

# Live Video Streaming Technology for Health and Fitness using OPENTOK and AWS

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**Abstract**— Fitness activity consumers are progressively looking to participate in programs that are on their terms both relating to the time of day to attend and the nature of the activity. The market is large and many platforms have tried/are trying to provide a winning service offering in helping people get and stay healthy but much is missing in what is being offered in the marketplace today. The intention is to fill in the holes through the offering with this application. This application is twitch for fitness training. Millions engage in fitness activities and millions watch fitness training videos on YouTube or workout to them. The application will bring together people who are interested in fitness activities (trainees) with fitness instructors (trainers) live through an Uber-like connecting system, and then make this session available to be watched by observers whom can either watch live or on demand. This enhances the user's interest in participating such online events and make themselves fitter and healthier. In this way, the technology helps in improving the man kind.

**Keywords:** Live Video Streaming Technology, OPENTOK and AWS, Mobile Health application

## I. INTRODUCTION

Mobile Health application, from this point forward alluded to as mHealth applications, are wellbeing and wellness related applications running on cell phones, for example, PDAs and tablets. An expanding number of individuals utilize portable applications to screen their wellbeing or wellness and bit by bit they are being utilized for anticipation, determination and treatment. These applications can be customized and custom-made to the client's condition and can be utilized in the solace of their home, office, or even moving. They are a stage towards universal human services, for example access to human services anyplace, whenever, accordingly permitting constant illness patients to self-deal with their condition utilizing cell phones and remote sensors.

The mHealth application advertise is blasting, and will keep on becoming considerably throughout the following scarcely any years, as indicated by an examination directed by Frost and Sullivan in 2011. The developing accessibility of wellbeing and wellness applications and expanding number of individuals utilizing cell phones and tablets urges the medicinal services industry to abuse the conceivable outcomes offered by wellbeing and wellness applications.

As indicated by the Global Mobile Health Market Report 2010–2015, in excess of 33% of the 1.4 billion cell phone clients will utilize a versatile human services application in 2015. At the hour of composing (December 2012) a large number of wellbeing and wellness applications are accessible for download on Google Play. Of those, 396 Apps utilize a type of sensor (for example weight scale,

pulse screen, accelerometer, GPS) to gather or infer physiological information. An application can be downloaded for nothing or a couple of dollars that helps the client getting in shape, screen their circulatory strain or guide the client in their exercise works out. Individuals from in excess of 190 nations download applications regular and an aggregate of 10 billion downloads have been recorded up to December 2011.

Wellness action buyers are logically hoping to take an interest in programs that are on their footing both identifying with the hour of day to join in and the idea of the action.

The market is enormous and numerous stages have attempted/are attempting to offer a triumphant assistance offering in helping individuals get and remain sound yet much is absent in what is being offered in the commercial center today. The expectation is to fill in the openings through the contribution with the application.

The application is for wellness preparing. Millions take part in wellness exercises and millions watch wellness preparing recordings on YouTube or exercise to them. This will unite individuals who are keen on wellness exercises (students) with health specialists (coaches) live through a Uber like associating framework, and afterward make this meeting accessible to be viewed by onlookers whom can either observe live or on request.

## A. iOS APP DEVELOPMENT

iOS (formerly iPhone OS) is a mobile operating system created and developed by Apple Inc. exclusively for its hardware. It is the operating system, which presently powers most of the mobile devices. The most popular ones include the iPhone, iPad and iPod Touch. Start Developing iOS Apps (Swift) is the perfect starting point for learning to create apps that run on iPhone and iPad. View this set of incremental lessons as a guided introduction to building your first app—including the tools, major concepts, and best practices that will ease your path.

Each lesson contains a tutorial and the conceptual information you need to complete it. The lessons build on each other, walking you through a step-by-step process of creating a simple, real-world iOS app.

As you make your way through the lessons and build the app, you'll learn about concepts in iOS app development, gain a deeper understanding of the Swift programming language, and familiarize yourself with the many valuable features of Xcode, Apple's integrated development environment (IDE).

Swift has many other features to make your code more expressive:

- Generics that are powerful and simple to use
- Protocol extensions that make writing generic code even easier
- First class functions and a lightweight closure syntax

- Fast and concise iteration over a range or collection
- Tuples and multiple return values
- Structs that support methods, extensions, and protocols
- Enums can have payloads and support pattern matching
- Functional programming patterns, e.g., map and filter

Swift is the result of the latest research on programming languages, combined with decades of experience building Apple platforms. Named parameters are expressed in a clean syntax that makes APIs in Swift even easier to read and maintain. Even better, you don't even need to type semi-colons. Inferred types make code cleaner and less prone to mistakes, while modules eliminate headers and provide namespaces. To best support international languages and emoji, Strings are Unicode-correct and use a UTF-8 based encoding to optimize performance for a wide-variety of use cases. Memory is managed automatically using tight, deterministic reference counting, keeping memory usage to a minimum without the overhead of garbage collection.

