Android Application

Download & Installation

The Android app can be installed using the APK provided on the git repository (snapcrack.apk). To install the APK, the device must enable the installation of apps from sources other than the app store.

Documentation for how to install apps from sources other than the Google Play Store on a Google Pixel can be found here

App Usage

To use the app, launch it on an Android device that is on the ISU network. If the device is not on campus, the user needs to connect it via VPN to the ISU network. The user will then be prompted to log in. Either log in, or create an account. Once the user is logged in, to start collecting data just press the green start button. The camera will open and while recording bounding boxes will appear on screen when detections are made. To stop recording, simply press the button at the bottom of the screen and the recording will end. If it takes a second to end, that is normal. Sometimes the application needs to finish sending images to the server.

ETG Virtual Machine

To access the VM, the user must be on the ISU network. This can either be on campus, or via VPN.

Host: snapcrack.ece.iastate.edu
Username: vm-user
Password: password123

MySQL

Root user access is only required when creating a new database, updating other user permissions, or configuring MySQL on the machine. The created user is capable of doing all database manipulations (including adding/dropping tables) and is sufficient for all database

usage in this project and is used by the server. All MySQL queries are executed by the Node.js server and the response formatted within the response JSON.

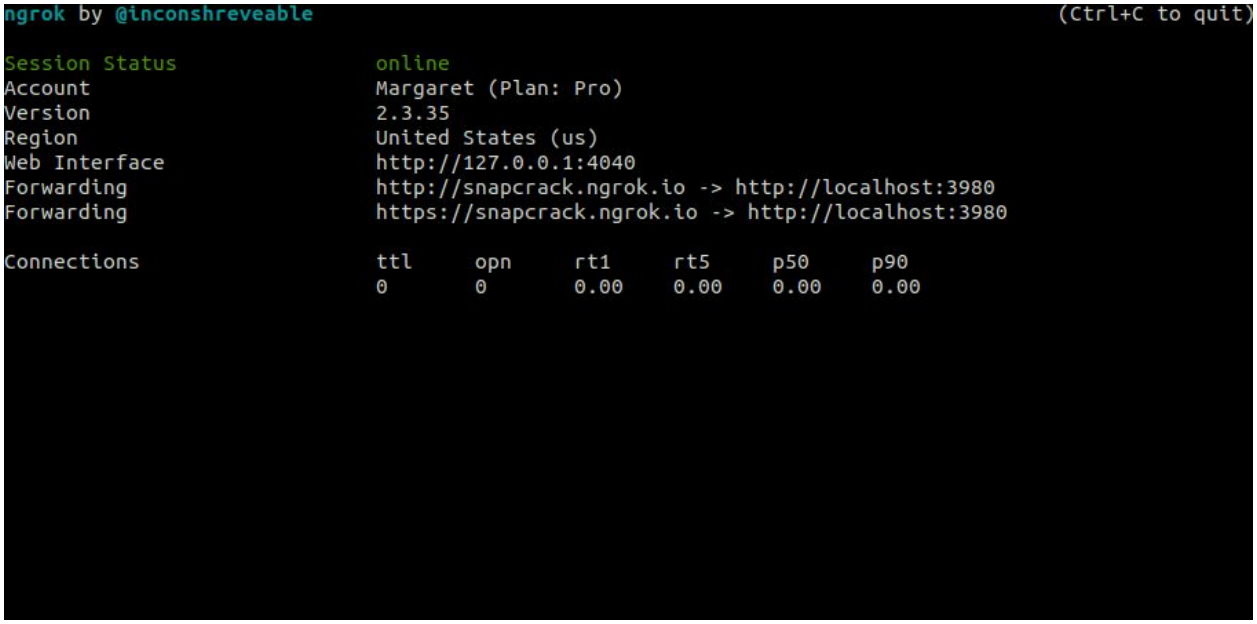
Root password: rootpass
Database name: Snapcrack
User: sdmay20-18
User password: sd18

Ngrok

Ngrok is what hosts the server and allows connection to it from outside the VPN. It is a paid service that was chosen because it allows for the use of a consistent subdomain name. Free options do exist, but they either require significantly more setup or generate random subdomains each time the service is started.

Either the basic or pro plan from Ngrok work for this project. The basic plan is only a yearly fee of $60 and the pro plan costs either a monthly fee of $10 or a $99 yearly fee. If the plans change, all that matters is that the plan offers a custom, reserved domain.

Currently Ngrok **must** be started any time the Node.js server is wanted to be used if not already running (including using the applications so it can send the images/data). It will need its own open terminal window to run and needs to be started in the vm. It has been started correctly if the terminal looks like this:



From here, any http request will be displayed below the connections with the type of requests and whether or not it tunneled correctly. If it worked, it would display “OK” next to the request. If not, it will display the error type. 502 error typically occurs if the Node.js server has not been started.

To start ngrok:
Start in foreground (see requests in terminal) : ./ngrok http 3980 -subdomain=snapcrack
3980 is the port that the Node.js server is listening on

Address: http://www.snapcrack.ngrok.io
This is the address requests are sent to. Routes are added to the end. Routes with request types for each currently completed function are included in the routes spreadsheet.
I.e. If I wanted to add a user I would make an HTTP POST request to http://www.snapcrack.ngrok.io/user

Node.js Server

Uses Express for the http requests. Listens on port 3980 for http requests and executes the appropriate function depending on the route and type of request.

