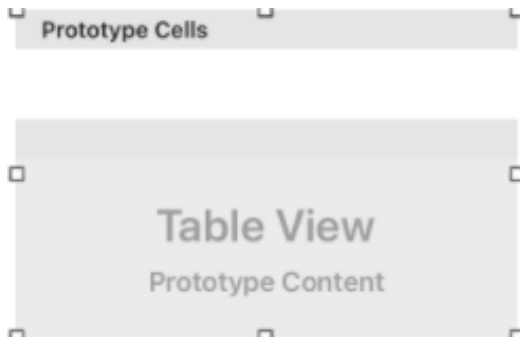
# Features

- Active Workout:  
Start, pause, complete.  
View speed, distance while active.  
Choice of 2 types: run or bike.
- View Workouts Summary:  
Previous workouts including duration, distance, type.

# Methods

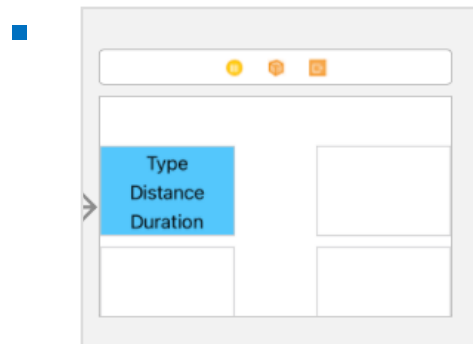
- Interface Builder / Storyboards
- Model - View - Controller pattern
- Poll live data from iPhone
- Emphasis on Pedometer data

# Methods



```
extension MainViewController: UITableViewDataSource {  
  
    func tableView(_ tableView: UITableView, numberOfRowsInSectionSection section: Int) -> Int {  
        return currentWorkout?.getData().count ?? 0  
    }  
  
    func tableView(_ tableView: UITableView,  
                  cellForRowAt indexPath: IndexPath) -> UITableViewCell {  
        // Ask for a cell of the appropriate type.  
        let cell = tableView.dequeueReusableCell(withIdentifier:  
            "basicStyleCell", for: indexPath)  
  
        let data = currentWorkout?.getData()  
        let curData: (String, String) = data?[indexPath.row] ?? ("", "")  
        cell.textLabel!.text = "\(curData.0) \(curData.1)"  
        return cell  
    }  
}
```

- Tableview: Display WorkoutSession data

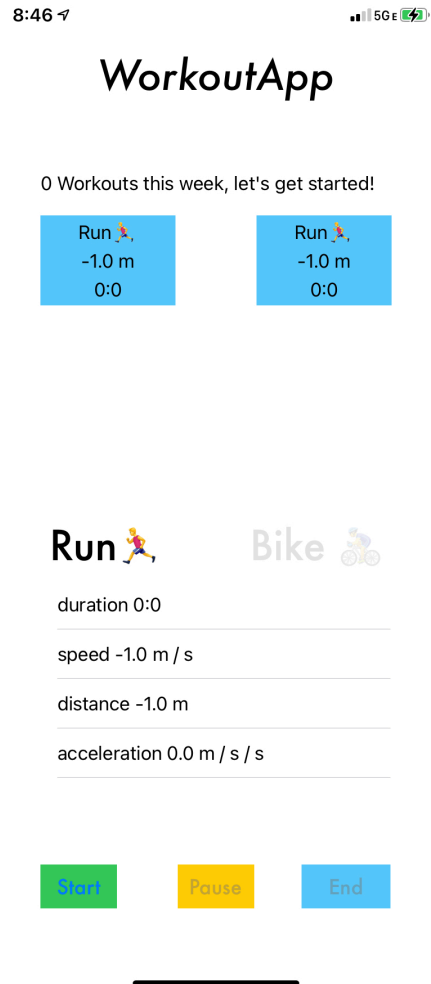


```
class WorkoutsCollectionViewController: UICollectionViewController {  
  
    let dataSource: [WorkoutSession] = [WorkoutSession(), WorkoutSession()]  
  
    override func viewDidLoad() {  
        super.viewDidLoad()  
    }  
  
    override func collectionView(_ collectionView: UICollectionView,  
                                numberOfItemsInSection section: Int) -> Int {  
        print(dataSource.count)  
        return dataSource.count  
    }  
}
```

- CollectionView: Display past workouts as grid



# User Interface



# Future Development

- Expansion to multiple workout types
- Dynamic feedback based on performance
- Machine learning / analysis on workout data
- Watch app

# Conclusions

- Wearables are a very broad field, my focus would be UI
- Great potential for fitness enhancing app development.
- Wearable software development is fun!