### B. Objective

Streaming of data has become a major breakthrough that helps people to analyse, manipulate and deploy the services provided over the web. The year ahead promises to be a time of exciting change as new trends and technologies drive innovation, disruption, and opportunities for growth in media and entertainment and in particular video streaming is becoming vast and promising media service in this data era. And in particular media streaming is becoming vast in this data era.

This application is a barrier smashing community of like minded people interested in enhancing their health and fitness while supporting others to do the same. It is a social club, a personal motivator and a virtual gym all wrapped into one. The mission is to be an expansive, welcoming, tight knit community that provides the necessary tools to make health and fitness fun and engaging. It incorporates the user's activity data, provides one-on-one coaching and support and a platform for others to cheer the user in real time. For trainers, it creates a new opportunities to find clients and fill in gaps in their schedules, transcending the confines of physical gyms and geographical limitations.

### C. Problem definition

A person who is fit is capable of living life to its fullest extent. Physical and mental fitness play very important roles in your lives and people who are both physically and mentally fit are less prone to medical conditions as well. But in the current society, people are busy with their works and most of the people do not care about their physical and mental conditions. All the daily utilities and services are available in everyone's phone through internet. But people do not have platform to maintain their body fit with the help of trainers.

As the proverb says "Health is wealth" the only thing humans want in their life is to be fit and healthy. Video streaming is used in various applications but for fitness this achieves the goal of attaining health at the doorstep. This project is mainly

Focused on fitness via technology. This is for the well being of the user to be in the pink. The user can access the application to get the training for fitness from a certified trainer. A trainer will be authorised based on their certificates. The trainee and the trainer can live stream their training and that video stream will also be saved for later user either publicly to all other user or privately only to that particular user based on their subscription plan.

The application uses the LIVE video streaming technique in the application of health and fitness based on the OpenTok cloud for streaming video and audio and AWS for storing the videos.

## II. EXISTING SYSTEM

- Fitness observing gadgets
- Fitness applications

Just talking, wellness trackers measure movement: a large portion of the present wearables accompany a 3 hub accelerometer to follow development toward each path, and some accompany a spinner to gauge direction and turn.

The information gathered is then changed over into steps and action and from their into calories and rest quality, however there is some mystery required en route.

At that point altimeter can gauge your elevation, helpful for working out the tallness of the mountains you've ascended or the quantity of flights of stairs you've figured out how to find a good pace during the day.

The entirety of this data is gathered and crunched to make a general perusing, and the more sensors your tracker has, the more precise its information.

These sensors measure the speeding up, recurrence, term, force and examples of your development—accepted together that as a decent pack of information and it can enable a tracker to work out if the client strolling not far off or simply waving at somebody you know. Have a plunge into the specs rundown of a specific tracker to perceive what sensors are incorporated to gather information about you.

While the eventual fate of Jawbone is undetermined, its prepared UP3 is as yet one of the most sensor pressed trackers, crushing in temperature sensors and a bio impedance sensor close by the commonplace accelerometer that are as of now referenced. Bioimpedance sensors check the obstruction of your skin to a modest electric flow, and the four cathodes within the UP3 wellness tracker are obviously unmistakable.

Different wearables, for example, the Fitbit Charge 2, utilize optical sensors to sparkle a light on the skin and measure the beat through it: the light enlightens your vessels, at that point a sensor quantifies the rate at which the blood is being siphoned (and accordingly the pulse). These optical sensors are less viable than bioimpedance as a measure of the general wellbeing however can be increasingly helpful if the client need to check the pulse during activity or work out.

It's a comparative story with rest following: utilizing a procedure called actigraphy, the tracker makes an interpretation of wrist developments into rest designs as well as can be expected, and likewise with ventures there's some mystery and assessing included. It's a helpful guide, yet it's not as exact as polysomnography this is the thing that the

specialists use to gauge rest in a lab, and it screens cerebrum movement instead of how much the client hurling and turning.

As the client would definitely know, it's hard to get two wellness trackers to concur on how much movement they got past in a day or what the pulse really is. That is on the grounds that the sensors inside every gadget are not immaculate at estimating what the client doing they all utilization marginally various calculations to make an interpretation of the crude information into real measurements.

