Girl Hackathon
Theme: Future of Learning

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SUB THEMES OF ROUND 2

- **Digital literacy and accessibility:** To provide digital literacy or digital skill training for all and updating their technological knowledge to the highly demanded skills of the 21st century. As the nature of literacy has changed in the digital age we also need to rampantly adapt to this change through innovative solutions.

- **Hybrid Education Model:** Post pandemic we continue to see the rampant growth of Hybrid education models across several educational institutions providing flexibility to learn from both online and offline modes.

Problem Statements:

Please use one of the below problem statements or come up with any other problem statement of your choice:

1. Majority of people in India still don't have access to the internet, and fewer still own a smartphone—Google has made India central to the Next Billion Users initiative—designed to ensure the internet is useful for people coming online for the first time. We are continuously working on improving our apps and services so they're relevant in more Indian languages and continue to create offline versions for those facing network constraints. Explore and enhance the features of existing applications or come up with a new application to improve **accessibility** in ways we can work together to improve lives of people living in rural areas and overall advance India's digital economy.

2. **Hybrid education** models are being adopted across educational institutions post pandemic. As the name suggests, this model gives students the flexibility to attend classes in both online and offline modes. Since educators have a mix of online and offline students to address, various novel methods or tools for teaching need to be adopted. Monitoring, doubt sessions, intra student communication, grading group projects etc are getting tougher and a 'standard' solution to this problem needs to be identified. What features could help solve for the Hybrid education model in the current day and age.

3. Across the world, senior citizens who grew up in a pre-digital era, are finding it difficult to acclimatize themselves with the emerging technology. However, evolution of new technologies and applications can enable senior citizens to stay safe and secure. These days, senior citizens have already graduated to using smart phones from landline or basic mobile phones but are largely using them to only make and receive calls. Rapid development in apps and websites which are user-friendly, can improve the safety of senior citizens if we can make them familiar with how to operate them through **digital literacy**. What features would you add to existing applications or come up with a new application to empower the reach to a larger audience of elderly.

Participants may either choose the above problem statements or may take inspiration from them and come up with something totally new. Goodluck!

2022 Girl Hackathon Design Doc Round: Project Submission

Project Name: InTouch

Group Name: CodeForSupport

Group Members: Rhea Adhikari, Ishika Gupta , Shriti Chandra

Brief summary

Please summarize your problem statement and solution in a short paragraph.

Problem Statement: Senior Citizens (>60 years) have been observed to face issues in adapting and getting accustomed to operating smart mobile applications which narrows their use case of using mobiles to only make phone calls. They are scared about what if something goes wrong which is why they don't explore all the features and tend to learn very slowly in the process.

Solution: We are suggesting a model for the elders to adapt quickly to the applications existing on their phones. Our model will educate them on how to use the applications and make it easy for them to learn via interactive guiding methods such as providing them with interactive overlays along with voice assistance.

Problem Statement

What's the background of the chosen theme? (brief introduction is enough)

What is the specific problem on the chosen sub theme? What problem you're trying to solve. Please mention the theme your solution caters to. (Multiple selections is acceptable.)

What are you doing, why, and for whom?

The background of our chosen theme is that across the world, the senior citizens who grew up in a pre-digital era, are finding it difficult to acclimatize themselves with the emerging technology.

The specific problem is that the elderly do not have much experience with smartphones and face a lot of hardships learning to use the basic yet important functionalities of it. They are often confused and skeptical about the entire process or the utility of any interface. The problem is not limited to elderly but also to people who do not have hands on experience with the same.

The theme of our solution caters to digital literacy and accessibility which is to provide training digitally to be able to be up to date with the technology of the 21st century.

We are providing an interactive and simple training application that, using simple commands, will help the user to learn and get accustomed to the utilities of any smart phone. Upon prompting a question, let's say "How to open the camera?", the application will provide step by step guidance with the help of very user friendly animations and appropriate interface designs, to do the job. Along with the textual guidance, we plan to integrate it with google assistant for text to speech translation of the same.

We are planning to do this as this will ensure that the elderly do not have the fear of technology. The learning experience will be easy, realistic, and can be taken as many times as the user pleases or requires.

The target audience of this application will be the elderly, senior citizens, the people who have not used smart devices a lot, and other learning enthusiasts.

Use Cases

Describe specific use cases that illustrate the problem/opportunity.

A few specific use cases for our chosen problem statement might be as follows:

Learning to make normal voice calls, or video calls using different applications, setting alarms, watching recreational videos or watch movies or other media they wish to access. This might also include learning how to use a camera, sending and receiving text messages, using calculators, using meditation applications, and many such applications.

Design Idea and approach

A short and sweet overview of your implementation ideas. You don't need to contain every detail of your implementation, and should omit code. This will be covered in the Hackathon round. Use a diagram that illustrates your solution when necessary.

You can discuss but not limited to:

- Which technologies will you use?
- What new components will you write?
- What technologies will you use to write them?
- What are the dominant scaling parameters? (data sizes, qps estimates, etc.) Consider the range and maximum values.
- What is the general rollout strategy?
- What are your information security/privacy concerns and how will you address them?