Current routes

- Hello
    - Test route that returns “Hello World”
- User
    - Single user functions
- Users
    - Multi-user functions
- Crack
    - Single detection functions
- Cracks
    - Multiple detection functions

Current Dependencies

- Body-parser
- Mysql
- Request
- Http
- Express

- Multer

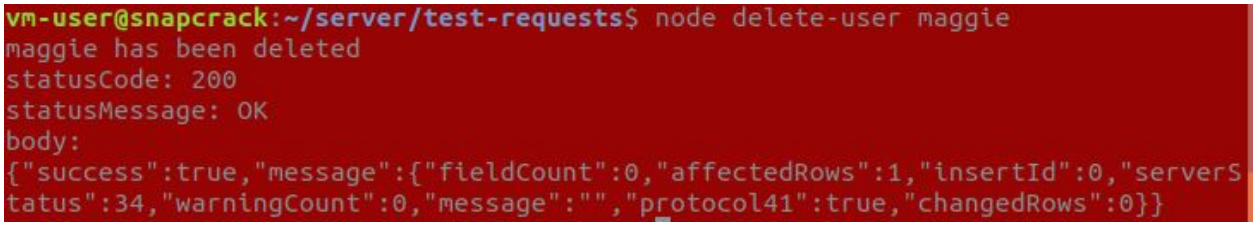
All server responses are formatted roughly the same with a success value first, then the value received by the MySQL query (shown in the images below). If the request was successful then "success: true", false otherwise.
Currently some requests need additional work to catch cases where the MySQL query might not fail, but return an unwanted value (i.e. trying to delete a user that isn't there just returns empty, but also "success: true"). Right now the success value exclusively means that MySQL did not throw a fit. The only exception is the user-verification function (POST to /login). It will only return true if the username/password matches a username/password pair in the db.

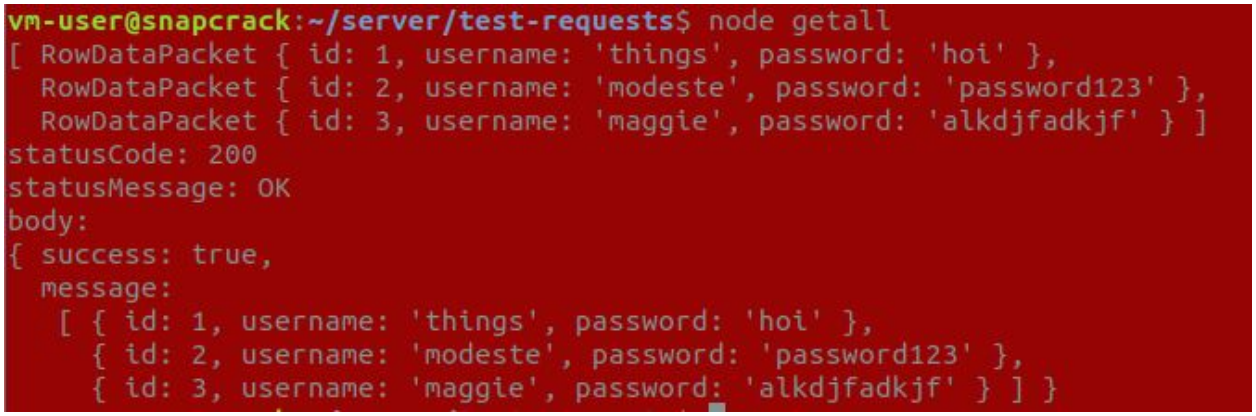
To start: node merged_appServer

Run that command in the home directory (directory the user is in when they log onto the VM)

Example requests are in the ~/server/test-requests directory. Each file has a comment detailing how to correctly use it. These requests work with the live server/db and can also be helpful when populating data for testing in other areas.

Examples of request outputs:





Model Training and Machine Learning

Information regarding how to train a model like the one used in this project can be found within the README files in the project repository.

Troubleshooting

“Tunnel snapcrack.ngrok.io not found”

Try starting/restarting the Ngrok tunnel. Make sure it is started on the correct port.

502 bad gateway

Try starting/restarting the Node.js server.

Web Portal

- To start the web portal locally:
    - clone the git repository
    - Open you command prompt and change to the repository directory
    - Cd into snapcrack/
    - Type node server.js
- To use the web portal
    - To register
        - Enter your desired credentials
        - Press Register
    - To log in
        - Ensure you are registered
        - Enter your login credentials
        - Press Login
    - To view cracks
        - Go to your dashboard

- To remove a crack
  - Press the garbage bin next to the crack ID you want to delete
- To add tags
  - Click a crack ID
  - Press add tags
- To sort the cracklist
  - Press the sort drop down box and select the manner of sorting

In order to use Google Maps in the web portal Google needs a credit card associated with the gmail account providing the API key. While we believe that the usage of Google Maps for this project will remain in the free tier, Google requires a billing account for any usage of the Google Maps API. The API is registered through snapcrack.isu@gmail.com which has a password of “snapcrack2020”