For instance, the tracker may excuse a little development of the wrist and exclude it as a stage. Be that as it may, how little is excessively little? Various gadgets will have various edges and in this manner bring back various readings. Anything from a rough vehicle ride to an extravagant floor covering can lose the precision of your wellness tracker.

With regards to calories, an application needs something other than a stage check to make the count: that is the reason the client will regularly be requested the age, sexual orientation, stature and weight as well. The calculations utilized by every producer are not made openly accessible, as everyone jumps at the chance to keep a cover on the 'mystery ingredient' they use to get the best and most precise outcomes, however the more sensors and information focuses utilized the more exact the outcomes are probably going to be. To truly tell what number of calories the client is consuming, for instance, a tracker needs to include information about your pulse and the amount you're sweating into the calculation nearby what number of steps the client taking.

One of the most notable following stages out there is MotionX, which you can discover in Nike's running applications, the most recent Swiss smartwatches and numerous different gadgets. Philippe Kahn is prime supporter and CEO of MotionX engineer FullPower, and he disclosed to us how the 'signal handling' technique inside a wellness tracker tidies up the crude information that is gathered.

"Consider being at a show. You simply made a poor chronicle of a show with a recording device of an extraordinary exhibition from a seat in the crowd. Together with music, the recorder gets a wide range of clamors around you: your foot tapping, prattle, connections, etc if the client needed to transform this poor chronicle into a quality account of the music, you would need to take out however much of these undesirable sounds as could be expected."

What's more, the nature of this tidying up process differs from tracker to tracker, Kahn says. The applied procedures run from the easy to the modern, however MotionX bets everything:

Full power utilizes in excess of 100 master designers to change the exactness and viability of its product, and the organization has put more than \$50 million in the advancement of cutting edge calculations — this is enormous business.

The applications are the last connection in the chain, introducing your information in an easy to understand group once it's been gone through different calculations and refined as needs be.

You'll see most wellness following applications accompany the capacity to include information and exercise physically too — we don't yet have a GPS beacon or a lot of sensors you can completely depend on.

"At regular intervals the client gets estimations. By and large strolling and running are truly precise, however whatever else is exceptionally untidy. In the event that the client need to assemble a timetable on that the client truly need to do some post handling on top [of the data]. We manufactured our own following on the accelerometer in the iPhone."

So two applications won't really report similar insights, regardless of whether they are utilizing a similar crude information. Whenever the client is in the market for a wearable GPS beacon, give close consideration to the coordinated programming and good applications just as the sensors and calculations stuffed into the gadget itself. They all have an influence in the quantity of steps that glimmer up on your cell phone screen by the day's end.

#### A. *Disadvantage*

Not continually everything works and goes as arranged. There are a few weaknesses for wellness trackers also and the application care that the client know it all. Hence, here are 4 drawbacks of the wellness tracker.

##### 1) *Steps*

The clients need to consider, that a large portion of the wellness trackers are no 100% precise. For instance steps. These little gadgets can't generally tally all the means, along these lines the client can't really depend on these gadgets if step counter is the main need.

##### 2) *Battery*

These little brilliant groups are electronic and the client need to charge them so they could work appropriately only for the client. Envision, the client go out for running and out of nowhere. The Smart Band is out of battery. So if the client neglects to charge it, the client won't have the option to utilize it while working out.

##### 3) *Calories*

In the event that the client wellness tracker can't tally all the means precisely, additionally the client calories won't be checked right. It is a major destruction if the client might want to shed pounds since your calories are checked just around.

##### 4) *Comparing*

Not always the downfalls of these gadgets are the technological things. It also could be psychological. These fitness trackers and apps, where you can follow your progress, are offering to connect with your friends. Imagine, if your friend walked 2x more than you, it can make you feel inadequate. And sometimes this kind of negative feelings can lead us to discouragement and make us stop working out.

In the end, it is really important to find the best and most suitable fitness Tracker just for the user. One that is lightweight, comfortable, do not exceed your budget and with a lot of useful functions.

### III. PROPOSED SYSTEM

This framework is invaluable than the current framework in numerous viewpoints as the application makes it simple as could reasonably be expected. Here the client can screen his wellness information and furthermore guided by each or more mentors in turn. This encourages the client to oversee time in like manner. The client can book a meeting when he discovers time and this makes the procedure simpler. Indeed, a couple of moments of high force interim or dashing activity might be as compelling as any longer exercise meetings, according to another investigation. Mitochondria, the vitality communities of the cells, are basic for acceptable wellbeing.

Past research has discovered that activity makes new mitochondria and improves the capacity of existing ones. Adjusted mitochondrial work in light of a solitary meeting of activity produces flags that may prompt valuable changes in the phones, bringing down the hazard for constant ailment.

