FYP Mid-year Evaluation

LIVE SUBTITLES USING AUGMENTED REALITY

Group Member	CGPA	Roll Number
Ifrah Ishtiaq	3.772	(CS-132)
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Syeda Sara Akif	3.500	(CS-002)

PROJECT BACKGROUND

There are many online and offline translating softwares but too frustrating as they require the user to shift focus from text to the people talking.

Also, in many applications, the function of turning on/off i.e translating again and again could get very tedious.

translatez

itranslate

Snaptrans

Googletranslate

PROJECT INTRODUCTION

- What is our project about?
- Who will it help?
- Are there any similar products available commercially?
- If YES, how is our project different?

PROJECT INTRODUCTION

- **What is our project about?**

Live Subtitles is an Android Application which provides:

- Real-time speech to text conversion allowing the users to view and read the speaker's speech in live conversations.

- Designed as an Android App to ease users in their daily lives.

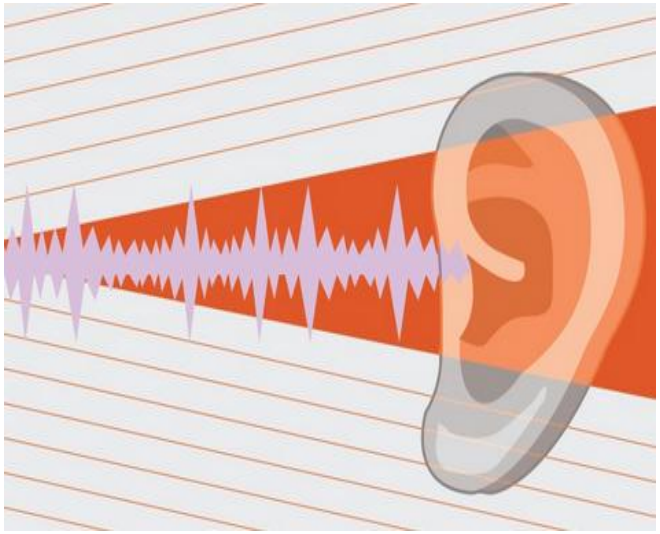
- Implemented using AR to allow the text to be overlaid on screen of the user's mobile.

- Allowing User to view the Subtitles in either English or Urdu as per their desire.

- **Who will it help?**

1. People with Hearing Disabilities:

According to WHO, over 5% of every country's population suffers from some sort of hearing impairment which means that currently there are appoximately 10 million citizens in Pakistan and 466 million people all around the globe who are hearing impaired. Moreover, It is estimated that by 2050, one in every ten people will have a disabling hearing loss.

