Hopper Project Report

Table of Contents

Author

Hopper is an individual project created by

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Project Description

Hopper is a traceroute visualizer that also handles performing traceroutes via hostnames and IP addresses all within the application. The application also offers the ability to save and import existing traceroutes for future comparisons.

Using a map and a list, each hop of a traceroute is visualized along with the round-trip time (RTT), city, country, IP address of the hop, and the hop index.

GitHub Link

https://github.com/hamdielzard/hopper

Video Presentation

https://youtu.be/yUukloQhrVY

Technical Details

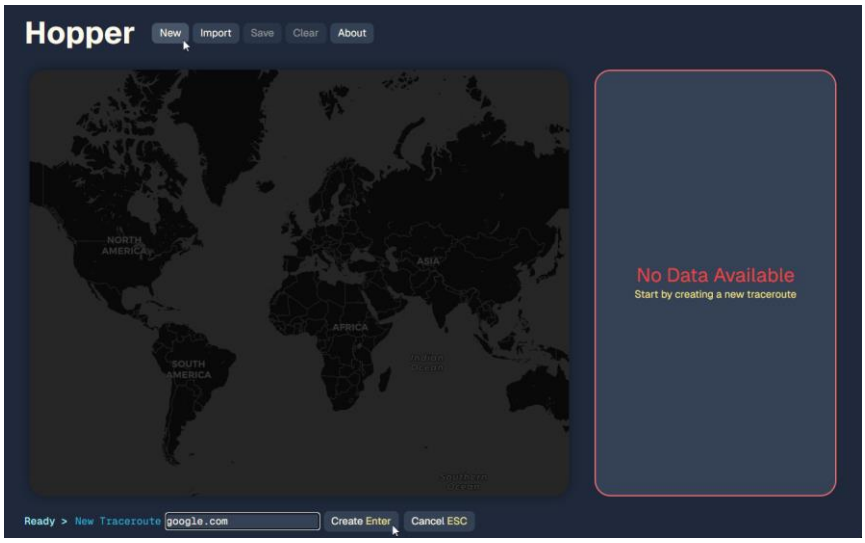
- Hopper runs entirely using NextJS, a framework based on React. Its ability to do server-side rendering and handle the backend allows any user to quickly execute the entire tech stack with one command.
- The backend for running the traceroutes is entirely contained under the api directory.
- The frontend for showing the application is under the app directory.
- Static files are served under the public directory.
- Hopper also relies on a geolocation API (https://ipapi.co/) to get geolocation data of an IP address, as well as (https://flagsapi.com/) to get flags for each country using the country code provided in the geolocation API.
- Hopper relies on a library “Leaflet.js”, wrapped under “react-leaflet” that handles the map, markers, and the configuration of the zoom of the map.
- Each marker is a custom icon that shows the Hop number of the traceroute.
- Hopper also uses its own structure to save past traceroutes for quick importing. That way users are able to compare results quickly.

Instructions on Running

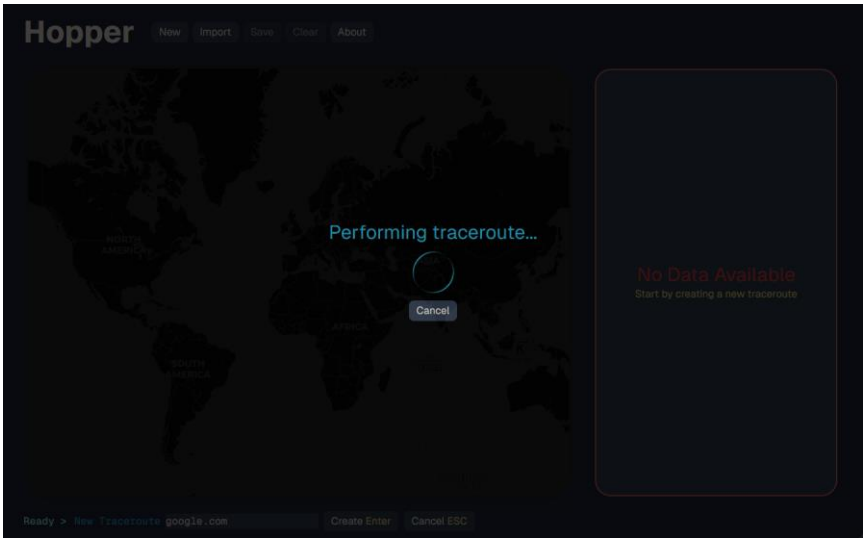
1. Make sure you have Node.js installed!
2. Clone the repository: `git clone https://github.com/hamdielzard/hopper.git`
3. Inside the directory, install the dependencies via `npm install`
4. Run the development server via `npm run dev`
5. On a browser, navigate to http://localhost:3000/

