Geography 485L/585L - Internet Mapping

Karl Benedict

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Week 4 - Module 2a - Web-based Mapping Clients. Google Maps API (pt. 2)

Overview

- Additional Google Maps API Capabilities to be Aware of
 - Styling of the base maps with custom preferences
 - Fusion Tables
- Bringing it all together in a "real" web page

Getting Started with Styled Maps

Styled Maps Documentation | Create Map Style wizard

Map Example: Simple - Styled

```
gmap_styled.html
```

```
<!DOCTYPE html>
   <html>
       <head>
           <link rel="stylesheet" type="text/css" href="css/mapPage.css">
       </head>
       <body>
           <h1>Sample Map - Styled (POIs Highlighted)</h1>
           <div id="map_canvas"></div>
10
       <!-- Let's put our JavaScript down here -------
           <!-- Load the external JavaScript file with the map definition code -->
12
           <script src="js/mapPage_styled.js"></script>
13
14
           <!-- Load the API in asynchronous mode and execute the initialize function when done -->
           <script async defer</pre>
               src="https://maps.googleapis.com/maps/api/js?callback=initialize&key=<YourKey>">
          </script>
```

```
</body>
20
   </html>
   mapPage_styled.js
   function initialize() {
        var classroom = new google.maps.LatLng(35.084280,-106.624073)
2
        var myOptions = {
3
            zoom: 8,
4
            center: classroom,
5
            mapTypeId: google.maps.MapTypeId.ROADMAP,
6
            styles: [
               {
                 featureType: "water",
9
                 stylers: [
10
                   { visibility: "on" },
11
                   { hue: "#0008ff" }
12
                 ]
13
              },{
                 featureType: "road.highway",
15
                 stylers: [
                   { hue: "#ff1a00" }
17
              },{
19
                 featureType: "road.arterial",
20
                 stylers: [
21
                   { hue: "#ffa200" },
22
                   { visibility: "simplified" }
23
24
              },{
25
                 featureType: "road.local",
26
                 stylers: [
                   { visibility: "off" }
28
                 ]
              },{
30
                 featureType: "administrative",
                 stylers: [
32
                   { visibility: "simplified" }
34
              },{
                 featureType: "poi",
36
                 stylers: [
37
                   { visibility: "on" },
38
                   { hue: "#00ffff" }
39
40
              },{
41
                 featureType: "poi",
42
                 stylers: [
43
                   { visibility: "on" }
44
                 ]
45
            ]
47
            };
49
```

```
var map = new google.maps.Map(
document.getElementById("map_canvas"),
myOptions);
}
```

Google Fusion Tables

Fusion Tables Introduction

 $Sample\ Fusion\ Table\ from\ the\ previous\ NAWRS\ Mapper\ example:\ https://www.google.com/fusiontables/DataSource?docid=1v2IIIFJqat2tTSBA8e4guqlzMGRe8iW4yXP25Kg$

NAWRS Mapper Javascript File: https://github.com/nawrs/nawrs-google/blob/master/core.js

