**System Requirements Specification**

**Mental Health Awareness Application**

**CS 490, Spring, 2021**

**Team Name**:

Helping Hand Awareness

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# Introduction

## System to be Produced:

The goal of this system is to produce an application that will allow for friends, family, and acquaintances to be reminded when to contact others. In this era, it has become common to contact and maintain communication with people via social media platforms like Twitter, Facebook, and Instagram. In times of busy lifestyles and events such as long periods of quarantine many forget to contact others. This communication and contact, even through a simple text, can help prevent others from feeling isolated, depressed, or negative. This application will keep track of the communication between the user and others they contact on social media platforms. For each contact there will be a living calculated average, this living average will fluctuate based on the number of times the participant communicates. The user will be reminded when these averages fall to communicate with the person they may have forgotten about or become too busy to remember to talk to.

## Applicable Standards:

The standards identified below are in correlation with those outlined in the Apple Developer Guidelines (see Section 4), and only those relevant to this system are discussed.

* The system will require user permission for each individual social media platform before collecting data
* The system cannot access/collect user data unless required
  + User data will only ever be seen by the user
  + User data will never be sold/distributed to a third party
  + User data collection will only occur when needed for the express purposes outlined in Section 1.1
* The system is supported by at least the most current iOS version, iOS 13.7
* The system is supported by any version after iOS 13.7
* The system uses entirely original code and UI
* The system is tailored towards being an app and not a website
* The development team will follow the Apple Developer Code of Conduct (Linked in section 4)

## Definitions, Acronyms, and Abbreviations:

* Living Average: Average calculated based off of the current amount of times a user has texted or called another within a defined amount of time. Can be raised or lowered by new interactions from the user.
* The System: The term used to refer to the product/application.

# Product Overview

## Assumptions:

* User will install and use app on iOS-based device.
* User will have at least 5 MB of storage (current project size after initial archive).
* User operates in the English language.
* Application will be designed to operate on iPhone running at least iOS 13.7, or any version later than iOS 13.7.

## Stakeholders:

Customer is considered a top stakeholder due to the positive influence of application on a wide audience and mental health. Customer would be concerned with the proper algorithm to calculate reminders before it becomes too much time.

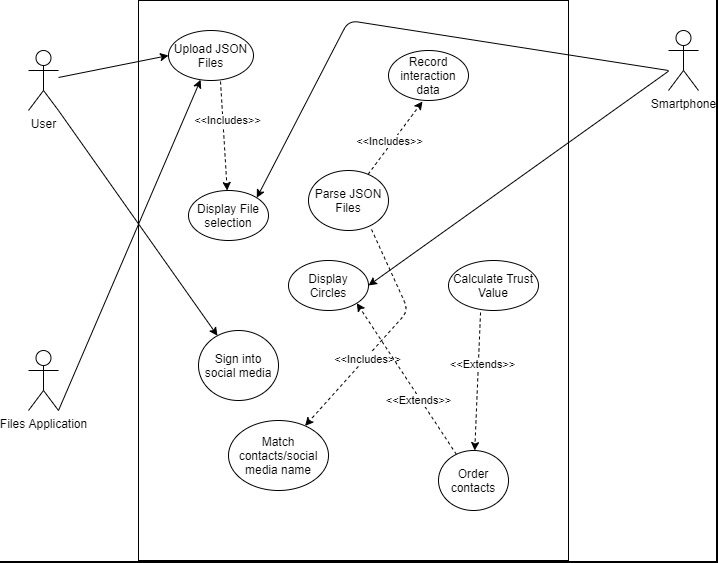
Users with mental health concerns or communicating with someone who does are considered reasonable stakeholders as the reminders can heavily influence the positive mental state of another.

The National Institute of Mental Health (NIMH) could take interest in the application to use it as an aid to encourage the support of family members and friends with mental health issues/ disorders.

## Event Table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Event Name** | **External Stimuli** | **External Responses** | **Internal data and state** |
| Average Drops for Contact | User has not contacted contact | Application pushes notification for contact reminder |  |
| User denies access to social media platforms | User changes settings in app or in settings of device | Application notifies user that access has been denied | Application is unable to reach any contacts and unable to calculate inner circle |
| User changes weighting of any of the social media platforms | User inputs new weights for different forms of communication | Application updates user that inner circle ratings have changed (if any) | Program recalculates average based on new weights of social media platforms |
| Contact blocked by user | User inputs contact number to be blocked |  | Program excludes blocked contacts from calculations and data retrieval |
| Inner circle of contacts is calculated | Contact receive enough trust to change positions | Application updates user that inner circle ratings have changed (if any) | Program calculates trust using collected data |

## Use Case Diagram:



## Use Case Descriptions:

2.5.1 Actors

* User: uses the application, provides contact information and data.
* Smartphone: the medium in which the application will be used, the user interacts with others, and things such as their Inner Circle are displayed
* Files Application: the user must upload files for the application to be able to properly determine averages.