The OpenTok stage makes it simple to insert ongoing, excellent intelligent video, informing, screen-sharing, and more into web and portable applications. The stage incorporates customer libraries for web, iOS, Android, and Windows, just as server-side SDKs and a REST API. OpenTok utilizes WebRTC for sound The OpenTok stage makes it simple to install ongoing, top notch intuitive video, informing, screen-sharing, and more into web and portable applications. The stage incorporates customer libraries for web, iOS, Android, and Windows, just as server-side SDKs and a REST API. OpenTok utilizes WebRTC for sound video correspondences. All applications worked with the OpenTok stage require two essential parts: The Client—customer side code that runs in a program or portable application, set up by the engineer utilizing the OpenTok customer side libraries, which are accessible for Web, iOS, Android, and Windows. The customer side handles most of OpenTok functionality. The Server server-side code executed on a web server set up by the engineer utilizing the OpenTok server SDKs, which are accessible for Node, PHP, Java, .NET, Python, and Ruby.

Each OpenTok video talk happens inside a meeting. You can think about a meeting as a "room" where customers collaborate with each other progressively. Meetings are facilitated on the OpenTok cloud and oversee client associations, sound video streams, and client occasions, (for example, another client joining). Every meeting is related with a one of a kind meeting ID. To permit various customers to visit with each other, you would suggest have them interface with a similar meeting (utilizing a similar meeting ID).

#### A. Advantage

- The user can save time by doing the training session whenever the user finds time.
- User can track real time and live data of the session where he can find the amount of calories burned in the session, steps, Heart Rate, THRM.
- Helps user in monitoring the Health and fitness of his own.

- User can watch the sessions that has been conducted by other trainers and trainees.
- The user can also view his own sessions whenever he wants.
- The watchers can also express themselves with the help of comments.

### IV. MODULE DESCRIPTION

#### A. Signup

The signup module which allows the user to create their own account of the application. This module has three fields. The email field accepts only the unique emails for creating a new account. The email that is used already by the same user or by other users will not be accepted as a valid email id. The format of the field should be as per global mail format.

The password field accepts password for the respective mail id. The confirm password field is to verify that the password provided is same as the confirm password.

#### B. Login

In the login module the user is allowed to log into the application with their email id and password. The email of the user should be unique. The password of the user will not be saved at any instance by the application.

#### C. Watch

In the watch section the user can watch a recorded video or take a live session with trainer. The videos that are posted as public will only be visible in the watch section for all the user. In this the ongoing live sessions will appear first and the recorded video will appear next. If the user is willing to take live section then he can select one as per their wish. The live video session may or may not be recorded for the public use.

#### D. Book a Trainer

In this module the watcher can choose the trainer for their workout session. The watcher can either choose a specific trainer or can join with a random trainer. To choose a specific trainer the watcher need to know their username. The watcher can also select the trainer using the category of workout like burn, strength, legs, core, thighs, yoga, Pilates etc. The watcher can take session with random trainer by clicking on book with any trainer. To book a random trainer the user has to authorise his age that he is above 18 years is depicted.

#### E. Monitoring Fitness Data

The data in the live video is replicated also in the recorded video where the health data and the views as well. The Health data is monitored with the help of Fitness devices such as iWatch, Fitbit, China watch and Apple health. These data are real time and live. The THRM is calculated based on the age.

#### F. Report

The report option is to make a complaint on the trainer. The report of a trainer can be done while the session is in live or the user can report the trainers by searching for the trainer by their username.

The report is not only for the trainer it is also for the blog and feed. To report a blog the user needs to visit the blog and to report a feed too the user need to visit the feed.

## V. CONCLUSION

The work is to make a healthy app that fits and reached the user at all levels. Thus the application has the feature for referring and other revenue making functionalities. The day-to-day life is all about health and that what makes a human being wealthier. The creation of an application to fit for the fitness makes an indispensable effort for the user. The healthier the people the wealthier the world will be. This is literally not only a saying but the motto of the project. This makes the people to work and take their personal activities in a separate manner. The project is all about health at its peak.

## VI. FUTURE ENHANCEMENT

Any application that exists can never attain its fullness. Thus as a part of attaining the fullest application the user indulge in upgradation. The upgraded application can run over iOS. Another feature of the upgraded application will be run over the web. The application will be optimised for the performance and will be stabilised for the throughput. The quality of the video will be increased in such a way that there will be non-interrupted streaming. The main feature for the upgrade is the community streaming where the multiple user can join into a live session streaming between all the users. And also the booking of trainer will be in multiple for continuous back -to-back sessions.

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