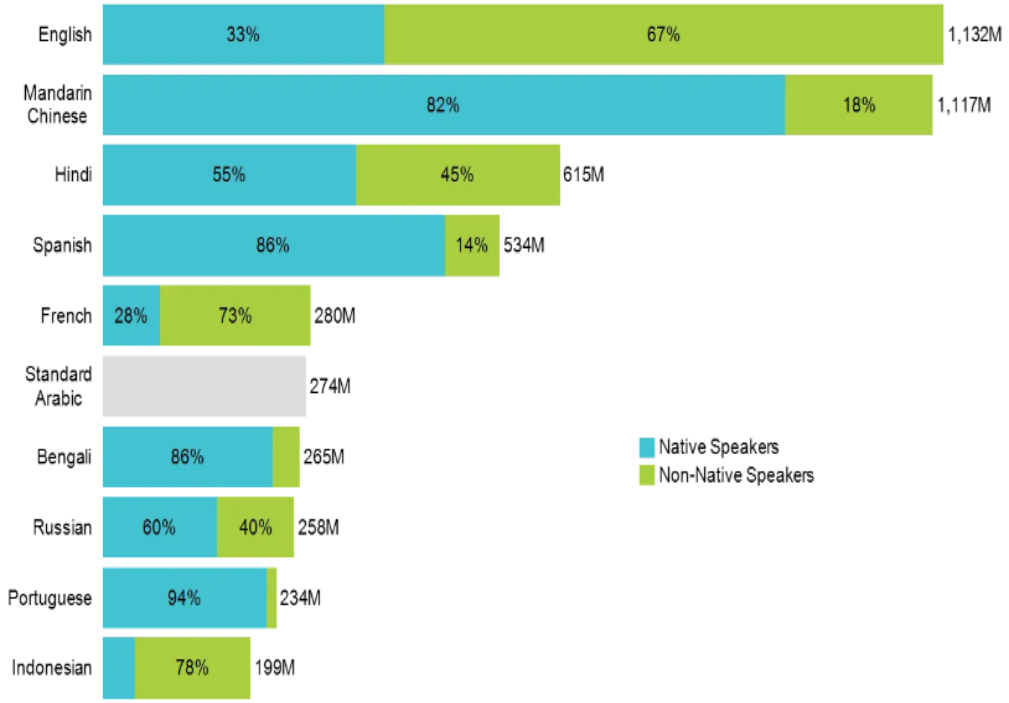


There is a great need for a medium that will help include such huge amount of people.

- **Who will it help?**

2. People with different languages:

Great content transcends language boundaries but only if it's translated.



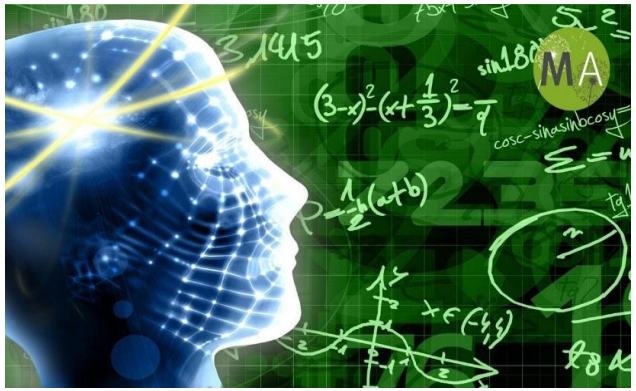
People from all over the world understand different languages and even locally, different people are comfortable with different languages.

According to a survey, about 90% of organizations struggle with language barriers in their day-to-day work.

Our application is aimed at removing this linguistic barrier.

- **How does it help?**

3. Improved Comprehension



Using subtitles alongside listening, lip reading could help ease concentration fatigue for listeners and help with missed out information. Given that some people learn through watching and reading, visuals like subtitles in real world could improve learning by up to 400 percent by affecting users on a cognitive level and allowing them to have better understanding.

Therefore, Our app will enable users to process the information faster and better.

- **How does it help?**

4. Increased Engagement

Statistics show that subtitles are inherently more captivating.

According to a recent study, captioned videos had a 40% increase in views and were 80% more likely to be seen till end. Hence, a conversation stands a much better chance at having an impact if it is conveyed with captions.

- **Are there any similar products available commercially?**

1. London's Royal National Theatre offers **"Smart Glasses"**

- **If YES, how is our project different?**

Smart Glasses display already defined subtitles making them limited to the theatres.
These glasses cost roughly $1,050 per pair making them very expensive and unaffordable to most people.
Smart Glasses could also be very uncomfortable to wear, specially for longer times.

