



MapONE

One System for Planetary Map Sources

By: Samantha Milligan, Michael Nelson,
Ricardo McCrary, and Jake Stuck

Client Overview

- **United States Geological Survey**
(USGS) Planetary Geologic Mapping
(PGM) Program
- Organization in the planetary
science community
- Business: Develop **planetary maps**
& create tools to share map
information



Problem

- Map publication venues: USGS & **online science journals**
- Journal articles containing maps are **time-consuming** to locate
- **No centralized system** for non-USGS map sources to exist



Solution

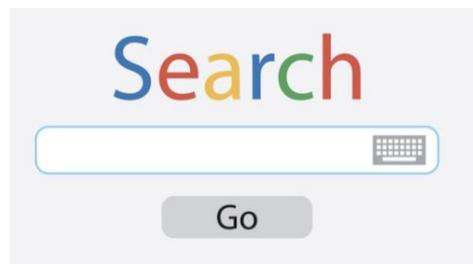
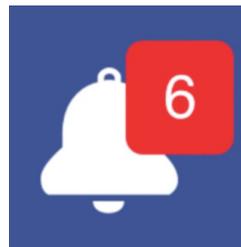
- Web application
- Uses a web scraper to **extract source data** from publications containing maps
- User Impact: quickly locates map sources for researchers & scientists

The screenshot displays the 'Planetary Geologic Mapping (PGM)' web application. At the top left is the USGS logo with the tagline 'science for a changing world'. The main title 'Planetary Geologic Mapping (PGM)' is in a white box. Below it is a 'Non-USGS Map Source Catalog' section with a user profile icon. A search bar contains the text 'Search: **Criteria**' and a 'Filter:' button. Below the search bar is a table with six columns: Source, Link, Author, Title, Body, and Scale. Each column contains a list of three items, such as '- Source 1', '- Source 2', and '- Source 3' under the Source column.

Source	Link	Author	Title	Body	Scale
- Source 1	- Link 1	- Author 1	- Title 1	- Body 1	- Scale 1
- Source 2	- Link 2	- Author 2	- Title 2	- Body 2	- Scale 2
- Source 3	- Link 3	- Author 3	- Title 3	- Body 3	- Scale 3

System Requirements

1. Login into an **account**
2. **View/filter** source data
3. Download article information
4. View/save **search history** results
5. Automate searches
6. Receive **notifications** on new articles



Software Architecture

Frontend

- GUI

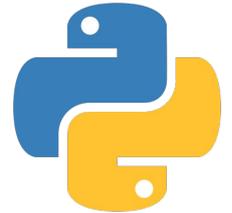
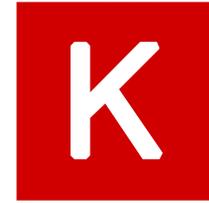


