MICHIGAN STATE
UNIVERSITY

Project Plan
Open Source Intel

The Capstone Experience

Team GM

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From Students…
…to Professionals

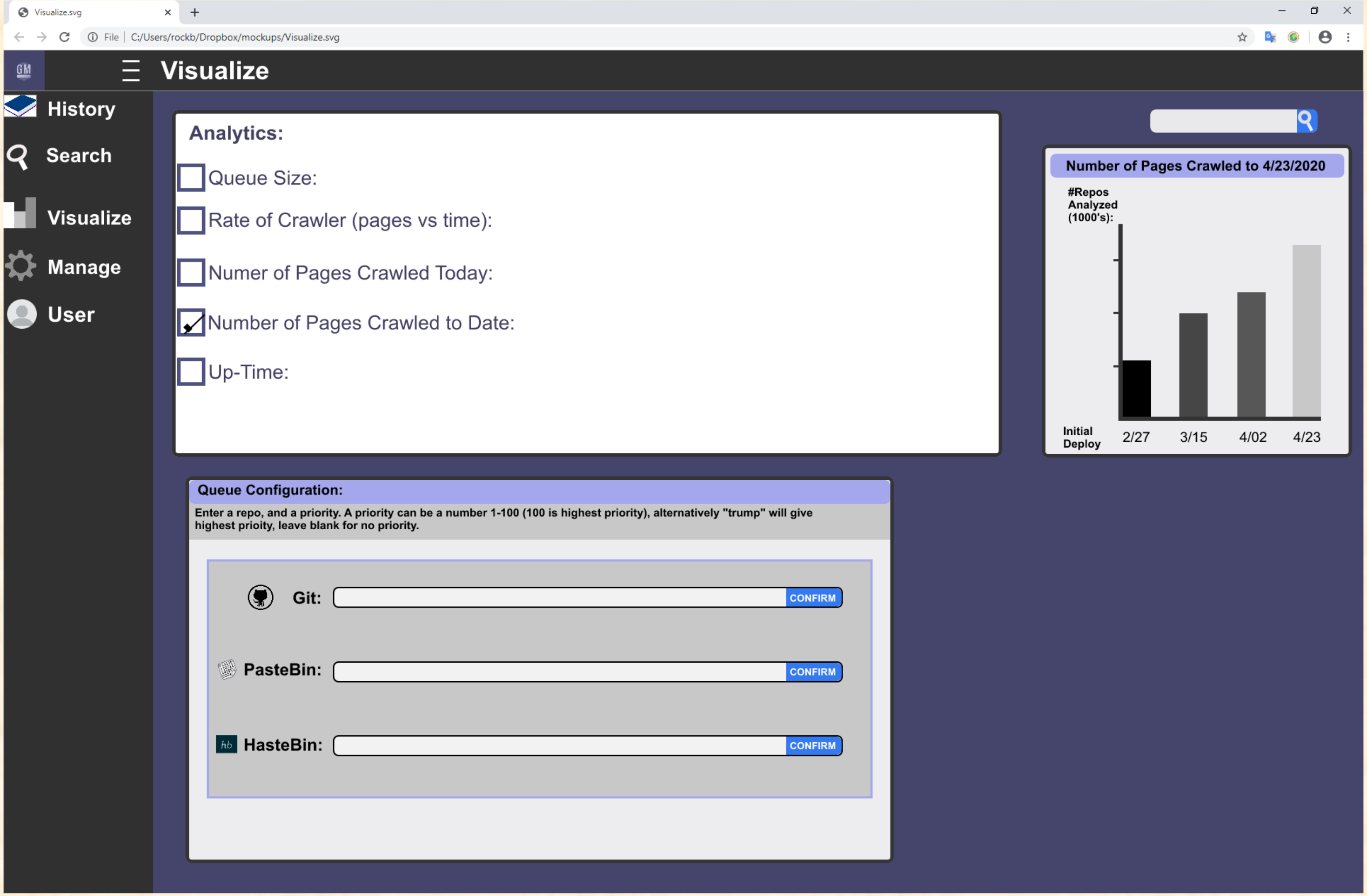
Functional Specifications

- GM is so large that it is at risk of having intellectual property leaked on public repositories.
- Open Source Intel will be able to find any GM owned IP on public repositories and then alert the GM team of findings
- A confidence rating will be given of the assurance that something is found on the site.