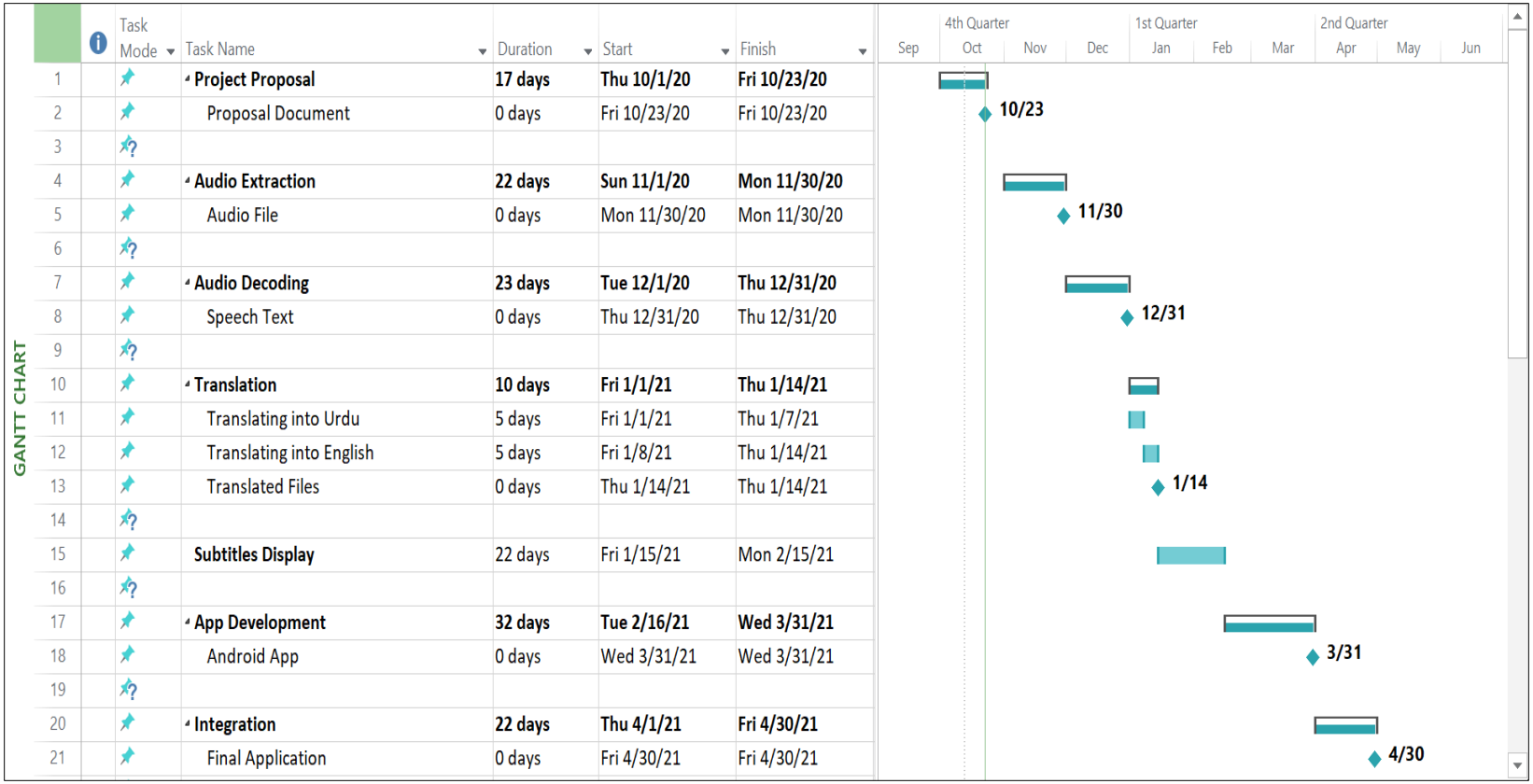
- **Are there any similar products available commercially?**

2. Shravan Apps by Oswald Labs offer "Live Subtitles" android application.

- **If YES, how is our project different?**

Live Subtitles is an Indian product yet to hit market. The date for release is not announced.

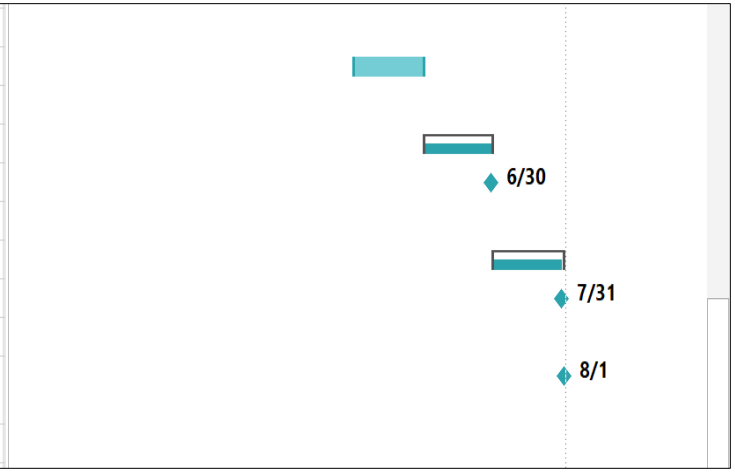
GANTT CHART



GANTT CHART

	Task Mode	Task Name	Duration	Start	Finish
1		**Project Proposal**	**17 days**	**Thu 10/1/20**	**Fri 10/23/20**
2		Proposal Document	0 days	Fri 10/23/20	Fri 10/23/20
3					
4		**Audio Extraction**	**22 days**	**Sun 11/1/20**	**Mon 11/30/20**
5		Audio File	0 days	Mon 11/30/20	Mon 11/30/20
6					
7		**Audio Decoding**	**23 days**	**Tue 12/1/20**	**Thu 12/31/20**
8		Speech Text	0 days	Thu 12/31/20	Thu 12/31/20
9					
10		**Translation**	**10 days**	**Fri 1/1/21**	**Thu 1/14/21**
11		Translating into Urdu	5 days	Fri 1/1/21	Thu 1/7/21
12		Translating into English	5 days	Fri 1/8/21	Thu 1/14/21
13		Translated Files	0 days	Thu 1/14/21	Thu 1/14/21
14					
15		**Subtitles Display**	22 days	Fri 1/15/21	Mon 2/15/21
16					
17		**App Development**	**32 days**	**Tue 2/16/21**	**Wed 3/31/21**
18		Android App	0 days	Wed 3/31/21	Wed 3/31/21
19					
20		**Integration**	**22 days**	**Thu 4/1/21**	**Fri 4/30/21**
21		Final Application	0 days	Fri 4/30/21	Fri 4/30/21