Bringing It All Together - link

gmaps_events.html

```
<!DOCTYPE html>
   <html>
       <head>
3
           <link rel="stylesheet" type="text/css" href="css/event_mapPage.css">
           <title>Karl's Event Diary</title>
       </head>
6
       <body>
           <h1>My diary of endurance events that I've participated in since joining
           Team in Training
10
           </h1>
12
           In 2008 Cynthia and I joined the Leukemia and Lymphoma Society's
           (<a href="http://www.lls.org/">LLS</a>) Team in Training
14
           (<a href="http://www.teamintraining.org/">TNT</a>,
           <a href="http://youtu.be/GMSKG8L6K78">info video</a>) program as
16
           participants to train for the Animas Valley/Steamworks Half Marathon and
17
            raise money for blood cancer research and patient services. In spite of
18
             our not having any direct connection to blood cancer (at that time),
19
             we found the goals of LLS admirable, the combined training and
20
             fund-raising program of TNT a great idea, and made many new friends
21
             over the many seasons that we have been involved with TNT.
22
23
           From 2008 through early 2015 we continued to volunteer with TNT, as
24
           participants, mentors, and since 2010 I was a coach (check out my
25
           <a href="http://youtu.be/GMSKG8L6K78">half-second</a> of fame in the
26
           info video at 2:13) for TNT with an emphasis on training walkers for
27
           full- or half-marathons. This page provides a summary of the events that
            I've participated in in some capacity since 2008. 
29
           <!-- based on the example provided by Google -
31
           https://developers.google.com/maps/documentation/javascript/examples/
           style-selector -->
33
           <div id="style-selector-control" class="map-control">
34
             <select id="style-selector" class="selector-control">
35
```

```
<option value="default">Default</option>
36
             <option value="silver">Silver</option>
37
             <option value="night">Night mode</option>
             <option value="retro" selected="selected">Retro</option>
39
             <option value="hiding">Hide features</option>
40
            </select>
41
          </div>
43
          <div id="event-map" name="event-map"></div>
45
          47
48
          <thead>
          Date
49
          Event Name
50
          Event Time
51
          Location on Map
52
          </thead>
53
54
          55
          56
             1/8/2017
             Disney World Marathon
58
59
             7:14
             <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
60
             10)">approx. map</a>
          62
          64
             10/16/2016
             Duke City Half Marathon 
66
             ~2:55
67
             <a href="#event-map" onclick="recenter(map, eventPlaces[0].point,
68
              11) ">map</a>
69
          70
71
          \langle t.r \rangle
             11/13/2015
73
             Avengers Half Marathon 
             3:17:55
75
             <a href="#event-map" onclick="recenter(map, eventPlaces[5].point,
              12) ">approx. map</a>
77
          79
          1/11/2015
81
             Disney World Marathon (Goofy - Day 2)
82
             6:21:01
83
             <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
84
              10) ">approx. map</a>
85
          86
88
          89
```

```
1/10/2015
90
              Disney World Half Marathon (Goofy - Day 1)
91
              2:45:55
              <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,</pre>
93
               10) ">approx. map</a>
94
           95
           97
              10/19/2014
              Duke City Half Marathon
99
              2:45:17
              <a href="#event-map" onclick="recenter(map, eventPlaces[0].point,</pre>
101
102
               11) ">map</a>
           103
104
           105
              2/23/2014
106
              Princess Half Marathon
107
              3:07:11
108
              <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
109
               10) ">approx. map</a>
110
           112
113
           \langle t.r \rangle
              2/22/2014
114
              Princess Enchanted 10k
              1:42:43
116
              <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,</pre>
               10) ">approx. map</a>
118
           120
           121
              9/1/2013
122
              Disneyland Half Marathon
123
              2:56:57
124
              <a href="#event-map" onclick="recenter(map, eventPlaces[5].point,</pre>
