

A Survey of COVID-19 Contact Tracing Apps
(Technical Report)

Contact Tracing and Privacy amid the COVID-19 Pandemic
(STS Research Paper)

An Undergraduate Thesis Portfolio
Presented to the Faculty of the
School of Engineering and Applied Science
In Partial Fulfillment of the Requirements for the Degree
Bachelor of Science in Computer Science

by

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May 10, 2021

Preface

How has software been used to alleviate public health burdens? Though it is an invaluable tool in the battle against disease, software in the health care sector inevitably raises problems of privacy and distrust, which, if poorly managed, may induce public resistance that curtails the advantages such systems have to offer.

How effective are mobile contact tracing apps? The COVID-19 pandemic has sparked technological interventions such as smartphone contact tracing apps, which introduce security concerns. Analysis will be conducted on a 2020 IEEE article titled “A Survey of COVID-19 Contact Tracing Apps”; the article examines system architectures, privacy considerations, potential attacks, and examples of existing apps. Such analysis will expose unanswered questions and insights to guide future development of contact tracing technology. Additionally, the article’s analysis of system architecture will be extended to the Virginia statewide contact tracing app called COVIDWISE. Promoting an understanding of the security implications of the COVIDWISE app architecture will encourage wider adoption of the technology.

In the U.S., in response to the 2020 pandemic, how have public health authorities, privacy advocates, and other social groups competed to draw the line between essential contact tracing and undue invasion of privacy? Since the efficacy of these apps relies on a sufficient adoption rate, understanding public perception of the technology and how stakeholders attempt to influence this perception is imperative. Privacy advocacies and public health organizations have primarily competed to establish contact tracing’s role in the pandemic by vying for public trust or distrust in both the technology and institutions responsible for implementing it. In order to successfully implement digital contact tracing and other essential data aggregation technologies in the future, the competition for trust must be understood and accounted for.

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1. Technical Report: A Survey of COVID-19 Contact Tracing Apps
2. Sociotechnical Research Paper: Contact Tracing and Privacy amid the COVID-19
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3. Prospectus