22					
23		**Testing**	**22 days**	**Sat 5/1/21**	**Mon 5/31/21**
24					
25		**Report Writing**	**22 days**	**Tue 6/1/21**	**Wed 6/30/21**
26		Final Report	0 days	Wed 6/30/21	Wed 6/30/21
27					
28		**Research Paper Writing**	**23 days**	**Thu 7/1/21**	**Sat 7/31/21**
29		Research Paper	0 days	Sat 7/31/21	Sat 7/31/21
30					
31		**Final Live Subtitle using Augmented Reality**	**0 days**	**Sun 8/1/21**	**Sun 8/1/21**
32					



TASK DIVISION

- **AUDIO AND TEXT EXTRACTION + TRANSLATION**
  - Mahrukh Khan
  - Syeda Sara Akif

- **ANDROID APPLICATION DEVELOPMENT**
  - Ifrah Ishtiaq
  - Ameema Arif

Audio Extraction & Translation

Audio Extraction from Video

Video

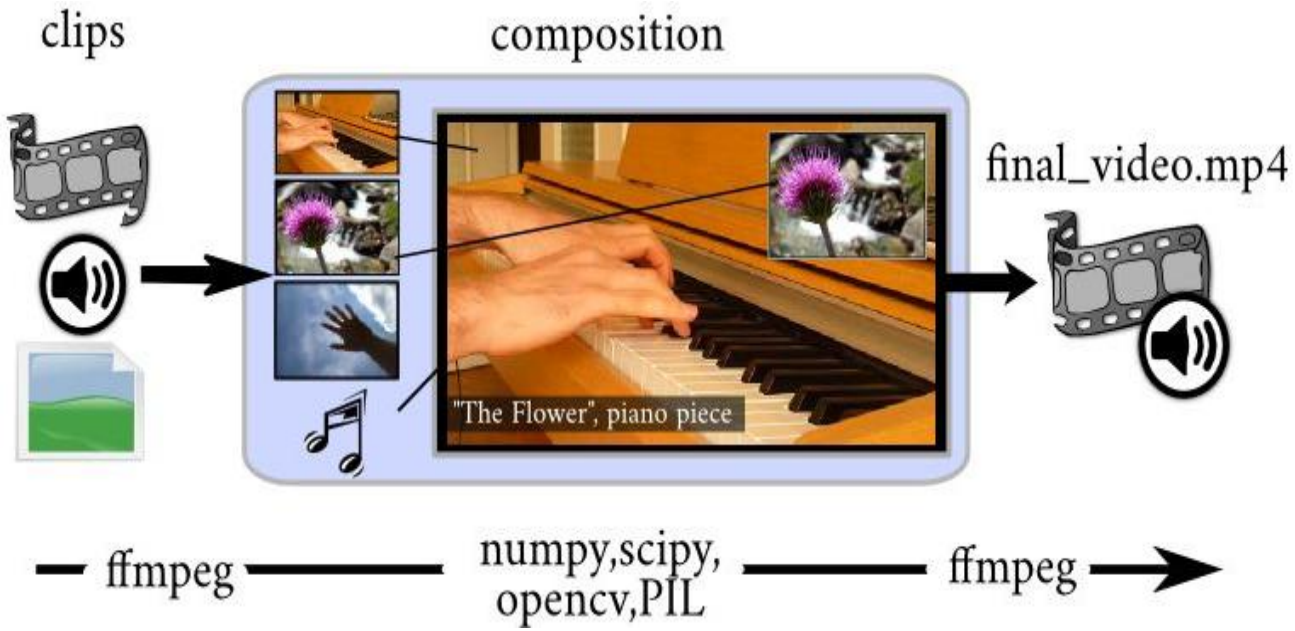
Audio Extraction

Audio File

Python Library for Video to Audio Conversion

“Movie Py”

