



University of Arkansas - CSCE Department Capstone II - Final presentation - Fall 2021

VacCheck

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Team Members



Ellis Tran

- Leader
- Mobile/Web Developer



Insert

Sung Woo Kim

- Web Developer

Picture



Patrick Kwok

- Mobile Developer



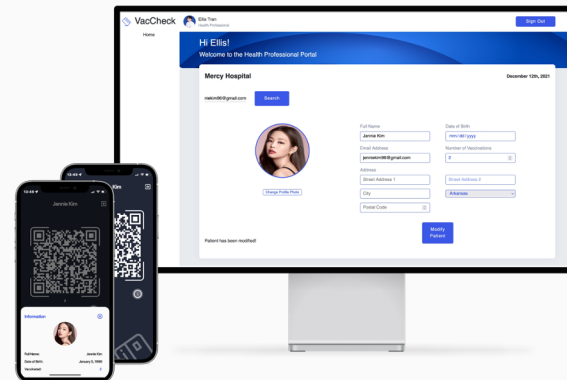
Yaling Liu

- Web Developer

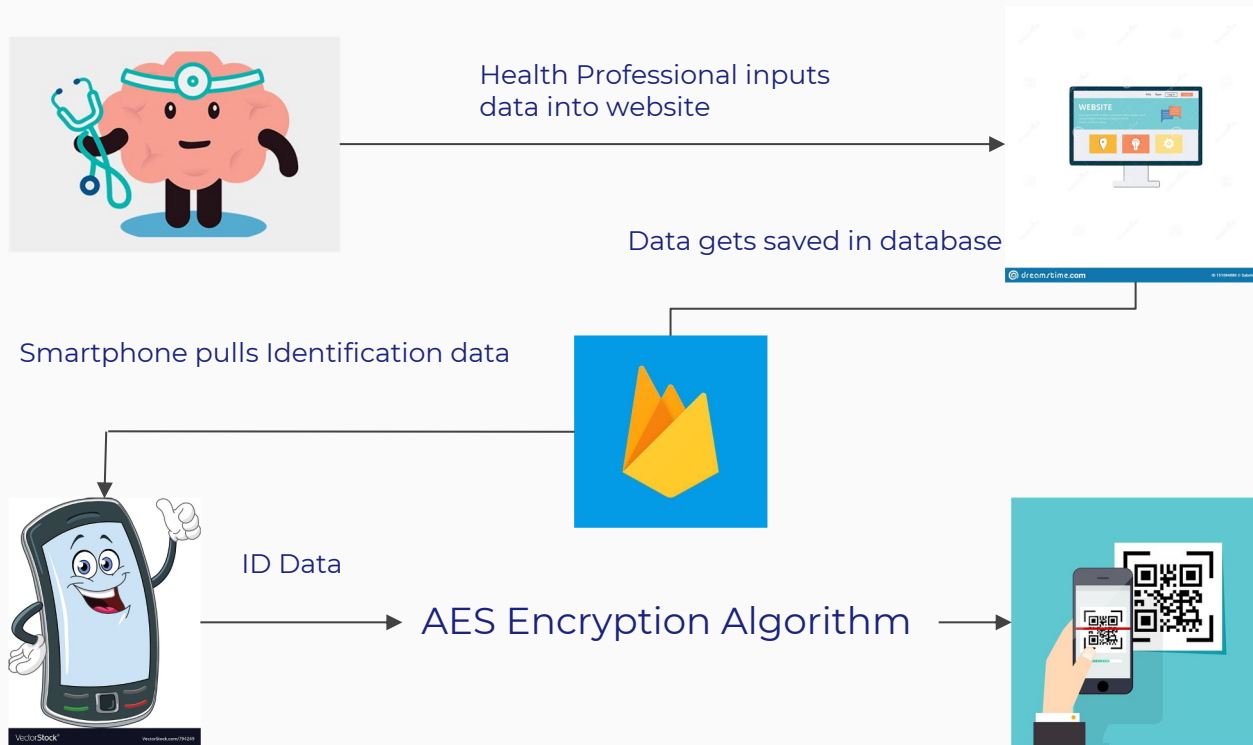
What is VacCheck?