Flutter

Backend

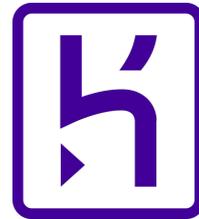
- APIs
- Web Scraper
- Database

django



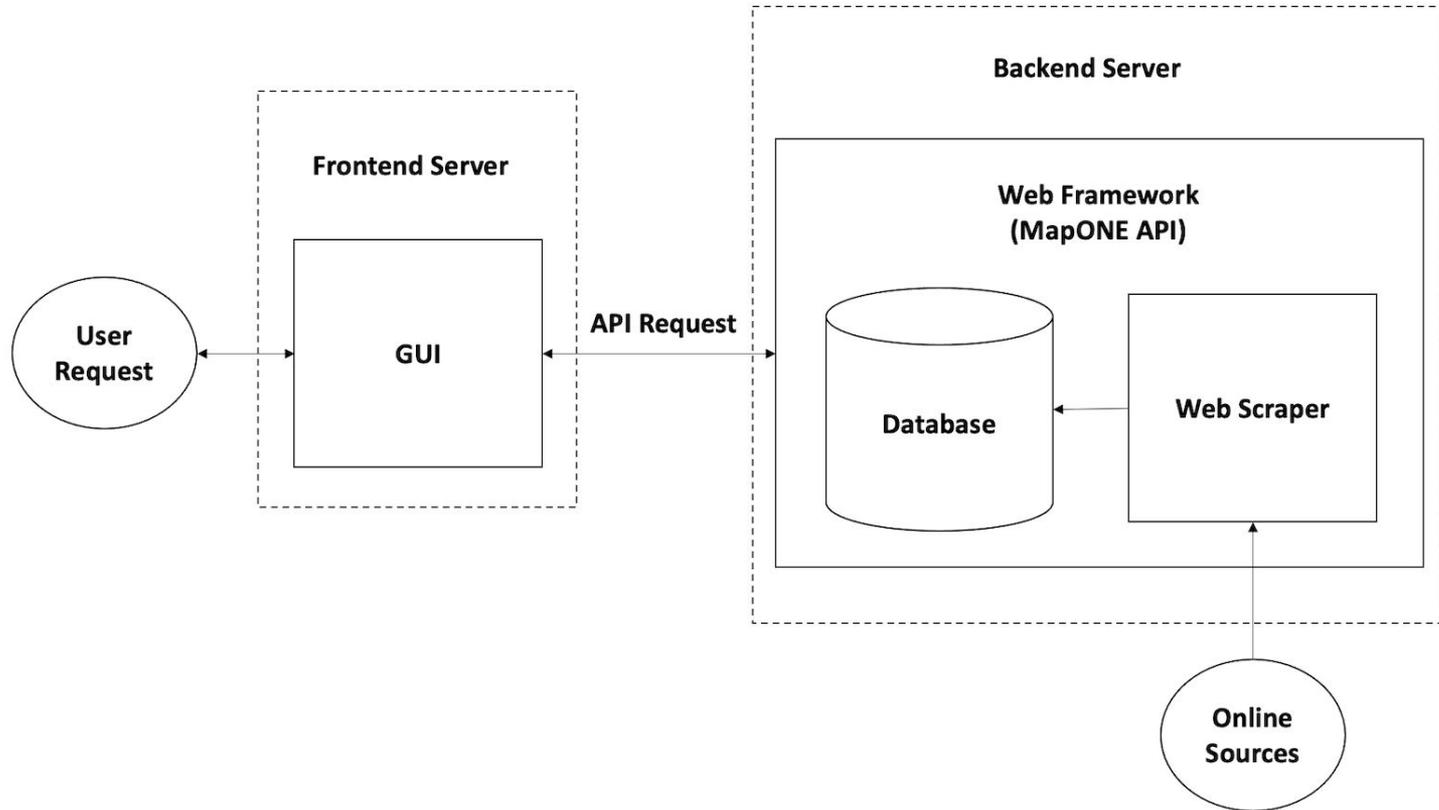
Hosting Platform

- API calls
- Cloud storage



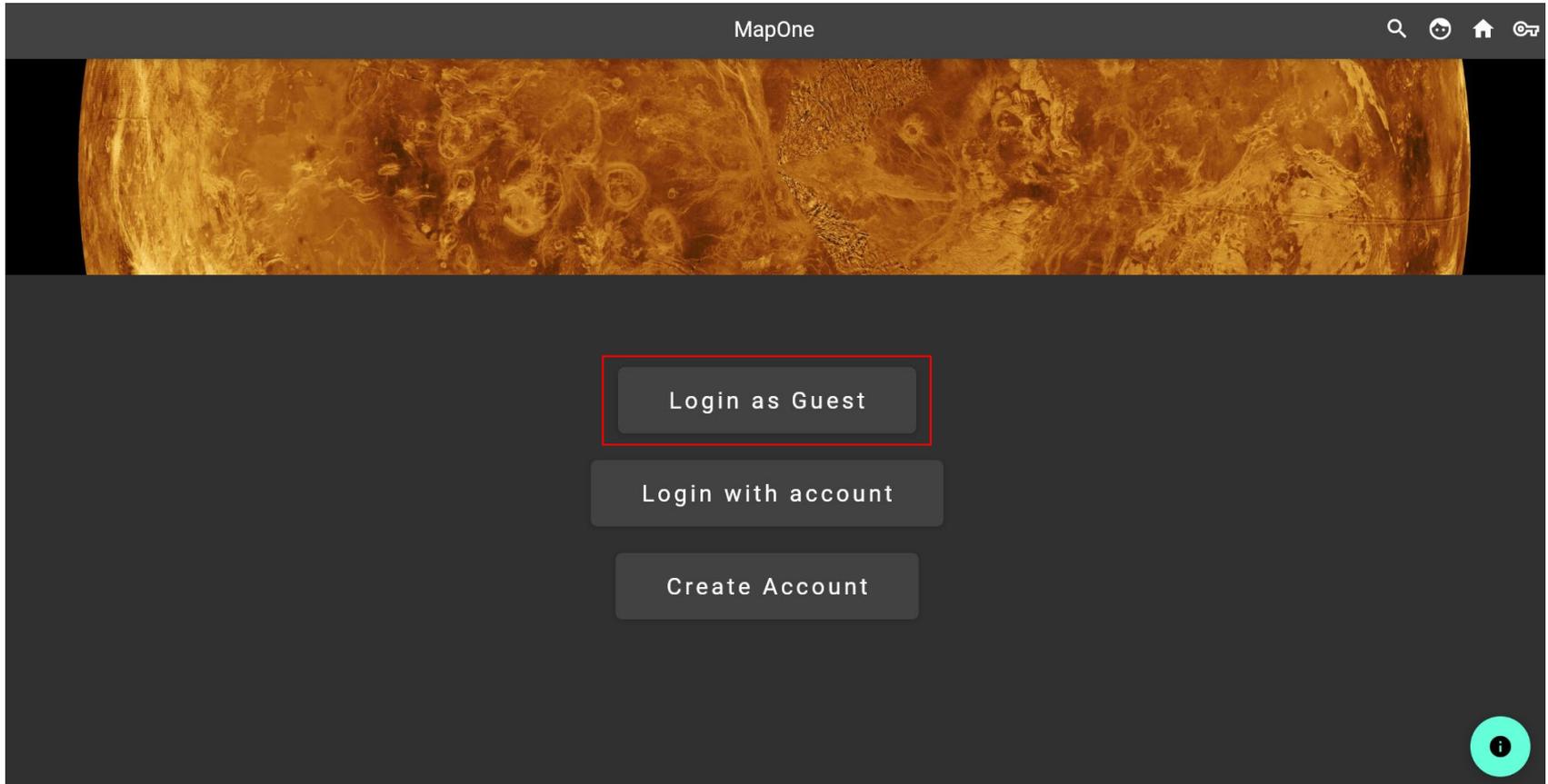
HEROKU

Software Implementation



Prototype Demo