2.5.2 Processes

* Processes - The main processes that the system is doing is allowing people to browse, display their information and obtain information.
* Upload JSON Files: User needs to upload files of previous communication to application.
* Display File Selection: System will show what files have been selected.
* Sign into Social Media: User will use the appropriate username and password to log into their social media accounts.
* Display Circles: Application will show the user who their “closest friends” (most communicated with people) are.
* Record Interaction Data: This will include the data the user gives about if an interaction is positive or negative.
* Parse JSON Files: System will use the JSON files to pull necessary information for trust algorithm.
* Calculate Trust Value: Information pulled from the JSON files will calculate trust values for each person.
* Match Contacts/Social Media Name: Application will allow the user to match their contacts to the people they communicate with on social media.

# Specific Requirements

## Functional Requirements:

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| --- |
| No: 3.1.1 |
| Statement: The system shall allow the user to block certain contacts from being used in the algorithm |
| Source: Product Owner |
| Dependency: 3.2.7 and 3.2.9 |
| Evaluation Method: The system has an option to input a number and that blocks the contact from being used in the algorithm. |
| Revision History: Garðar, created 9/22 |

## Interface Requirements:

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| --- |
| No: 3.2.1 |
| Statement: The system shall display the names of the user’s innermost circle of friends |
| Source: Product Owner |
| Dependency: 3.2.7 |
| Evaluation Method: The system displays the list of the user’s innermost circle of friends |
| Revision History: Garðar, created 9/22 |

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| --- |
| No: 3.2.2 |
| Statement: The system shall have a home screen with buttons that allow the user to navigate to the ShowCircle view, BlockNr view, and Weights view |
| Source: Product Owner |
| Evaluation Method: The app opens up on a home screen with three buttons |
| Revision History: Garðar, created 9/22 |

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| --- |
| No: 3.2.3 |
| Statement: The system shall detect when a ranking has dropped |
| Source: Product Owner |
| Dependency: This requirement will depend on the average line tracker and the table where information is stored. |
| Conflicts: When a user does not input information necessary to create an accurate algorithm judgement. |
| Evaluation Method: The system will detect that the user has communicated less frequently with a person and prepare to notify them. |
| Revision History: Gabrielle Stoney & Jason Hansen Created 09/24, Lizzy Jackson edited 03/04 |

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| --- |
| No: 3.2.4 |
| Statement: The system shall notify a user when a ranking has dropped |
| Source: Product Owner |
| Dependency: This requirement will depend on the average line tracker and the table where information is stored. |
| Conflicts: When a user does not input information necessary to create an accurate algorithm judgement. |
| Evaluation Method: The system will send a notification to an IOS user via banner, lock screen, and Notification Center |
| Revision History: Gabrielle Stoney & Jason Hansen Created 09/24 |

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| --- |
| No: 3.2.5 |
| Statement: The system shall allow the user to rank the quality of communication. |
| Source: Product Owner |
| Dependency: This requirement will depend on the user filling out the survey for each interaction found. |
| Conflicts: When a user does not input information necessary to create an accurate algorithm judgement. |
| Evaluation Method: The system will send a notification after an interaction with a ranking system between 1 and 5 to rate communication experience. The system will then record the response in the table. |
| Revision History: Gabrielle Stoney & Jason Hansen Created 09/24, Lizzy Jackson edited 03/04 |

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| No: 3.2.6 |
| Statement: The system shall send a notification survey to rate a communication experience as positive or negative. |
| Source: Product Owner |
| Conflicts: There will be a conflict when the user does not complete the survey. |
| Evaluation Method: The system will send a notification after a communication experience with a thumbs up or down to rate communication experience. The system will record the response in the table. |
| Revision History: Gabrielle Stoney & Jason Hansen Created 09/24 |

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| --- |
| No: 3.2.7 |
| Statement: The system shall track the time in between each communication experience. |
| Source: Product Owner |
| Dependency: When a user will fill out an experience survey. |
| Conflicts: There will be a conflict when the user does not complete the survey. |
| Evaluation Method: Time stamps will be inputted into the table for each time a communication experience survey is completed. |
| Revision History: Gabrielle Stoney & Jason Hansen Created 09/24 |