A web and mobile application that allows:

- Health professionals to input data for individuals
- Personal users to generate a unique QR code that contains their vaccination information
- Business to scan customers' QR codes



Design Architecture

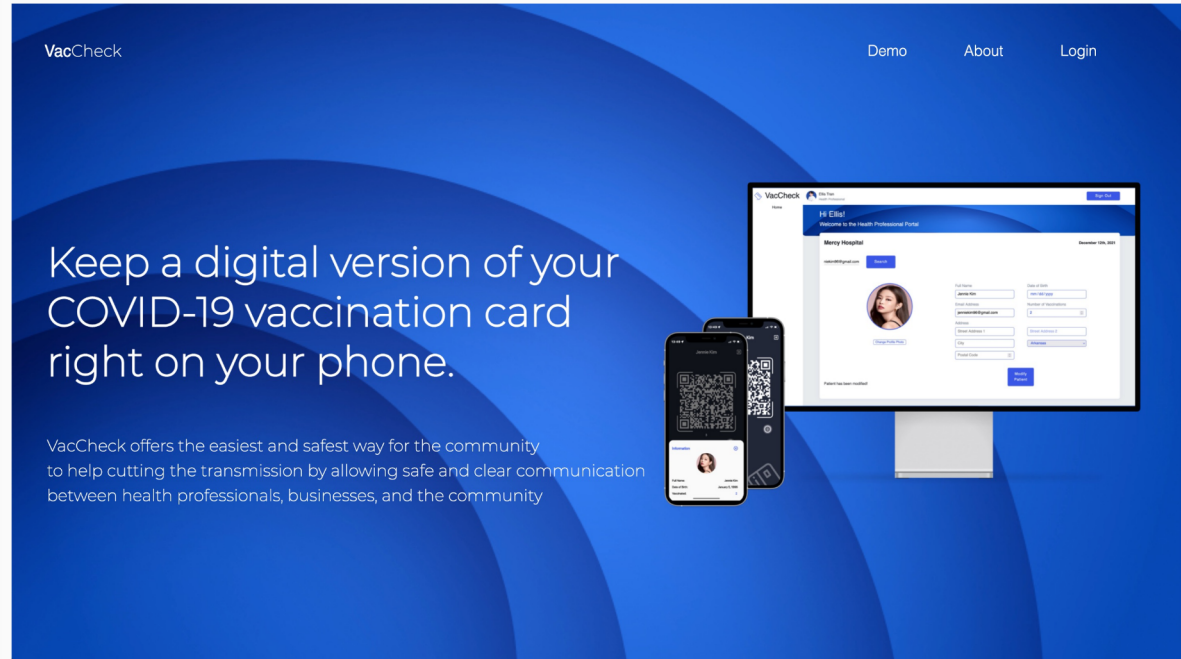


Website Design and Technologies



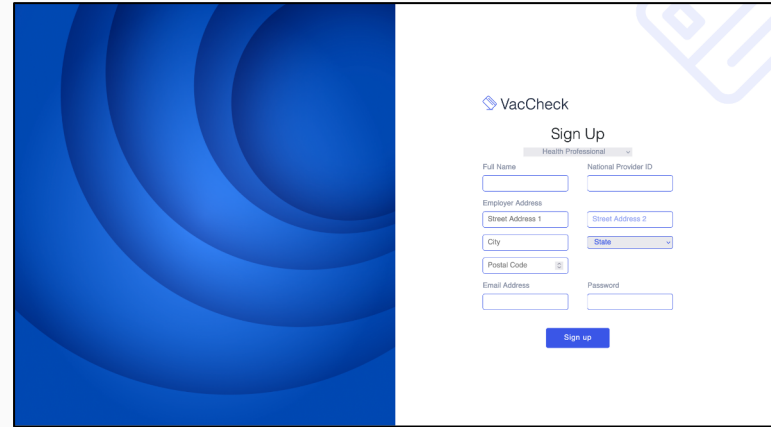
Landing Page

- Project Overview
- Routes to Authentication Pages
- Implementation:
 - React

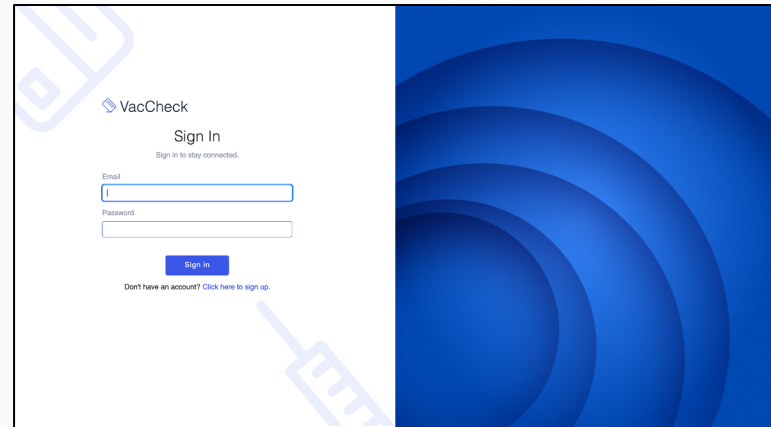


Web Authentication

- Account Type
 - Health Professionals
 - Personal Accounts
 - Businesses
- Implementation:
 - Firebase
 - Firestore DB
 - Authentication



The screenshot shows the 'Sign Up' page for 'Health Professionals' on the VacCheck website. The page features a blue background with a circular pattern on the left. The form includes the following fields: Full Name, National Provider ID, Employer Address, Street Address 1, Street Address 2, City, State (dropdown), Postal Code, Email Address, and Password. A 'Sign up' button is located at the bottom right of the form.



The screenshot shows the 'Sign In' page on the VacCheck website. The page features a blue background with a circular pattern on the right. The form includes the following fields: Email and Password. A 'Sign in' button is located below the password field. Below the button, there is a link: 'Don't have an account? Click here to sign up.'