Use Case: Guest User



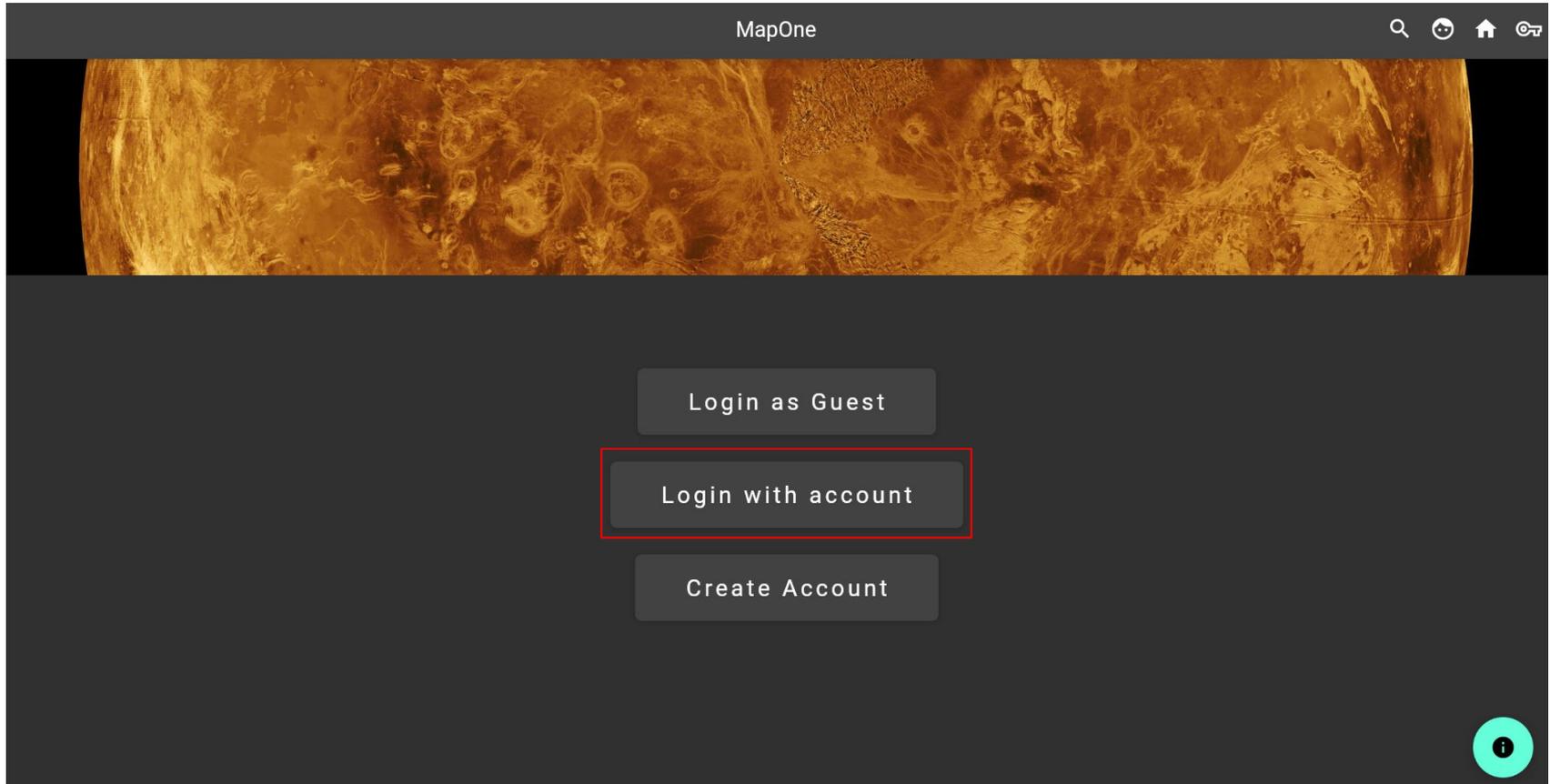
Main Page

MapOne 🏠 🔍

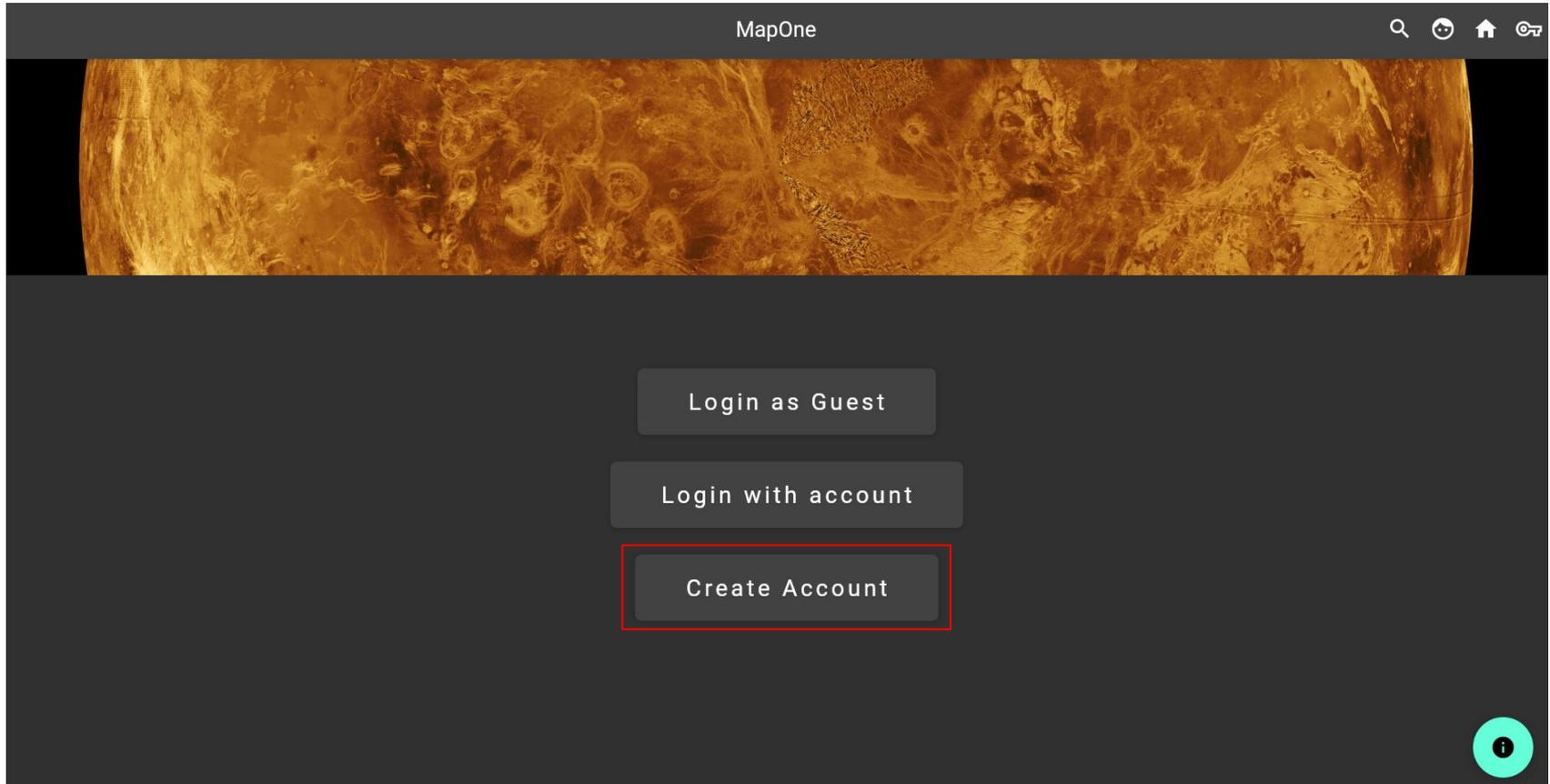
Export all Publications to csv

Body	Article Title	Publication Date	Author	URL
Jupiter	Origin and bulk chemical composition of the	2017-08-01	P. Wurz, D. Lasi, N	https://link.springer.com/article/10.1007/
Jupiter	Chemical differentiation of the Galilean satellites of	2020-05-19	Maria Cristina DeÂ San	https://link.springer.com/article/10.1007/
Jupiter	Origin, Bulk Chemical Composition And Physical Structure of	2007-04-01	L. V. Ksanfomalitv	https://link.springer.com/article/10.1134/
Mars	Landform evolution of Tharsis Montes and Olympus Mons	2011-07-19	A. Coradini, D. Turrini	https://link.springer.com/article/10.1007/
Mars	Morphology and geological structure of the western part	2010-09-09	Andrew S. Divkin	https://link.springer.com/article/10.1007/