125
               12) ">approx. map</a>
126
           127
128
129
           \langle t.r \rangle
130
              1/13/2013
131
              Disney World Marathon (Goofy - Day 2)
132
              6:46:57
133
              <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
               10) ">approx. map</a>
135
           136
137
138
           139
              1/12/2013
140
              Disney World Half Marathon (Goofy - Day 1)
141
              3:22:48
142
              <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
143
```

```
10) ">approx. map</a>
144
          145
147
          9/29/2012
149
              Hot Chocolate 15k 
              1:56:46
151
              <a href="#event-map" onclick="recenter(map, eventPlaces[6].point,
              10)">map</a>
153
          155
156
          157
              6/9/2012
158
              Animas Valley/Steamworks Half Marathon
159
              no time: coached
160
              <a href="#event-map" onclick="recenter(map, eventPlaces[1].point,
              10) ">map</a>
162
          163
164
          166
              1/9/2012
167
              Disney World Marathon (Goofy - Day 2)
168
              6:56:28
              <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
170
              10) ">map</a>
          172
174
          175
              1/8/2011
176
              Disney World Half Marathon (Goofy - Day 1)
177
              3:29:00
178
              <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,</pre>
179
              10)">map</a>
          181
183
          \langle t.r \rangle
              6/19/2010
185
              Animas Valley/Steamworks Half Marathon
              no time: coached
187
              <a href="#event-map" onclick="recenter(map, eventPlaces[1].point,
               10)">map</a>
189
          190
191
192
          193
              6/6/2010
194
              San Diego Rock 'n' Roll Marathon
195
              no time: coached
196
              <a href="#event-map" onclick="recenter(map, eventPlaces[2].point,
197
```

```
11) ">map</a>
198
         199
201
         10/18/09
203
            Nike Women's Marathon
            7:13:05
205
            <a href="#event-map" onclick="recenter(map, eventPlaces[3].point,
             12) ">map</a>
207
         209
210
         211
            9/6/2009
            Disneyland Half Marathon
213
            3:43:05
214
            <a href="#event-map" onclick="recenter(map, eventPlaces[5].point,
             12) ">map</a>
216
         217
218
         220
            1/11/2009
221
            Disney World Marathon
222
            6:57:42
            <a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
224
             10) ">map</a>
         226
228
         229
            10/19/2008
230
            Duke City Half Marathon
231
            3:09:42
232
            <a href="#event-map" onclick="recenter(map, eventPlaces[0].point,</pre>
233
             11) ">map</a>
         235
237
         \langle t.r \rangle
            6/21/2008
239
            Animas Valley/Steamworks Half Marathon
240
            3:14:52
241
            <a href="#event-map" onclick="recenter(map, eventPlaces[1].point,
             10) ">map</a>
243
         245
         247
248
      </body>
249
250
      251
```

```
<!-- Load the external JavaScript file with the map definition code -->
252
             <script src="js/mapPage_events.js"></script>
253
             <!-- Load the API in asynchronous mode and execute the initialize
255
             function when done -->
257
             <script async defer</pre>
                 src="https://maps.googleapis.com/maps/api/js?callback=initialize&
259
                 key=<YourKey>">
             </script>
261
        </body>
    </html>
263
    gmaps_events.js
    var map;
    var eventPlaces;
    function initialize() {
        // Define a set of global coordinates for use throughout the web site
 5
        // Place coordinates derived from GNIS database: http://geonames.usgs.gov/
        // pls/gnispublic
        // from https://tools.wmflabs.org/geohack/geohack.php?
        // pagename=Geographic_center_of_the_contiguous_United_States&
        // params=39.828175_N_98.579500_W_region:US_type:landmark
10
        geoCenter = new google.maps.LatLng(39.828175,-98.5795)
11
        eventPlaces = [
12
             {
                 name: "Albuquerque",
14
                 point: new google.maps.LatLng(35.0889356,-106.5747462),
                 label: "Albuquerque: Duke City Half Marathon"
16
            },
18
                 name: "Durango",
                 point: new google.maps.LatLng(37.2752800,-107.8800667),