Health Professionals Portal

Implementation:

- React
- Firebase
 - Fetch account info
 - Update user data
 - Upload photos

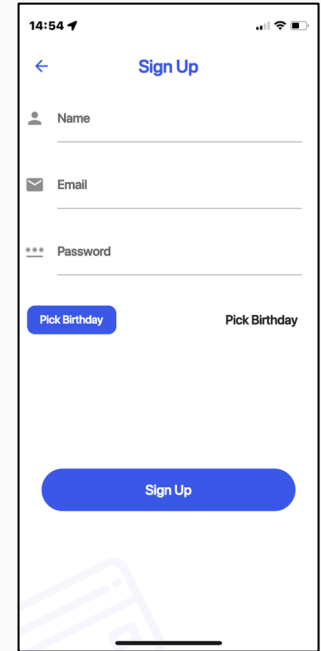
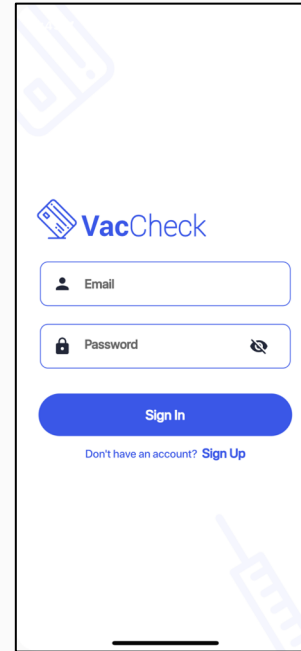
The screenshot displays the VacCheck Health Professionals Portal interface. At the top left, the logo 'VacCheck' is visible next to the user's profile 'Ellis Tran, Health Professional'. A 'Sign Out' button is located in the top right corner. Below the header, a blue banner greets the user with 'Hi Ellis!' and 'Welcome to the Health Professional Portal'. The main content area is titled 'Mercy Hospital' and shows the date 'December 12th, 2021'. A search bar contains the email 'niekim96@gmail.com' and a 'Search' button. The user's profile is shown with a circular photo of Jennie Kim and a 'Change Profile Photo' button. To the right, a form contains the following fields: 'Full Name' (Jennie Kim), 'Date of Birth' (mm/dd/yyyy), 'Email Address' (jenniekim96@gmail.com), 'Number of Vaccinations' (2), 'Address' (Street Address 1, Street Address 2, City, Postal Code), and 'City' (Arkansas). A 'Modify Patient' button is at the bottom right. A message at the bottom left states 'Patient has been modified!'.