Instructions on Using Hopper

Running a new traceroute



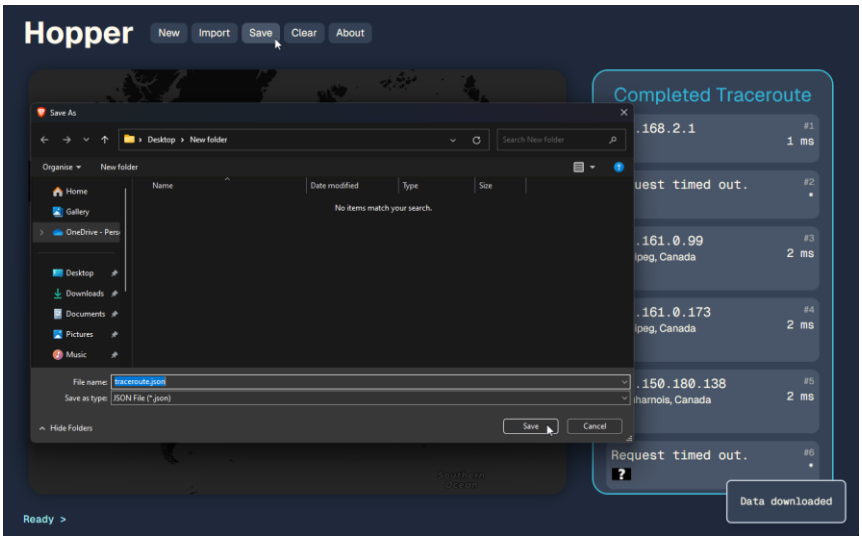
Click New and then input the hostname or IP address of the desired traceroute destination, then either press Enter or click on the Create button.



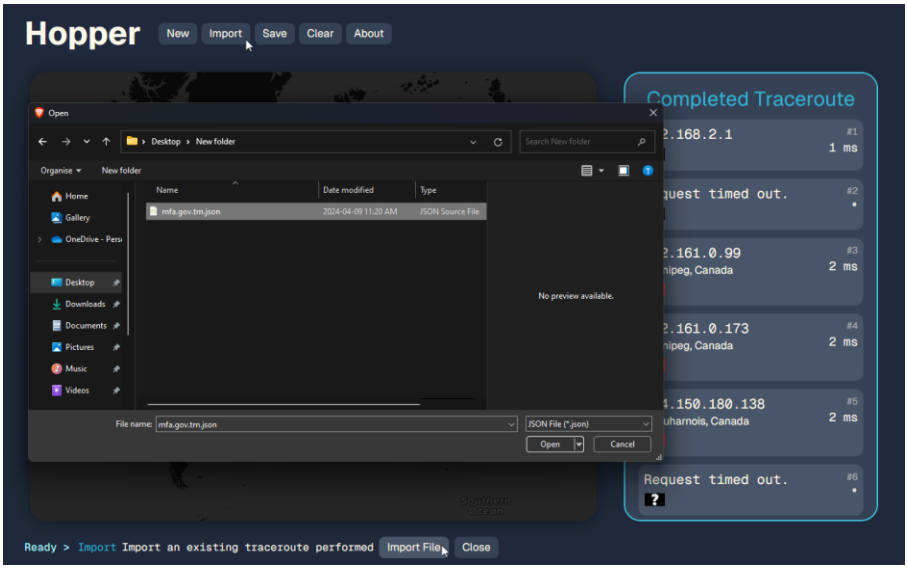
Wait for the traceroute to be performed. This can take a few minutes and the console log will show the progress of each hop. Be assured it is not stuck!

Traceroute results will be shown on the map as well as to the side. You can zoom and pan the map. The choice to Save and Clear results will be opened now.

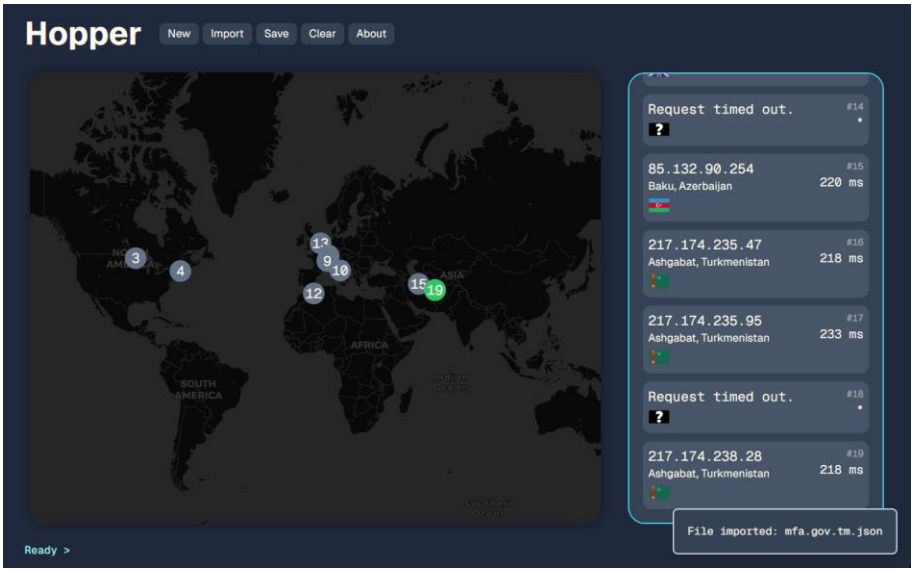
Saving and Importing Past Traceroutes



On a completed traceroute, click Save to be prompted to save a JSON file.



To import past traceroutes, click Import on the menu bar, then click Import File to open the file picker dialogue box. Once you open a file, flag data will be fetched again as flag data is not stored.



This will take far less time than performing another traceroute.