# Project Proposal - Mobile Device Authentication

## Who will use the System?

Users of the system will be anyone from the casual user of the home computer, to the businesses, corporation, medical professionals/providers, and government officials. There is a great concern about the security of files, systems, and the ability of technology to protect any organization information or individual information from unauthorized access. Today, basic password takes mere minutes, if not seconds, to break through. A string of letters and numbers known by an individual isn't enough to keep accounts and devices secure. Smart Devices, especially mobile phones and tablets, are seeing explosive growth around the world .The staggering number of Applications that enter the market everyday make it convenient for users to perform many functions. This system can be a perfect mobile biometric security solutions for organizations, from both public and private sectors, concerned with mobile identity authentication management, data access control and security. This system can also serve as a plug-in authentication system for the various kinds of applications developed by the mobile application developers.

## How will they use the system?

The system will be designed and developed as an android application. It can be used in any android smart phone and tablet. The intended user of the system can be trained to login by tapping the touch screen of the application a desired number of times at desired intervals. The user entries (tapping sequence) will be initially recorded for a several number of times to obtain a pattern which will be stored locally. Then, at later point, they will be compared with the tapping sequence every time the user enters one. If the time intervals and the pressure parameters matches exactly, then the user is authenticated to enter the system.

## Overall Functionality

From a high level perspective, this is a mobile system that will support the following list of functions.

### Set Tap Sequence

The application will capture the tapping pressure and the exact timestamp of each tapping. This data will then be passed along to first to the ‘Compare Tap Sequence to Data’ function, and then it will be passed along to the ‘Record Tap Data’ function.

### Record Tap Data

This function will take in data from the ‘Set Tap Sequence’ function. It will then record this data locally in a to-be-determined location (RAM, Local SQL Server, Text File, etc.). This function will pass this data, as well as information from local data, to the ‘Check Number of Sequences’ function.

### Compare Tap Sequence to Data

This function take in data from the ‘Set Tap Sequence’ function. It will then get and compare some locally pre-captured sequences up against the current input data for the current tap sequence. It will then run some algorithm to see if the pattern is legitimate or not. Results will be sent to the ‘Display Results’ function.

### Display Results

This functions sole primary responsibility is to show the results back to the user specifying that the sequence is an acceptable sequence or not. More information needs to be determined if other output or actions are required at this point.

### Check Number of Sequences

This function will take input data from the ‘Record Tap Data’ function and it will run some logic to determine if it is necessary to offload data to a desktop PC. If it should, then it will call the ‘Offload Data’ function.

### Offload Data

The primary purpose of this function is to take necessary data that is passed to it from the ‘Check Number of Sequences’ function and send it off to a Desktop PC.

# Main components of the system:

Our intended mobile security authentication application will run on Android devices that includes the following:

An Android device with touch screen enable-direct associations with the display so that the user can directly manipulate items or areas on the screen. The touch screen provides the physical function to interact with buttons and other similar components displayed on the screen using fingers and other peripheral such a stylus. “A touch screen device is used for direct manipulation of objects on the screen. Since the user is directly touching the screen, the system does not require any additional affordances to indicate the objects being manipulated.”(Android). A touch screen device with built in features through supported application programming interfaces provide device feedback by providing X-axis and Y-axis relative coordinates. Also other optional features include the physical pressure applied and measurement of the surface area touch contact.

The Android Software Development Kit (SDK) provides a vast amount of application programming interfaces to design, build, and test the life cycle of a mobile application for Android devices. Our goal is to build a mobile application that allows a user to setup, create and validate authentication access by using timing and pressure parameters of a tapping sequence. The application will record the user input of sequences provided by the touch screen along with time and optional pressure that will be recorded and analyzed. All information collected will be used to verify the user’s access rights using defined algorithms to verify a high percentage of accuracy.

Android SDK provides access to SQLite database, which provides a lightweight database engine for manipulation of data such as creating, retrieving, deleting and updating. In our mobile application will create a private SQLite database where information will be stored specifically for our application along with ability to export that information off the device.

# Works Cited

Android. Touch Devices. 19 09 2015 <https://source.android.com/devices/input/touch-devices.html>.