Design Specifications

- Scrape various public repositories to identify GM property and security threats such as: usernames, API keys, and code snippets.
- User friendly web frontend to display the data collected by the backend Python scrapers.
- Once the threat has been identified and verified, GM can proceed with legal action through the website.

Screen Mockups:Visualize



Visualize.svg
C:/Users/rockb/Dropbox/mockups/Visualize.svg
GM
History
Search
Visualize
Manage
User
CONFIRM
CONFIRM
CONFIRM
Number of Pages Crawled to 4/23/2020
#Repos Analyzed (1000's):
Initial Deploy
2/27
3/15
4/02
4/23

Visualize

Analytics:

□ Queue Size:

□ Rate of Crawler (pages vs time):

□ Numer of Pages Crawled Today:

☑ Number of Pages Crawled to Date:

□ Up-Time:

Queue Configuration:

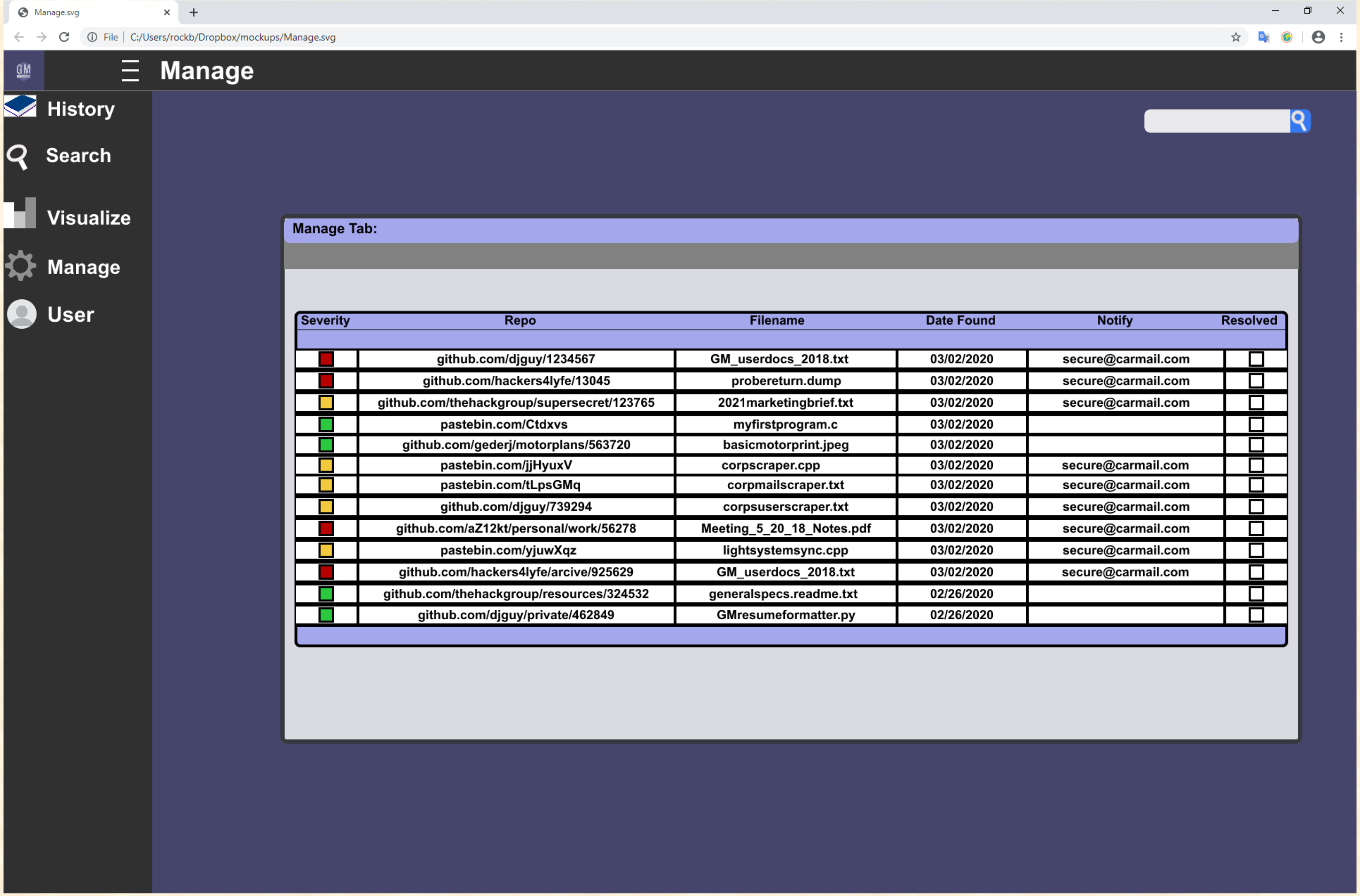
Enter a repo, and a priority. A priority can be a number 1-100 (100 is highest priority), alternatively "trump" will give highest prioity, leave blank for no priority.

