# Quantifying Security - Visualizing Usability of Allthenticate

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Allthenticate

## Introduction / Background

- Founded in Santa Barbara, CA – Allthenticate is a cybersecurity company that aims to revolutionize security solutions used by people everyday

- The Allthenticate app, *Allthenticator,* enables the use of a smartphone to unlock everything, from doors to your office or cars to logging into a website using proprietary software and hardware solutions

- The **goal** of this project is to quantify the benefits that this security solution provides as opposed to existing methods and incorporate the findings into improving the Allthenticate app user experience

## Data

- The data we handle in this project are collected from the apps on phones and are all logged through the ELK stack (Elastic, Logstash, Kibana)

- Our data have several features, such as the time and date an action happened, the time it took to for the Bluetooth to connect, the model of the phone used to unlock the key, etc.

- For the majority of the project, we worked on data from 3 test phones used by Allthenticate's office, but ultimately, we will be getting data from all the users of the app once the logging infrastructure is pushed out for all consumers



*1. High level overview of our logging infrastructure + data pipeline*
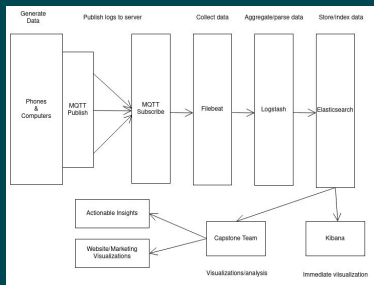
## Real-Time Interactive Dashboards

- Building a dashboard took care of both visualization tasks as well as providing a deliverable tool for the company to use.

- Plotly is an interactive visualization tool that worked perfectly and allowed us to explore with our data effectively. All the visual plots generated in Plotly are immediately compatible with Dash so it is easily implemented into a web-app.

- By having multiple visualizations of our data, we are able to identify outliers and problems with app performance as well as see high level distributions and summary statistics.

*2. Elastic dashboard (right) used to track connection thrashing and unusual app behavior in real time*



*3. Interactive Python Plotly Dash dashboard (below) used for in-depth analysis on customer data based on app-version, timeframe, phone type, etc*
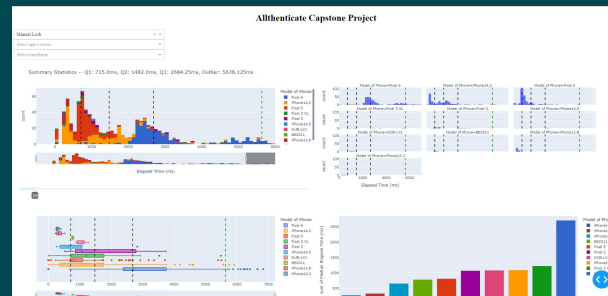


## User Survey + Cluster Analysis

- Based on attributes like app refreshes, commands processed, and auto unlocks, we clustered user data to try and see if we could identify any distinct groupings within user behavior/happiness

- Clustering is an unsupervised task, however, so we also developed usability study questions for users to answer (e.g. rate your experience from 1-10)

- Once the survey is sent to customers, we hope to validate cluster analysis based on the rating the user gave to hopefully see common traits and identify which features lead to a positive or negative user experience.



*4. Preliminary cluster analysis based on logging attributes*
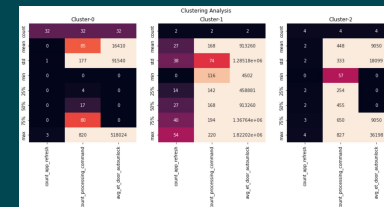
## Conclusion / Future Works

- We think we were able to meet our goal to quantify user experience in order to assess the effectiveness of Allthenticate's product as well as tracking feature improvement from the data.

- The app was just recently updated to now collect data from real users, so it will be interesting to see how these internal tools will stand up to real use-cases

- We also hope to deploy this dashboard to a secure server, which will increase compute power and capability to handle the increase in data we will be visualizing on a daily basis.