Mobile Design and Technologies



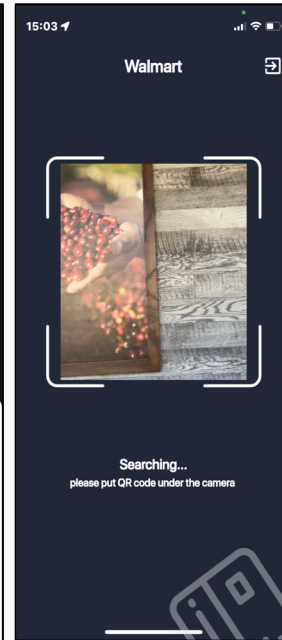
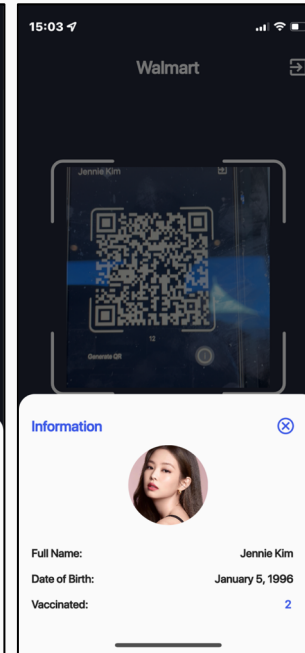
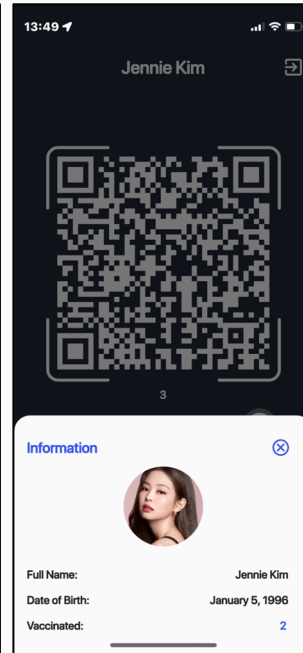
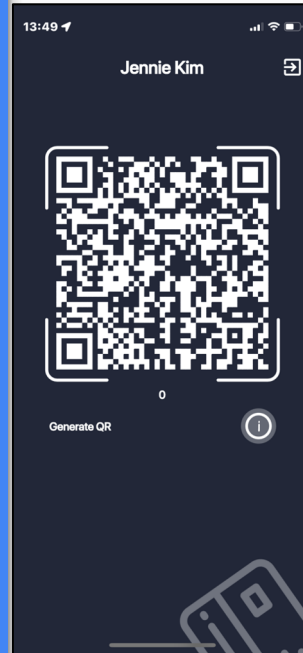
VacCheck Mobile Authentication Pages

- Two types of users:
 - Business User
 - Personal User
- Implementation:
 - Flutter/Dart
 - Firebase
 - Authentication