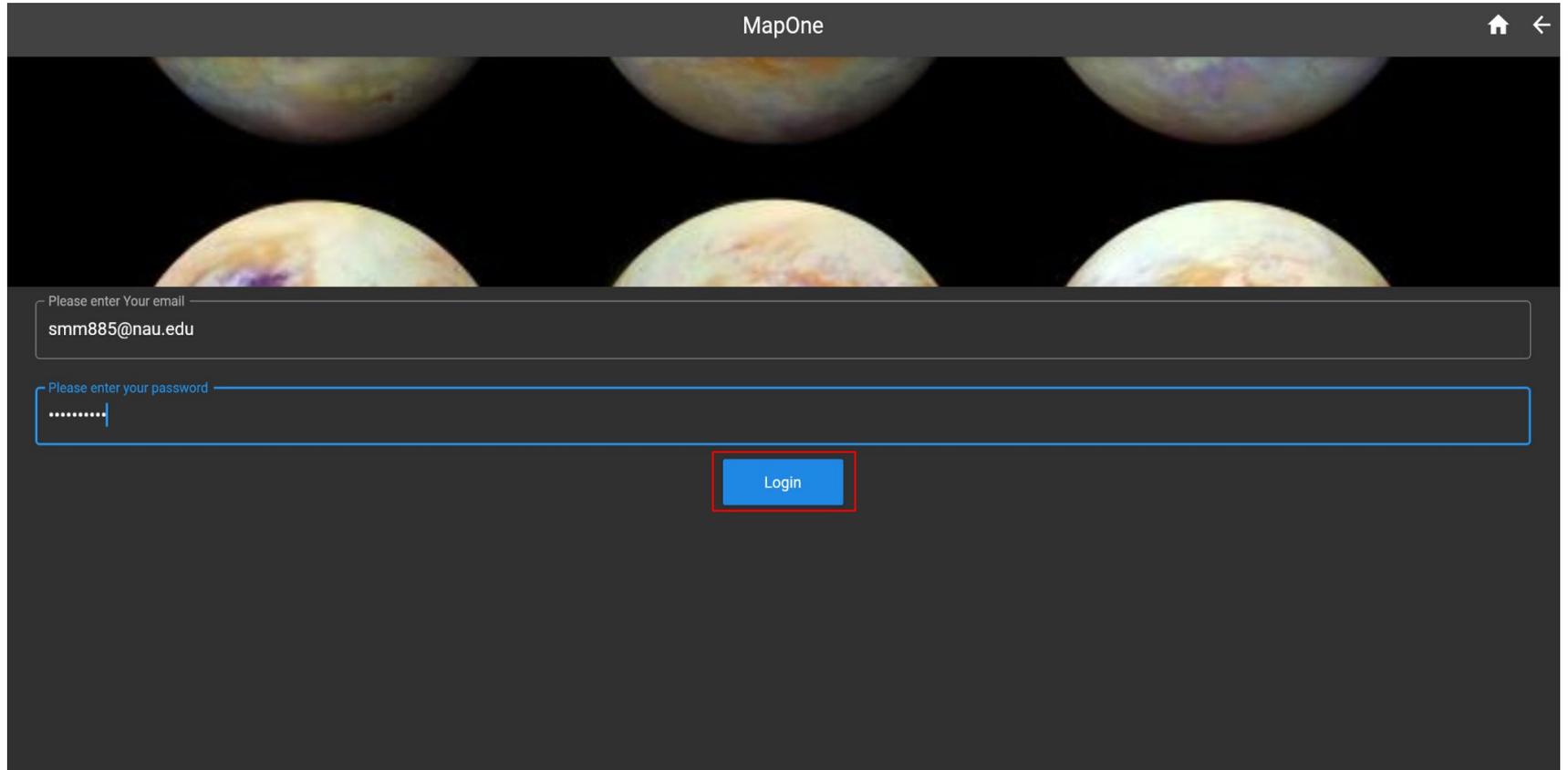
Use Case: Existing User



Use Case: New User



Login Page



The image shows a mobile application interface for 'MapOne'. At the top, there is a dark grey header with the text 'MapOne' in the center, a home icon on the left, and a back arrow on the right. Below the header is a large image of Jupiter. The main content area is a dark grey form with two input fields. The first field is labeled 'Please enter Your email' and contains the text 'smm885@nau.edu'. The second field is labeled 'Please enter your password' and contains a series of dots. Below the password field is a blue 'Login' button, which is highlighted with a red rectangular border.

MapOne

Please enter Your email
smm885@nau.edu

Please enter your password
.....