Python Library for Video to Audio Conversion



Textual Extraction from Audio

Audio File

Textual Extraction

Text File

Libraries for Textual Extraction from Audio Files

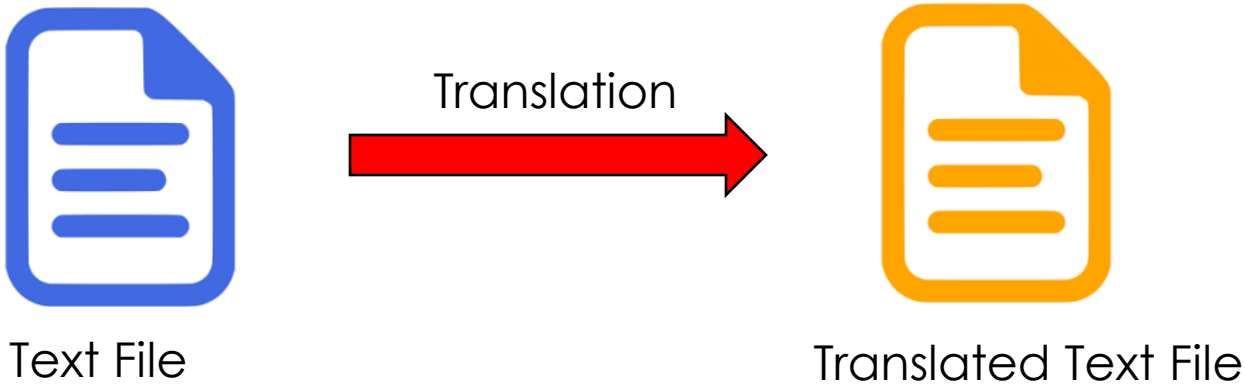
1. Speech recognition is mostly **free** and allows documents to be created faster because the software generally produces words as quickly as they uttered, which is usually much faster than a person can type.

Libraries for Textual Extraction from Audio Files

2. Google Cloud Speech API:

The Google Speech-To-Text API **isn't free**, however. It is **free** for **speech recognition** for audio less than 60 minutes. For audio transcriptions longer than that, it costs $0.006 per 15 seconds.

Translation of Text File



Libraries Available for Translation of Textual Files

- Google translator
- Google Cloud Translator API
- Microsoft Translator API

So we have used Google Translator for Textual Extraction from Audio.

Mobile Application Development

Step 01: Choosing an Appropriate Platform for our Application

- Android

OR

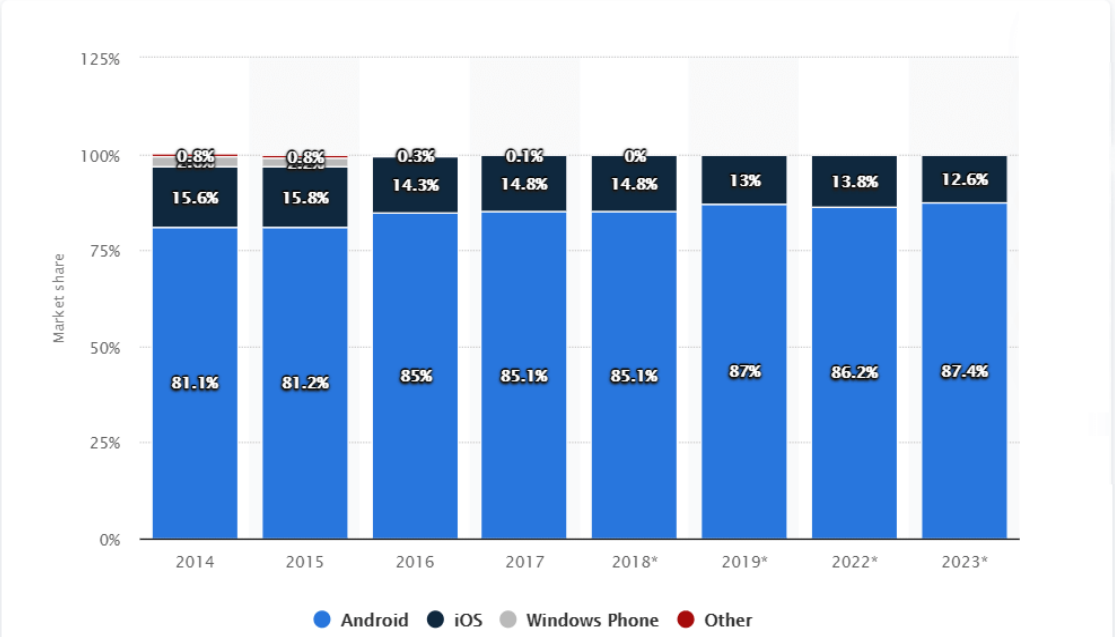
- IoS

Choosing Android

Choosing Android considering the following 2 factors:

i. Market share

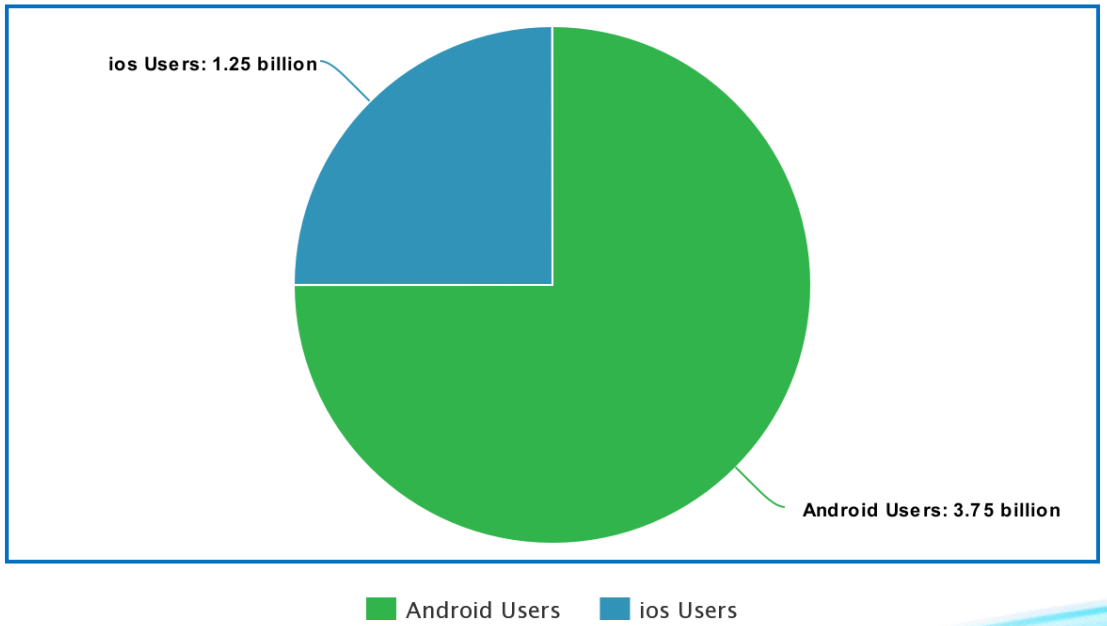
Share of global smartphone shipments by operating system from 2014 to 2023



ii. App Users

Total Mobile Users: 5 billion
Android Users: 3.75 billion
IoS Users: 1.25 billion

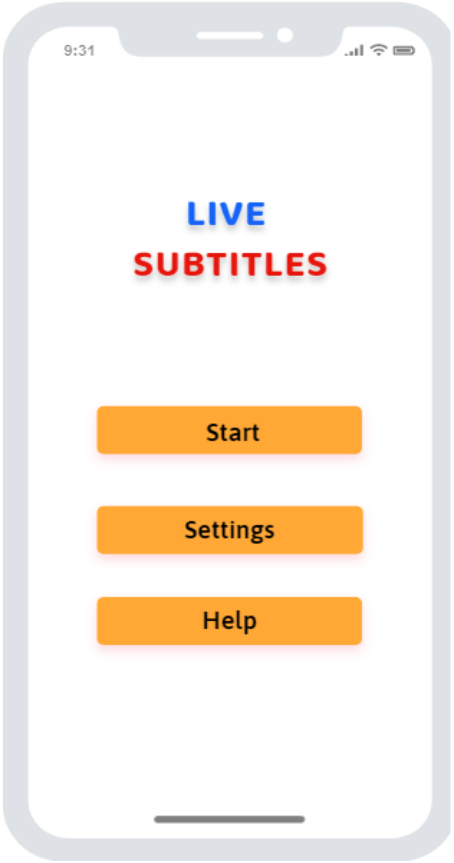
Mobile App Users
https://kommandotech.com/statistics/android-vs-ios-market-share/