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| --- |
| No: 3.2.8 |
| Statement: The system shall update the algorithm pertaining to trust after every communication experience survey. |
| Source: Product Owner |
| Dependency: Updated table information |
| Conflicts: If there is any information missing from the user surveys |
| Evaluation Method: The system will send a notification after an algorithm update if their communication levels are deteriorating. |
| Revision History: Gabrielle Stoney & Jason Hansen Created 09/24 |

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| --- |
| No: 3.2.9 |
| Statement: The system shall allow the user to modify the weights within the algorithm. |
| Source: Product Owner |
| Evaluation Method: The system will have a menu for adjusting algorithm weights |
| Revision History: Gabrielle Stoney & Jason Hansen Created 09/24 |

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| --- |
| No: 3.2.10 |
| Statement: The system shall allow the user to input a person to ignore. |
| Source: Developer |
| Evaluation Method: The system shall display a contact list for the user to choose people to ignore in the table. |
| Revision History: Gabrielle Stoney created 09/24  Jason, 11/30, Changed to list ; Lizzy Jackson changed to person, 2/9 |

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| No: 3.2.11 |
| Statement: The system shall modify the algorithm weights, updating the weights tracker for each recorded form of communication. |
| Source: Product Owner |
| Evaluation Method: The weights tracker will reflect an increment by 1 with a timestamp for each form of communication recorded. |
| Revision History: Gabrielle Stoney created 09/25  Harrison, 2/11, changed database to weights tracker |

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| No: 3.2.12 |
| Statement: The system shall notify the user when it must request permission to access iOS services. |
| Source: Product Owner |
| Dependency: 3.8.3, 3.9.1 |
| Evaluation Method: The user receives a notification pop-up from the system requesting access to iOS service permissions. |
| Revision History: Harrison Dinius, 9/24, created |

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| --- |
| No: 3.2.13 |
| Statement: The system shall have a button on the home screen that allow the user to navigate to the ShowCircle view, |
| Source: Product Owner |
| Dependency: 3.2.2 |
| Evaluation Method: When the button is pressed, the user is taken to the ShowCircle View |
| Revision History: Garðar, created 3/4 |

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| --- |
| No: 3.2.14 |
| Statement: The system shall have a button on the home screen that allow the user to navigate to the BlockNr view. |
| Source: Product Owner |
| Dependency: 3.2.2 |
| Evaluation Method: When the button is pressed, the user is taken to the BlockNr view |
| Revision History: Garðar, created 3/4 |

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| --- |
| No: 3.2.15 |
| Statement: The system shall have a button on the home screen that allow the user to navigate to the Weights view |
| Source: Product Owner |
| Dependency: 3.2.2 |
| Evaluation Method: When the button is pressed, the user is taken to the Weights view |
| Revision History: Garðar, created 3/4 |

## Physical Environment Requirements:

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| --- |
| No: 3.3.1 |
| Statement: The system shall run on at least iOS 13.7 or any version thereafter. |
| Source: Product Owner |
| Evaluation Method: The system runs on iOS. |
| Revision History: Garðar, created 9/22 |

## User and Human Factors Requirements:

* The user shall be familiar with using a smart phone.
* The user shall be familiar with the use of communication via various social media platforms.
* The system shall be able to detect when a user has not responded to a reminder.
* The user shall not require training in order to use the application.
* The user shall be at least 13 years old (in accordance with COPPA, see Section 4).

## Documentation Requirements:

* Audience shall have an intermediate skill level with using a mobile Apple device.

## Data Requirements:

* Log trust increase will be defined as:
* Where MaxCR is Max\_Compression\_Ratio, MinCR is Min\_Compression\_Ration, and CI is Compression\_Interval. Eq. 1 will provide the information needed to increase a user’s relationship with someone. As time goes on, the trust value will increase at time (t+1) which is defined as:
* As time goes on, Eq. 2 will continue to increase such that:
* Eq. 3 is considered to be a single interaction amongst people. There will be a weight on the type of social media. This weight value will range from 0 to 1 and will be found by how many times a user interacts with a specific social media platform divided by the total number of interactions amongst all social media platforms:
* Where is the specific social media, is the number of interactions that is accumulated in that specific social media, and is the total number of all interactions accumulated from all the number of social media platforms that are being used. Combining Eq. 3 and 4 and the number of , the trust increase will be calculated as such:
* For reference, see “Social Brain Hypothesis” study in Section 4.