Market Options

The current market trend avails the use of voice assistants to answer "how-to" questions. It implements an internet search query for "how-to" articles, fetches the most suitable set of steps

and reads out the same. However, given our subject group consisting primarily of senior citizens, this process is highly limited in its usage and fails to bring about an actual understanding of the process due to a lack of awareness on how to perform simple steps on a smartphone which is often a pre-requirement for these tutorials. Moreover, an abundance of fear of the device awry in the process and the unknown, security concerns and overwhelming complexity makes the process highly cumbersome for senior citizens.

Introducing InTouch

We aim to correct this by introducing interactive, voice powered tutorials and layovers over basic phone applications allowing the user to play around with the application in a safe, learning mode - *Care Mode* - with guided steps sketched out in detail. These steps will be aimed at the elderly with steps taken to accommodate visual and hearing impairments to make assistance easier to understand, thus improving upon their learning tangent. This will serve as an extremely important step so as to inculcate basic digital skills in senior citizens and serve as a teaching model to improve digital literacy.

Taking a look under the Hood

Upon authentication, three inputs will be taken from the user which will include age, language preference, and degree of visual and hearing impairment.

Taking these into consideration, the user will be able to ask their Google Assistant to go into Care Mode.Once Care Mode is enabled, we aim to start with 7 basic mobile applications (beyond phone calls and sms) :
1. Gallery - Viewing and Sorting Photos
2. Contacts - Checking, Filtering and Sorting Contacts
3. Camera - Clicking Photos and utilizing basic editor features
4. Voice Recorder - Record and Play audios
5. GPS - Enabling/Disabling, Sharing Live Locations
6. Check weather and temperature
7. Access utilities including flashlight, calculator and bluetooth

The user can ask Google assistant to "Open Camera". Once the Camera application is opened, we will begin a short overlay tutorial wherein a screen layover will be cast over the camera application to highlight the basic features required to click and save pictures.After the tutorial ends, the user will have the option to replay the tutorial, try the application themselves or ask for more help.

Another major issue faced by seniors is a lack of answers in real time. To overcome this, we plan to implement a text to speech real time chatbot during the overlay so that the user can ask familiar questions like "what's that gear icon for?" and troubleshoot problems as they arise inside the application itself. This will also include an option to exit *Care Mode* which will exit them back to the Home Screen.

Tech Stack

The layovers will be built with React Native components, keeping the CSS to minimal which greatly increases loading time, execution time and memory consumption. Firebase Cloud functions will be utilized to introduce real time notifications and interactive pop ups to keep the user engaged. The chatbot will be developed using Google Dialog Flow to support a conversational user interface and solve the user's problems as soon as they arise thus retaining the user's interest and improving their learning tangent. The application will be integrated with Google Assistant so that it can be opened with ease.

Scaling Parameters

The dominant scaling parameters here would be identifying what constitutes as basic predefined mobile applications and scaling the same to external applications with larger data sizes and more abundant and complex features. This will include using apps like Gmail to send and receive mails, Youtube to watch videos, Google Duo for video calls etc.

Rollout Strategy

The MVP will consist of interactive overlays for the 7 basic mobile applications described above and an Interactive Voice Response chatbot to enhance the experience. We plan on modulating each application type so that external applications can be onboarded with a set template of inputs, and processing and the process of setting up tutorials for the same can be automated to the maximum extent.

Privacy Policy

The security concerns here are minimal as we will not be storing any user information for the MVP development. For the second stage (expansion to external applications), personal data sourced from external applications will be taken on consent and will only temporarily be retained to enhance and personalize the UI experience for the user. We plan to host this data on Firebase thus making the application highly extensible and secure, i.e features can easily be integrated without worrying about interdependency between components and customization limits.

Alternatives considered

Include alternate design ideas here which you are leaning away from.

We considered two alternative design ideas :

1. In the idea presented above, a major dilemma was whether to use Google Assistant universally for the application or switch to a separate interactive voice response setup (IVR). Upon Research, Google Assistant with its many capabilities proved to be an overfit for the case presented here. Considering the fact that we aimed for the application to be inclusive with an internal text to speech setup so as to be able to better focus on Elderly assistance and not on global assistance and to be able to develop a more thorough command set suited specifically to each application so as to make the assisted IVR more adaptable and understandable, we switched to keeping our IVR chatbot separate and utilizing Google Assistant only to open and exit Care Mode.

2. We also considered developing a teaching model as an in-application feature to inculcate awareness amongst senior citizens about Phishing Scams. The application will allow sending fake scam messages, emails and phone calls in a real time setting to the subject with a link to share personal data and/or send money. If they accept the call and consent to share data, that would send up an immediate red flag. At this point, the subject would be informed about the same and given a tutorial on phishing, what they did and how to avoid it in future scenarios. This feature

turned game would serve as an educational model teaching the user digital awareness.

DataSets Considered for sourcing and predicting template Scam Messages -

https://www.kaggle.com/datasets/uciml/sms-spam-collection-dataset

https://archive.ics.uci.edu/ml/datasets/sms+spam+collection

References and appendices

Any supporting references, mocks, diagrams or demos that help portray your solution.

Any public datasets you use to predict or solve your problem.