

- HW 10 due Friday night, 11:59pm.
- HW 8 scores will be posted today
- Final discussion section points available tomorrow.
Will implement a small not-required extra feature of HW10 that will help avoid “over quota” complaints from Google geocoding service
- HW10: if you get 403 error – wifi related, not code

HW 10 First steps

1. (should be done already) Get Twitter account, register “app”, download keys, add to twitter code
2. (should be done already) Install httplib2, oauth2
3. Test Twitter alone, from Python shell, before combining with HW9 Google maps and GUI.
 - test search twitter
 - note function “printable” – if you don’t use this when showing tweet text in tkinter GUI, your program might crash or seem to hang/get stuck.
 - understand this function. You will need to modify it.

HW 10 Checklist

- ☐ update searchTwitter to return tweets
- ☐ add new Entry for search term (don't add a new button for this! Original map button should now read both entries, execute Twitter search, and show map)
- ☐ add new widget where tweet text can be displayed
- ☐ Rename readEntryAndShowMap (-> readEntriesSearchTwitterAndShowMap ?)
- ☐ update readEntriesSearchTwitterAndShowMap
 - ☐ retrieve tweets. I.e. call searchTwitter(...)
 - ☐ set "current tweet" to first one (*recommend*: currentTweetNum variable with index)
 - ☐ display current tweet
 - ☐ create and display map
- ☐ [extract locations from tweets](#)
- ☐ [update getMapURL to display pins for tweets](#)
- ☐ *recommended*: add new function, setCurrentTweet(num), to set and display current tweet
- ☐ Widgets to change current tweet (if have setCurrentTweet, this is simple, like changing zoom level)
- ☐ New widget where tweet URL can be displayed
- ☐ [New widget that will open browser to display web page for current URL](#)
- ☐ *recommended*: add function, setCurrentTweetURL, to set and display current URL
- ☐ Update setCurrentTweet function to set current tweet URL (via setCurrentTweetURL if you wrote it) to first URL associated with current tweet
- ☐ Widgets to change current tweet URL

- Extract location from tweets:
 - Study structure of tweets returned by Twitter. Detailed documentation here:
<https://dev.twitter.com/overview/api/tweets>
 - Particularly, the fields
 - coordinates – best source
 - user – if no info via coordinates, perhaps worth using user’s “location” - docs say this comes from profile info (but be aware that user’s often put odd things in their profiles and geocodeAddress might not give useful results on such locations)
- Note: many/most tweets returned by searchTwitter have no geo information. It’s unclear why. Twitter documentation doesn’t give a lot of help. HOWEVER, smaller search radius than default of 10 (km) does seem to help. Try, e.g., 2km. Also seems (though haven’t checked carefully) that more geocoded tweets are returned for searches in cities/denser places (e.g. Times Square vs. Iowa City).

- update getMapURL to show pins for tweets

Need to construct two new parts of the map string

- One for the “current tweet” – just a single marker

something like:

“&markers=color:*color1*|lat,lng”

- One for all the other tweets – several markers, distinct in some way (color/size/mark) from pin for current tweet

something like:

“&markers=color:*color2*|size:*size*|lat1,lng2|...|lat*n*,lng*n*”

- Open web browser for URL in tweet
 - Import webbrowser
 - use `webbrowser.open(url)`

Recommended: try it on something super easy first – not on a tweet URL. I.e.

1. add an “Open URL” button to your GUI, with command set to a function named, say, `openURL`
2. In `openURL` function, “hard code” a URL just to see if it works.

E.g. `webbrowser.open('http://www.uiowa.edu')`

3. After getting that to work, change so that it opens the current tweet URL.

Flickr

- Everything you need is here:
<https://www.flickr.com/services/api/>
 - Especially these sections:
 - API Keys
 - URLs
 - flickr.photos.search
- flickraccess.py
- Why do you need PIL to use Flickr in HW10? Because tkinter doesn't handle jpg images. Need PIL to convert from jpg to gif (if you want to put Flickr image on a Label or Canvas in your main GUI. Don't need PIL if you instead use webbrowser.open() to open Flickr image in a browser. Would make interface a bit clunky but okay ...)

Next time

More about the *limits of computation* mentioned throughout the semester, including

- Turing Machines
- informal proof of the *halting problem*