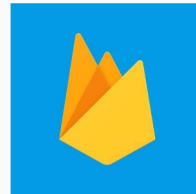
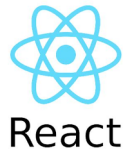
VacCheck Mobile User Pages

- Two types of users:
 - Personal User
 - Business
- Implementation:
 - Flutter/Dart
 - Generate QR code



Lessons Learned

- Web: Use React to development Web Page and add some css for the web
- Mobile: Flutter framework, Dart Language, Google Firebase, Generate a QR code
- Potential Impact:
 - Eliminate the need for a physical vaccination card.
 - Reduce the spread of COVID-19



Future Work

- A dashboard for business users
- More secure database
- Establish relationships with business, health providers, state/federal health systems



Final Demo

Introduction

VacCheck aims to assist with the problems of COVID-19 and potential future viruses to help the community cut the transmission of the virus by allowing safe and clear communication between health professionals, businesses, and the community.

Our team implemented two applications for the project. A reactive web application, and a mobile application that works for both iOS and Android.

Purpose

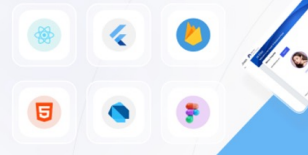
On May 31, 2021, a new variant of SARS-CoV-2, "Delta", was reported to the World Health Organization (WHO) indicating that it will cause more severe illness in unvaccinated people.

On November 24, 2021, a new variant of SARS-CoV-2, B.1.1.529, was reported to the World Health Organization (WHO), known as "Omicron" which is much more transmissible than previous.

As the new variants have a much higher virulence, business owners continue to be concerned about reopening up their business as they do not have transparent and safe guidance from the government.



Keep a *digital version* of your COVID-19 vaccination card right on your *phone*.



Results

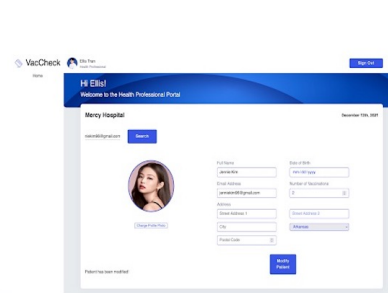


Figure 1

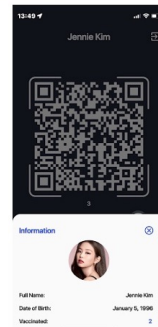


Figure 2

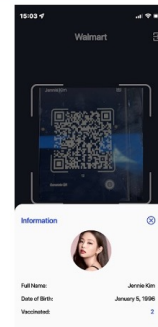


Figure 3

Methods

VacCheck Web:

Allows health professionals to log in and change data about their patients such as their number of vaccinations and their pictures. (Figure 1)

VacCheck Mobile:

Allow regular users to generate QR code to be scanned by businesses to be permitted into facility (Figure 2), and businesses to check the vaccination statuses of their customers and their employees (Figure 3).

Conclusion

VacCheck could be a great contribution to society as it eliminates the need for a physical vaccination card.

As COVID-19 still haunts the world, especially with the upcoming Omicron variant, an application like VacCheck is needed more than ever. By implementing VacCheck, our team hope that communities will utilize this safe technology to try and reduce the spread of the virus as much as possible.

Acknowledgement

University of Arkansas
College of Engineering
Computer Science &
Computer Engineering
Department
Dr. Pat Parkerson



College of Engineering
Computer Science
& Computer Engineering

Citation:

- 1) World Health Organization. (2021, December 12). Update on Omicron. World Health Organization. Retrieved December 8, 2021, from <https://www.who.int/news/item/28-11-2021-update-on-omicron>.
- 2) "What You Need to Know about Variants," Centers for Disease Control and Prevention, Aug 2021, from <https://www.cdc.gov/coronavirus/2019-ncov/variants/variant.html>.
- 3) Centers for Disease Control Delta variant: What we know about the science. Centers for Disease Control and Prevention, from <https://www.cdc.gov/coronavirus/2019-ncov/variants>