Git:

PasteBin:

HasteBin:

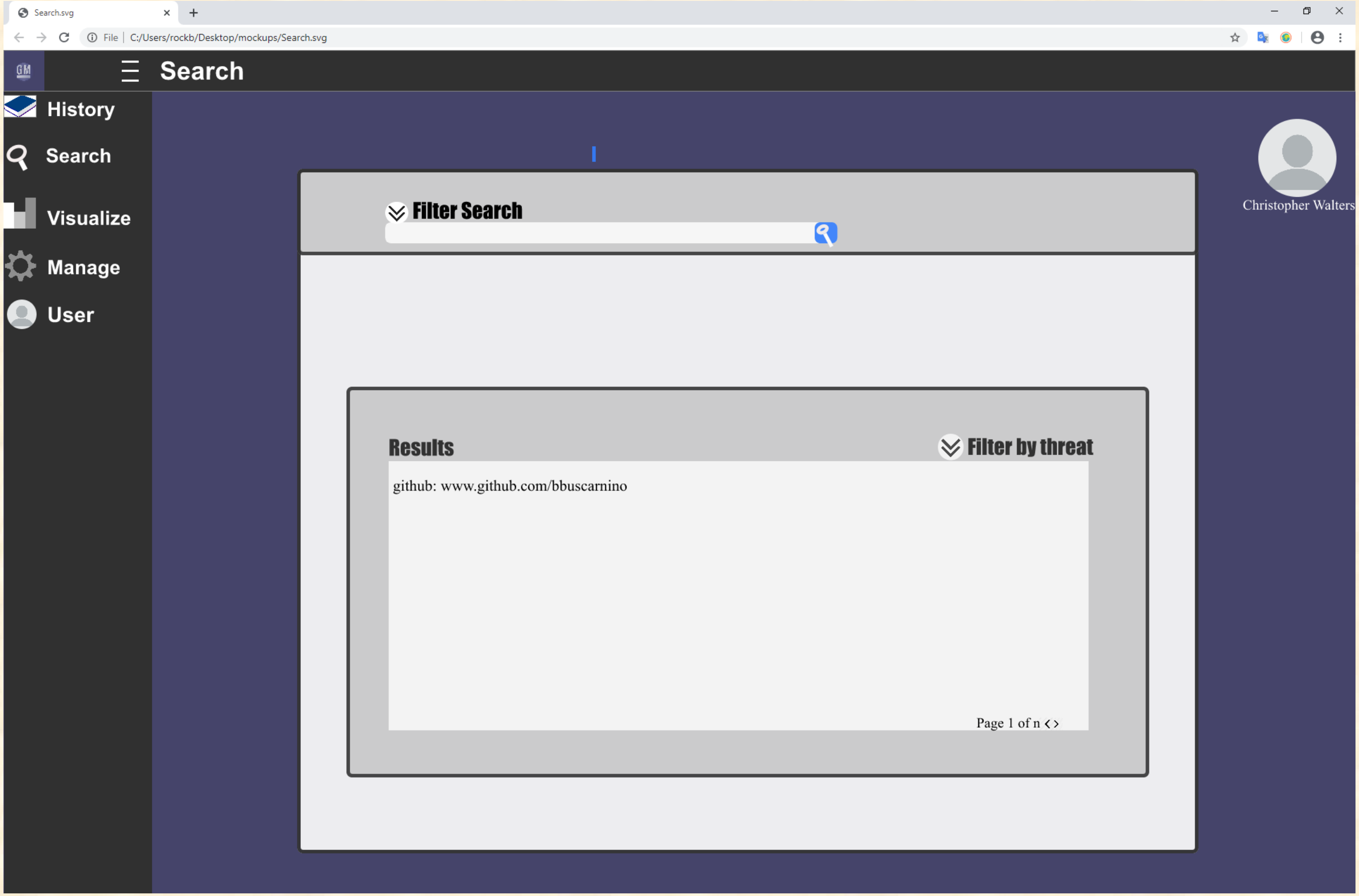
Screen Mockups: Manage



Manage Tab:

Severity	Repo	Filename	Date Found	Notify	Resolved
🟥	github.com/djguy/1234567	GM_userdocs_2018.txt	03/02/2020	secure@carmail.com	□
🟥	github.com/hackers4lyfe/13045	probereturn.dump	03/02/2020	secure@carmail.com	□
🟨	github.com/thehackgroup/supersecret/123765	2021marketingbrief.txt	03/02/2020	secure@carmail.com	□
🟩	pastebin.com/Ctdxvs	myfirstprogram.c	03/02/2020		□
🟩	github.com/gederj/motorplans/563720	basicmotorprint.jpeg	03/02/2020		□
🟨	pastebin.com/jjHyuxV	corpscraper.cpp	03/02/2020	secure@carmail.com	□
🟨	pastebin.com/tLpsGMq	corpmailscraper.txt	03/02/2020	secure@carmail.com	□
🟨	github.com/djguy/739294	corpsuserscraper.txt	03/02/2020	secure@carmail.com	□
🟥	github.com/aZ12kt/personal/work/56278	Meeting_5_20_18_Notes.pdf	03/02/2020	secure@carmail.com	□
🟨	pastebin.com/yjuwXqz	lightsystemsync.cpp	03/02/2020	secure@carmail.com	□
🟥	github.com/hackers4lyfe/arcive/925629	GM_userdocs_2018.txt	03/02/2020	secure@carmail.com	□
🟩	github.com/thehackgroup/resources/324532	generalspecs.readme.txt	02/26/2020		□
🟩	github.com/djguy/private/462849	GMresumeformatter.py	02/26/2020		□