Login

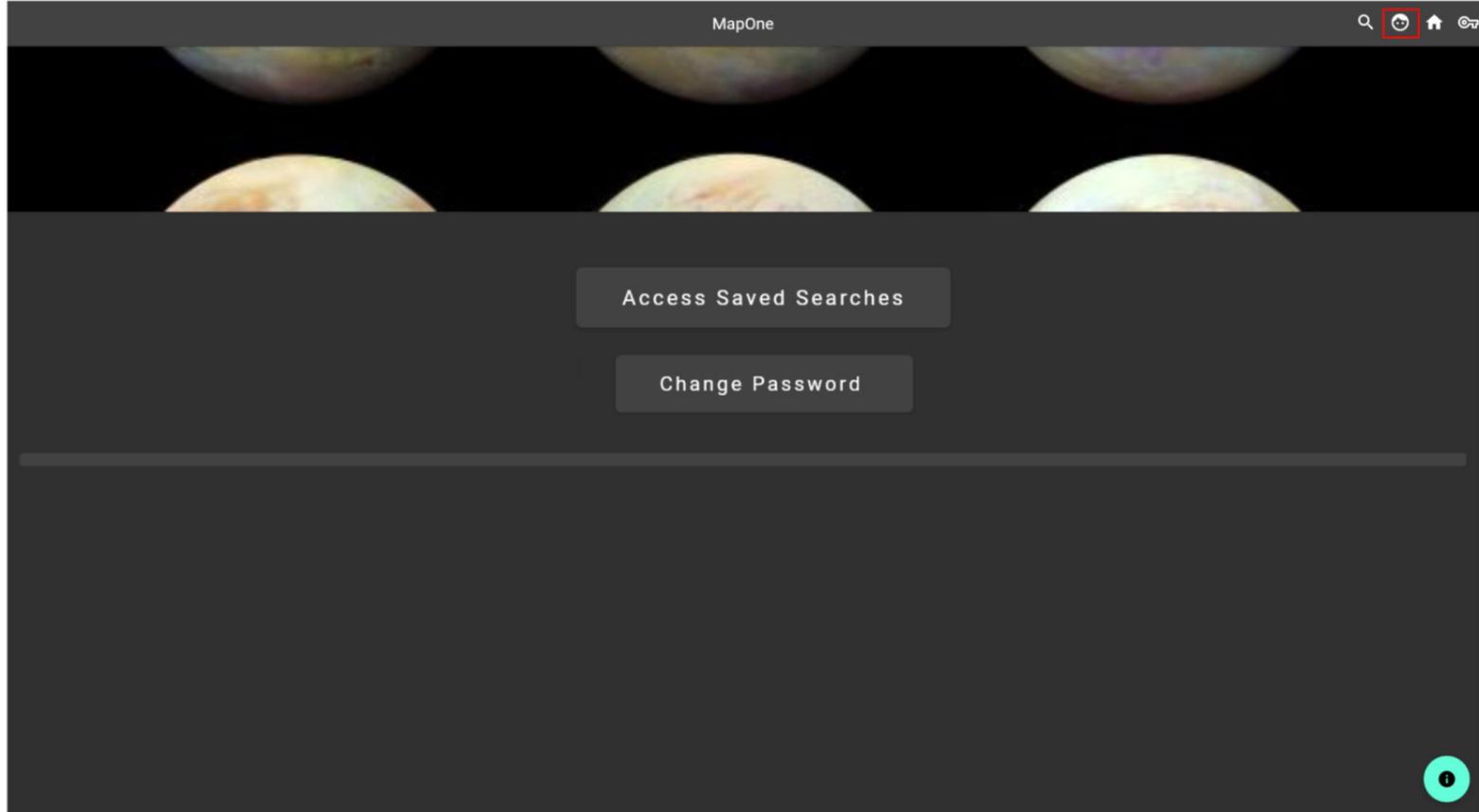
Main Page

MapOne

Export all Publications to csv

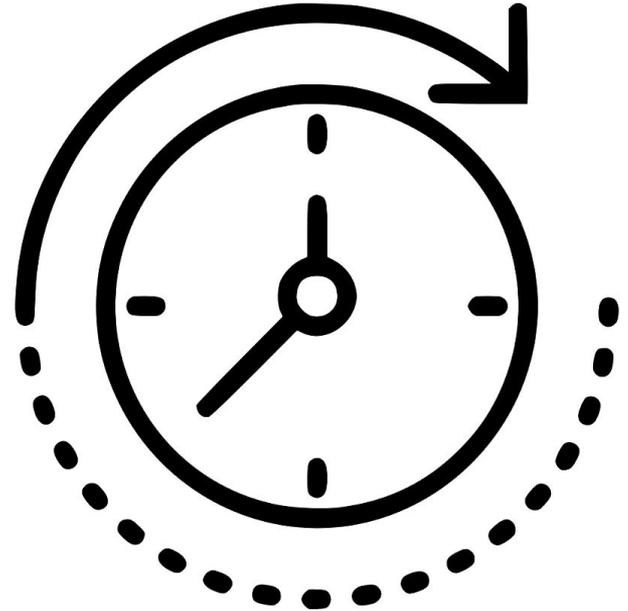
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User Profile