|  |
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| No: 3.6.1 |
| Statement: The system shall have a table to store data from different platforms the user communicates on. |
| Source: Product Owner |
| Dependency: 3.8.1, 3.7.4 |
| Conflicts: 3.2.8, 3.8.3 |
| Evaluation Method: The table will update all communication contact by a time stamp in the table itself. |
| Revision History: Gabrielle Stoney created 09/24 Harrison, 9/25, added dependency ; Lizzy Jackson changed to address platforms 2/9; Harrison, 2/11, changed database to table |

## Resource Requirements:

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| No: 3.7.1 |
| Statement: The user device shall require a reliable WiFi connection to run the system. |
| Source: Developer |
| Dependency: 3.8.3 |
| Evaluation Method: The system will be able to fulfill the purpose outlined in Section 1 while connected to reliable WiFi. |
| Revision History: Lizzy, 9/22, created Harrison, 9/25, added details |

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| No: 3.7.2 |
| Statement: The development team shall make use of Atom for real-time collaboration when coding together. |
| Source: Developer |
| Evaluation Method: The development team has downloaded and used Atom when any two or more developers need to look at/work on code together in real-time. |
| Revision History: Lizzy, 9/22, created Harrison, 9/25, added details |

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| No: 3.7.3 |
| Statement: The development team shall make use of Microsoft Teams for video and voice calls, as well as screen sharing. |
| Source: Developer |
| Evaluation Method: The development team has downloaded and used Microsoft Teams whenever a meeting is held and/or screen sharing is necessary. |
| Revision History: Lizzy, 9/22, created Harrison, 9/25, added details |

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| No: 3.7.4 |
| Statement: The development team shall use an iOS software development platform (Xcode) to program the system with. |
| Source: Product Owner |
| Evaluation Method: The development team has downloaded and used a software development platform to facilitate coding, testing, and implementation of the system. |
| Revision History: Gabi, 9/24, created Harrison, 9/25, added details |

## Security Requirements:

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| No: 3.8.1 |
| Statement: The system shall only access data limited to the social media platforms the user allows the application to access. |
| Source: Product Owner |
| Evaluation Method: There are no other methods in the system that pull data from any services besides the ones listed in the statement. |
| Revision History: Lizzy, 9/22, created Harrison, 9/24, added details Harrison, 11/30, amended to specify data is coming from iTunes backup  Lizzy Jackson, 2/9, changed to clarify data is coming from social media |

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| No: 3.8.2 |
| Statement: The system shall not share collected data with anyone other than the user. |
| Source: Product Owner |
| Evaluation Method: All collected data will be kept locally on the user's device or be sent securely to Firebase, so nothing other than the user ever views the data. |
| Revision History: Lizzy, 9/22, created Harrison, 9/24, added details |

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| No: 3.8.3 |
| Statement: The system shall have its service permissions available in iOS settings and in-house for the user to adjust. |
| Source: Platform |
| Evaluation Method: iOS Settings will allow the user to set permissions for contacts, texts, calls, FaceTime, cellular data, notifications, and background app refresh. |
| Revision History: Harrison, 9/24, created |

## Quality Assurance Requirements:

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| No: 3.9.1 |
| Statement: The system shall notify users of a request for permissions when access to required services is denied. |
| Source: Platform |
| Dependency: 3.8.1 |
| Evaluation Method: Whenever the system attempts to access an iOS service it does not have permission for, it will show the user a notification request for that service. |
| Revision History: Lizzy, 9/22, created Harrison, 9/24, added details |

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| No: 3.9.2 |
| Statement: The system shall not take up more than 4 GB of space upon the initial download. |
| Source: Platform (Apple Requirement) |
| Supporting Materials: https://developer.apple.com/news/?id=02122015a |
| Evaluation Method: The app size must not exceed 4 GB for user download. |
| Revision History: Harrison, 9/24, created |

# Supporting Materials

“Children's Online Privacy Protection Rule (‘COPPA’),” *Federal Trade Commission*, 01- Dec-2020. [Online]. Available: https://www.ftc.gov/enforcement/rules/rulemaking- regulatory-reform-proceedings/childrens-online-privacy-protection-rule.[ Accessed: 04-Mar-2021].

“Computational Modelling of Trust and Social Relationships,” *jasss.soc.surrey.ac.uk*. [Online]. Available: http://jasss.soc.surrey.ac.uk/15/1/3.html. [Accessed: 04-Mar- 2021].

A. Inc., “App Store Review Guidelines,” *App Store Review Guidelines - Apple*  *Developer*, 01-Feb-2021. [Online]. Available: https://developer.apple.com/app- store/review/guidelines/. [Accessed: 04-Mar-2021].