20
                 label: "Durango: Animas Valley/Steamworks Half Marathon"
            },
22
             {
                 name: "San Diego",
24
                 point: new google.maps.LatLng(32.7153292,-117.1572551),
                 label: "San Diego: San Diego Rock 'n' Roll Marathon"
26
            },
27
                 name: "San Francisco",
29
                 point: new google.maps.LatLng(37.7749295,-122.4194155),
30
                 label: "San Francisco: Nike Women's Marathon"
31
            },
33
                 name: "Orlando",
                 point: new google.maps.LatLng(28.5383355,-81.3792365),
35
                 label: "Orlando: Walt Disney World half- and full-marathon"
            },
37
             {
                 name: "Anaheim",
39
```

```
point: new google.maps.LatLng(33.8352932,-117.9145036),
40
                label: "Anaheim: Disneyland Half Marathon"
41
           },
42
43
                name: "Albuquerque",
44
                point: new google.maps.LatLng(35.0889356,-106.5747462),
45
                label: "Hot Chocolate 15k"
            }
47
       ];
49
       var myOptions = {
51
            zoom: 4,
            center: geoCenter,
53
            mapTypeId: google.maps.MapTypeId.ROADMAP,
            mapTypeControl: false};
55
56
       map = new google.maps.Map(
            document.getElementById("event-map"),
58
            myOptions);
59
60
       addMarkers(map, eventPlaces)
62
       // Add a style-selector control to the map.
63
       var styleControl = document.getElementById('style-selector-control');
64
       map.controls[google.maps.ControlPosition.TOP_LEFT].push(styleControl);
66
       // Set the map's style to the initial value of the selector.
       var styleSelector = document.getElementById('style-selector');
68
       map.setOptions({styles: styles[styleSelector.value]});
70
       // Apply new JSON when the user selects a different style.
       styleSelector.addEventListener('change', function() {
72
             map.setOptions({styles: styles[styleSelector.value]});
73
       });
74
   }
75
   function recenter(mapName, latlon, zoomLevel) {
77
       mapName.setCenter(latlon);
       mapName.setZoom(zoomLevel)
79
   }
80
81
   function addMarkers(mapName, markerArray) {
82
       for (index = 0; index < markerArray.length; index++) {</pre>
83
            myMarker = new google.maps.Marker({
                position: markerArray[index].point,
85
                title: markerArray[index].label
87
            myMarker.setMap(mapName)
       }
89
   }
90
91
   // styles generated by https://mapstyle.withgoogle.com
92
   var styles = {
```

```
default: null,
94
    silver: [
       {
         elementType: 'geometry',
97
         stylers: [{color: '#f5f5f5'}]
       },
99
         elementType: 'labels.icon',
101
         stylers: [{visibility: 'off'}]
       },
103
         elementType: 'labels.text.fill',
105
         stylers: [{color: '#616161'}]
106
       },
107
108
         elementType: 'labels.text.stroke',
109
         stylers: [{color: '#f5f5f5'}]
110
       },
111
112
         featureType: 'administrative.land_parcel',
113
         elementType: 'labels.text.fill',
114
         stylers: [{color: '#bdbdbd'}]
       },
116
117
         featureType: 'poi',
118
         elementType: 'geometry',
         stylers: [{color: '#eeeeee'}]
120
       },
122
         featureType: 'poi',
         elementType: 'labels.text.fill',
124
         stylers: [{color: '#757575'}]
125
       },
126
127
         featureType: 'poi.park',
128
         elementType: 'geometry',
129
         stylers: [{color: '#e5e5e5'}]
130
       },
131
132
         featureType: 'poi.park',
133
         elementType: 'labels.text.fill',
134
         stylers: [{color: '#9e9e9e'}]
135
       },
136
137
         featureType: 'road',
         elementType: 'geometry',
139
         stylers: [{color: '#ffffff'}]
       },
141
142
         featureType: 'road.arterial',
143
         elementType: 'labels.text.fill',
144
         stylers: [{color: '#757575'}]
145
       },
146
       {
147
```

```
featureType: 'road.highway',
148
         elementType: 'geometry',
149
         stylers: [{color: '#dadada'}]
      },
151
        featureType: 'road.highway',
153
         elementType: 'labels.text.fill',
         stylers: [{color: '#616161'}]
155
      },
157
        featureType: 'road.local',
         elementType: 'labels.text.fill',
159
160
         stylers: [{color: '#9e9e9e'}]
      },
161
162
         featureType: 'transit.line',
163
         elementType: 'geometry',
164
         stylers: [{color: '#e5e5e5'}]