Challenges & Resolutions

- Update automated searches based on frequency
 - Solution: daily internal timer
- Enabling hyperlinks
 - Solution: Change controller's text state for the URL column using Flutter's OnTap & a decoration widget

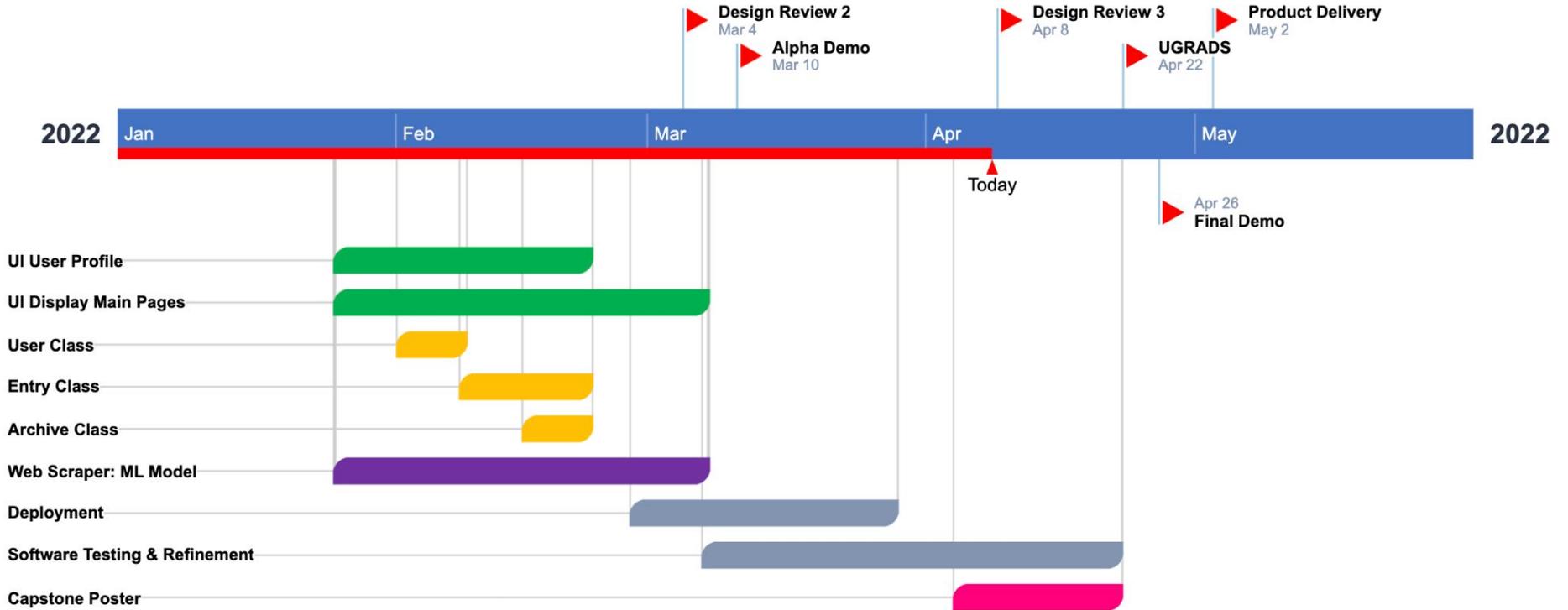


Testing Plan

- Unit Tests
 - Mock suite for Flutter GUI
 - User, Entry, & Archive class test cases
 - AREPL debugger for web scraper
- Integration Tests
 - API Requests
 - Verify database with scraped articles
- User Study
 - Client survey to gather user responses



Schedule



Conclusion

- Team **MapONE**
- **Client:** USGS
- **Problem:** No single platform to access non-USGS sources containing maps
- **Solution:** web application (GUI, API, & web scraper)
- **Upcoming:** software testing
- **Product Delivery Status:** on track, continue weekly client meetings



Questions?