

Harvard Transit Optimization

I. Purpose

This site's goal is to provide the user with a more useful set of data surrounding the Harvard University shuttle system. The Harvard Shuttle trackers at <http://m.harvard.edu/transit/> or <http://harvard.transloc.com> provide basic location data for the currently running shuttles as well as a estimated arrivals at each stop on a seperate page. The information is often divided among routes and pages in such a manner that makes it difficult to chose to the best method to get from one point to another on the Harvard campus, even with prior geographic knowledge. This site aims to help specifically with this problem: what is the optimal way to get from point A to B on Harvard's campus given the running shuttles?

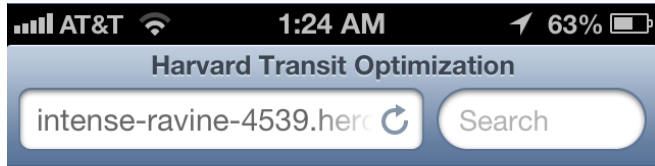
II. Functionality

To start optimising your travel go to <http://intense-ravine-4539.herokuapp.com/>. Upon opening, you will be greeted with a simple page that utilizes your position to give you instant information relating to the shuttles at the stop closest to you (you will be asked allow location services). Once your location has been processed at page load, the page will asynchronously present the information that is most important; when the shuttle is coming to the stop closest to you and which route it is running on. Each of these 'next shuttles' is clickable (tappable) and can present the next three stops it will travel to. Further down the page are the destination selection options. The four most popular destinations are easily accessible through large buttons, and the more obscure via a selector menu. Selecting a destination stop triggers the pathing optimization algorithms that returns three sets of directions to your stop:

1. A route that minimizes time spent walking
2. A route that minimizes time spent in transit (walking + shuttling)
3. A route that gets you to your destination as quickly as possible

Lastly the walking time to your stop is given for comparison. With these data you should be able to make a relatively informed decision about how you plan to get to your destination, whether it's quickly or comfortably.

III. Images



Here, you have just loaded the page and received shuttle data for your nearest stop. By clicking on the incoming shuttle (Extended Overnight in ~25 min), you have brought up its next three stops following the quad. Below

The closest shuttle stop to you is: Quad
The next shuttles at that stop are:
— Extended Overnight, Quad, 24.9 min.
Next: Mass Ave & Garden St, 28.9 min.
Next: Law School, 31.3 min.
Next: Maxwell Dworkin, 32.9 min.

Select your destination:

Quad

Memorial Hall

Boylston Gate

Mather House

Select additional route

Shuttle data only extends so far into the future.

Distant results may be inaccurate.

Designed by Carl and Fred Ward



AT&T 1:14 AM 65%

The closest shuttle stop to you is: Quad

The next shuttles at that stop are:

+1636'er, Quad, 7.8 min.

+1636'er, Quad, 22.9 min.

Walking: 15.5 min.

Least walking with shuttles:

1. Walk to Quad
2. Get on 1636'er in 7.7 min.
3. Ride to Boylston Gate
4. Walk to Boylston Gate

Total time: 38 min.

Transit time: 30.6 min.

Least transit time:

1. Walk to Quad
2. Get on 1636'er in 7.7 min.
3. Ride to Mass Ave & Garden St
4. Walk to Boylston Gate

Total time: 17.5 min.

Transit time: 10.2 min.

Fastest route with shuttles:

1. Walk to Quad
2. Get on 1636'er in 7.7 min.
3. Ride to Mass Ave & Garden St
4. Walk to Boylston Gate

Total time: 17.5 min.

The various methods of route optimization methods are displayed here. In this case the overall fastest route and the route with the least traveling time happen to be the same, while route with the least walking time



IV. Implementation

For those of you who want to play around with the data and code behind the site, setting up a local version is very simple. All the code is free and downloadable from <https://github.com/fredward/walkorshuttle>. Any Unix based system with [Python 2.7](#) and [Django](#) (package [pytz](#) also required) should be able to use the code to its full functionality. Included in the site's root directory is a script, `start.sh`, while will start the required querying and processing scripts as well as the Django development server. Once it has loaded the site can be accessed at `127.0.0.1:8000`. The server and all scripts can be killed with a simple Control-C in the terminal that spawned them.