Screen Mockups: Search



github: www.github.com/bbuscarnino

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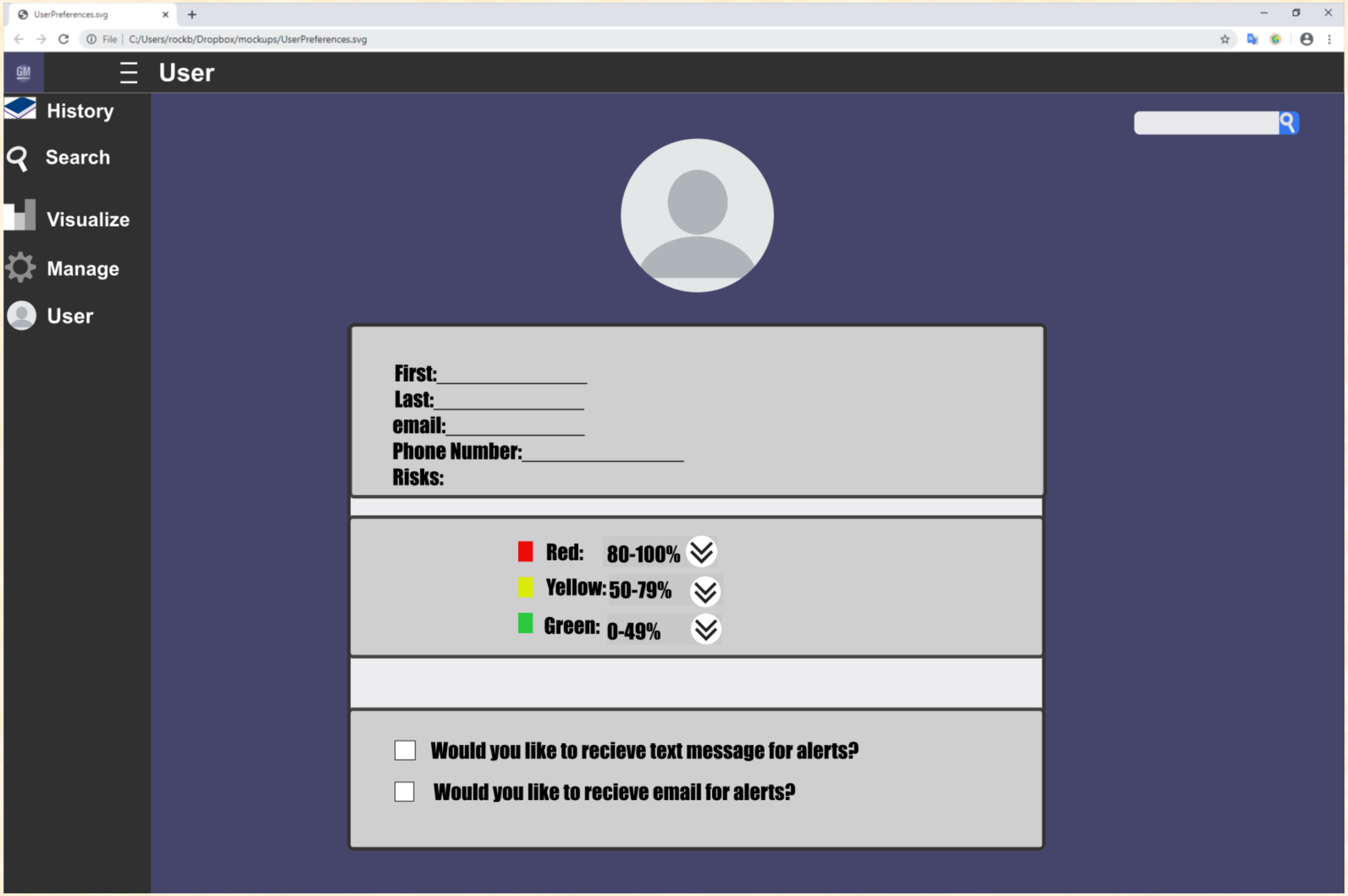
Screen Mockups: User-Preferences



First:_______________

Last:_______________

email:_______________

Phone Number:________________

Risks:

🟥 Red: 80-100%

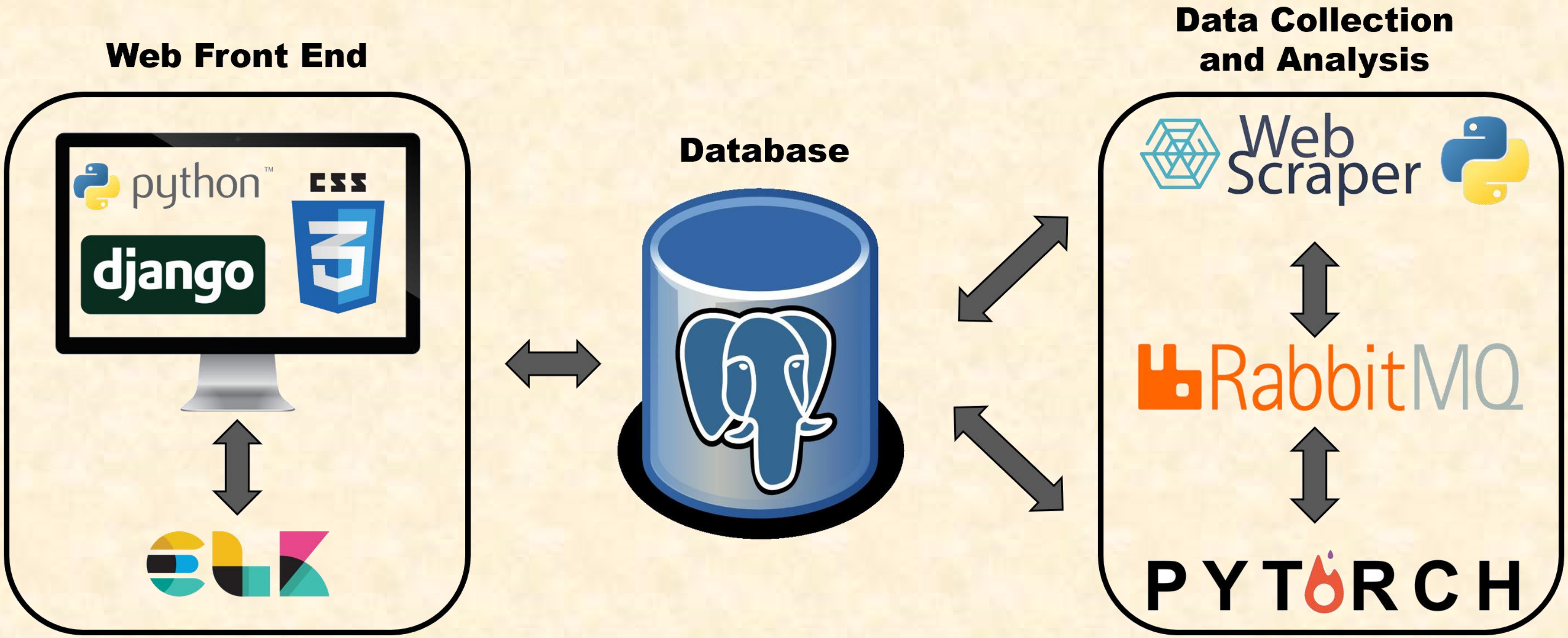
🟨 Yellow: 50-79%

🟩 Green: 0-49%

□ Would you like to recieve text message for alerts?

□ Would you like to recieve email for alerts?

System Architecture



Technical Specifications

- GM employees interact with a Python web application.
- The front end uses Django, a high-level Python web framework, styled with the Semantic UI CSS Framework.
- RabbitMQ serving as a work-queue between a suite of web crawlers and PyTorch machine learning service.
- PostgreSQL used for data warehousing of confidence rating, crawled websites, and details of identified leaks.

System Components

- Hardware Platforms
  - Rack-mounted server running NixOS.
  - MacOS Catalina.
- Software Platforms / Technologies
  - Python, Django, Semantic UI.
  - PostgreSQL and RabbitMQ.
  - Web scraper and ML services using Beautiful Soup, Requests, and PyTorch.
  - Kubernetes and Azure Kubernetes Service.

Risks

- Risk 1: Computing constraints
  - Scanning the entirety of GitHub/GitLab/Bitbucket/Pastebin plus their revision histories.
  - Mitigation: Leveraging bounding and caching much as possible to reduce the amount of computationally expensive work done.

- Risk 2: Identifying problematic content
  - GM is such a large company that they don't know all types of IP the enterprise may have exposed.
  - Mitigation: The crawlers will need to have a large breadth for their search,. Treating findings as metaphorical "breadcrumbs" and showing them to the user in a meaningful way so that the user can finish the investigation is an encouraged solution offered by our client.

- Risk 3: Bringing machine learning to production
  - Nobody on the team has experience with machine learning.
  - Mitigation: Leverage outside resources such as MSU CSE faculty and industry contacts.

Questions?

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