Step 02: Choosing Software for Android Application Development

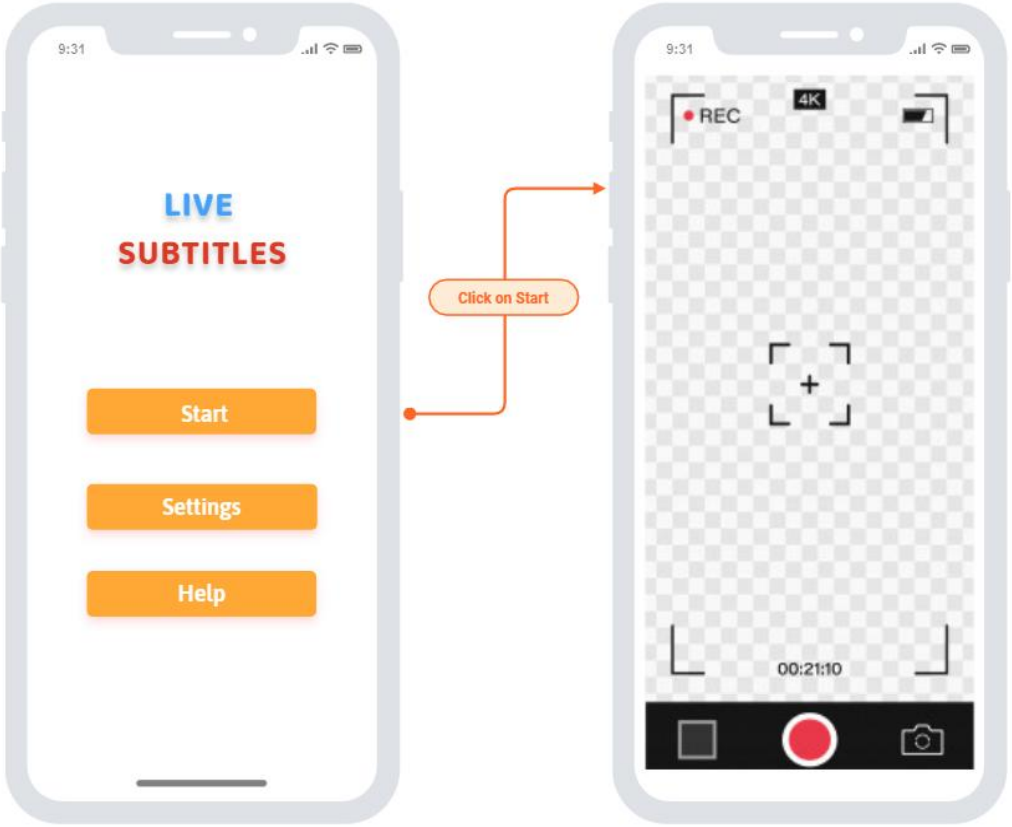
Android Studio

Step 03: Designing the Wireframes

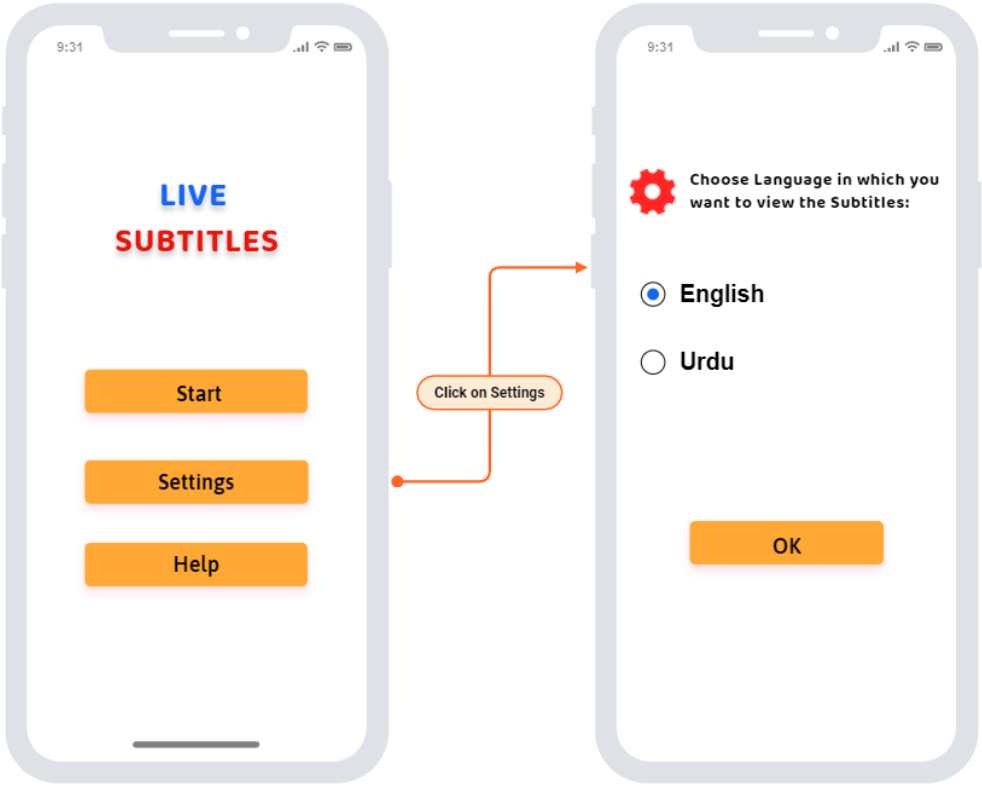


Main Screen	Start	Settings	Help
Start	Live Camera Streaming with subtitle display		
Settings	Choose desired Language		
Help	Basic guidelines on how to use		

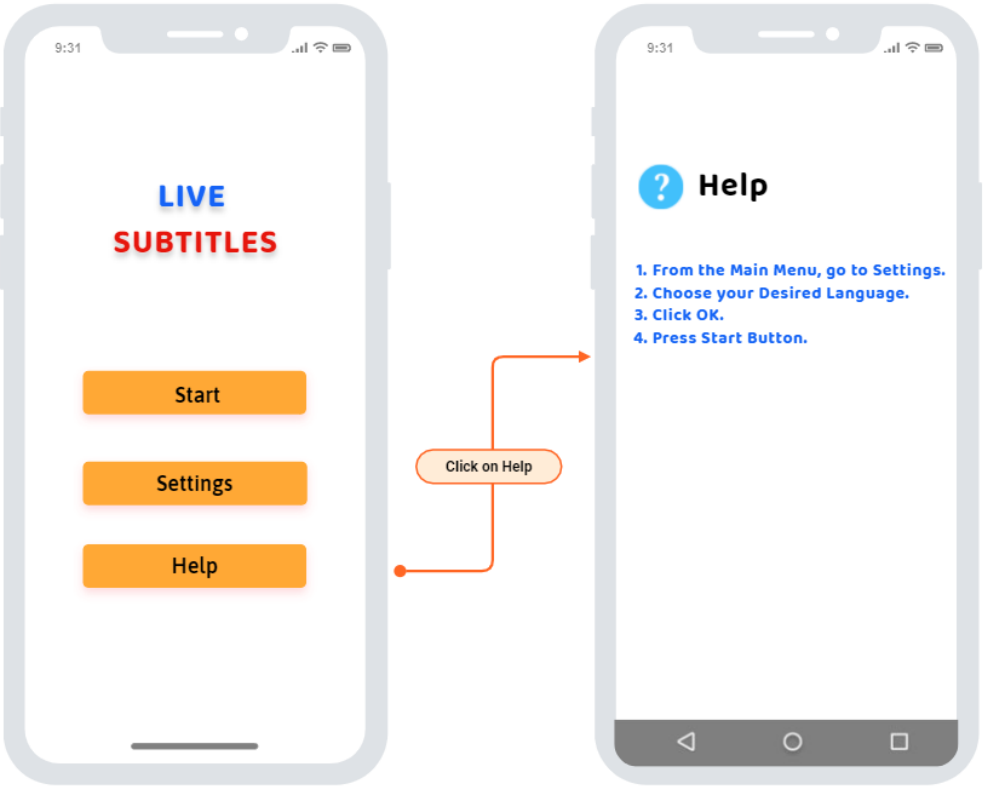
Start Interface Wireframe



Settings Interface Wireframe



Help Interface Wireframe



Step 04: Implementing The Wireframes into Actual Interfaces

- **Display in Demo Session**

MILESTONES ACHIEVED

- Audio Extraction from Video
- Textual Extraction from Audio
- Translation of Text
- Android Application

FUTURE PLAN

- Real time Audio Extraction with Translation
- Augmented Reality
- Integration of all modules
- Testing

THANK YOU