

Goals

- ❑ Creating an encrypted and protected chat application that resides within a portable USB thumbdrive
- ❑ Client-Server messaging system that has easy setup, is scalable, and accessible on the go
- ❑ Providing a cheap, easy setup, and scalable alternative for the government and private sectors

Motivations and Objectives

- ❑ Motivations
 - Breaches and other cyber-crimes cost around \$540 billion globally and is predicted to reach \$2 trillion by 2019 [1]
 - Current messaging alternatives are more focused on functionality than security
- ❑ Objectives
 - 3-Factor authentication system that does not ruin user experience
 - Create a tool that allows any organization to easily set up its own private key encryption messaging system

Challenges

- ❑ Reducing the overall cost of the design. Currently our solution relies heavily on expensive fingerprint sensors.
- ❑ Adding extra functionality such as an option for secure file transfers as well as creating “messaging groups”
- ❑ Prevent arduino code from being extracted and deciphered
- ❑ Increased coordination from the server to handle multiple clients in an organized way

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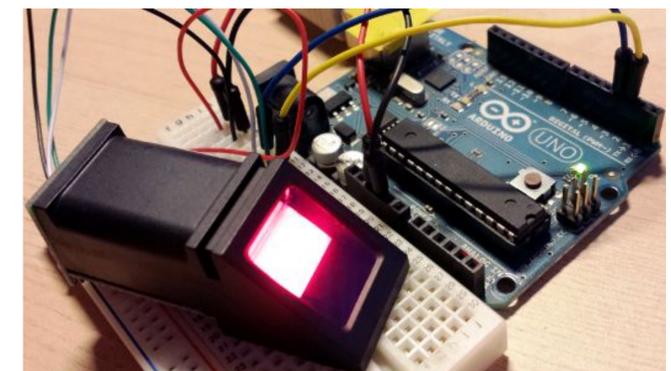
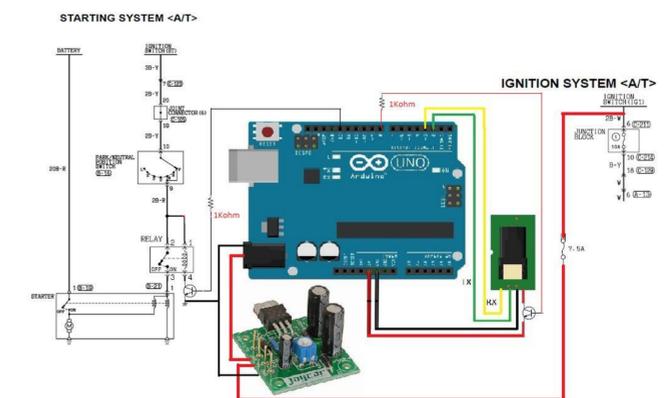
System Flowchart



Methodology

- ❑ Create a configurable server program as well as client program
- ❑ Include encryption methods (AES-256) into chat service
- ❑ Interface the fingerprint reader with the Arduino and register fingerprints
- ❑ Pack the program into the Arduino unit and copy-protect the application in the flashdrive
- ❑ Check for serial number of USB so that the flashdrive functions as a hardware dongle

Schematic



References

- [1] S. Morgan, “Cyber Crime Costs Projected to Reach \$2 Trillion by 2019,” Available: <https://www.forbes.com/sites/stevemorgan/2016/01/17/cyber-crime-costs-projected-to-reach-2-trillion-by-2019/#55b79f643a91>, 2016
- [2] L. Newman, “Hack Brief: A Slack Bug Could Have Been Everyone’s Worst Office Nightmare”, Available: <https://www.wired.com/2017/03/hack-brief-slack-bug-everyones-worst-office-nightmare>, Wired, 2017