165
      },
166
167
        featureType: 'transit.station',
168
         elementType: 'geometry',
         stylers: [{color: '#eeeeee'}]
170
171
      },
172
        featureType: 'water',
         elementType: 'geometry',
174
         stylers: [{color: '#c9c9c9'}]
      },
176
         featureType: 'water',
178
         elementType: 'labels.text.fill',
179
         stylers: [{color: '#9e9e9e'}]
180
      }
181
    ],
182
183
    night: [
       {elementType: 'geometry', stylers: [{color: '#242f3e'}]},
185
      {elementType: 'labels.text.stroke', stylers: [{color: '#242f3e'}]},
      {elementType: 'labels.text.fill', stylers: [{color: '#746855'}]},
187
        featureType: 'administrative.locality',
189
         elementType: 'labels.text.fill',
190
         stylers: [{color: '#d59563'}]
191
      },
193
         featureType: 'poi',
194
         elementType: 'labels.text.fill',
195
         stylers: [{color: '#d59563'}]
196
      },
197
198
        featureType: 'poi.park',
199
         elementType: 'geometry',
200
         stylers: [{color: '#263c3f'}]
201
```

```
},
202
203
         featureType: 'poi.park',
204
         elementType: 'labels.text.fill',
205
         stylers: [{color: '#6b9a76'}]
      },
207
         featureType: 'road',
209
         elementType: 'geometry',
         stylers: [{color: '#38414e'}]
211
      },
213
         featureType: 'road',
         elementType: 'geometry.stroke',
215
         stylers: [{color: '#212a37'}]
      },
217
218
         featureType: 'road',
219
         elementType: 'labels.text.fill',
220
         stylers: [{color: '#9ca5b3'}]
221
      },
222
         featureType: 'road.highway',
224
225
         elementType: 'geometry',
         stylers: [{color: '#746855'}]
226
      },
228
         featureType: 'road.highway',
         elementType: 'geometry.stroke',
230
         stylers: [{color: '#1f2835'}]
      },
232
233
         featureType: 'road.highway',
234
         elementType: 'labels.text.fill',
235
         stylers: [{color: '#f3d19c'}]
236
      },
237
      {
         featureType: 'transit',
239
         elementType: 'geometry',
         stylers: [{color: '#2f3948'}]
241
      },
242
243
         featureType: 'transit.station',
         elementType: 'labels.text.fill',
245
         stylers: [{color: '#d59563'}]
      },
247
         featureType: 'water',
249
         elementType: 'geometry',
         stylers: [{color: '#17263c'}]
251
      },
252
253
         featureType: 'water',
254
         elementType: 'labels.text.fill',
255
```

```
stylers: [{color: '#515c6d'}]
256
      },
257
258
         featureType: 'water',
259
         elementType: 'labels.text.stroke',
260
         stylers: [{color: '#17263c'}]
261
    ],
263
264
    retro: [
265
       {elementType: 'geometry', stylers: [{color: '#ebe3cd'}]},
       {elementType: 'labels.text.fill', stylers: [{color: '#523735'}]},
267
      {elementType: 'labels.text.stroke', stylers: [{color: '#f5f1e6'}]},
268
269
         featureType: 'administrative',
         elementType: 'geometry.stroke',
271
         stylers: [{color: '#c9b2a6'}]
272
      },
273
274
         featureType: 'administrative.land_parcel',
275
         elementType: 'geometry.stroke',
276
         stylers: [{color: '#dcd2be'}]
      },
278
279
         featureType: 'administrative.land_parcel',
280
         elementType: 'labels.text.fill',
         stylers: [{color: '#ae9e90'}]
282
      },
284
         featureType: 'landscape.natural',
         elementType: 'geometry',
286
         stylers: [{color: '#dfd2ae'}]
287
      },
288
289
         featureType: 'poi',
290
         elementType: 'geometry',
291
         stylers: [{color: '#dfd2ae'}]
      },
293
294
         featureType: 'poi',
295
         elementType: 'labels.text.fill',
296
         stylers: [{color: '#93817c'}]
297
      },
298
299
         featureType: 'poi.park',
         elementType: 'geometry.fill',
301
         stylers: [{color: '#a5b076'}]
302
      },
303
304
         featureType: 'poi.park',
305
         elementType: 'labels.text.fill',
306
         stylers: [{color: '#447530'}]
307
      },
308
      {
309
```

```
featureType: 'road',
310
         elementType: 'geometry',
311
         stylers: [{color: '#f5f1e6'}]
312
313
314
         featureType: 'road.arterial',
315
         elementType: 'geometry',
         stylers: [{color: '#fdfcf8'}]
317
      },
319
         featureType: 'road.highway',
         elementType: 'geometry',
321
         stylers: [{color: '#f8c967'}]
      },
323
324
         featureType: 'road.highway',
325
         elementType: 'geometry.stroke',
326
         stylers: [{color: '#e9bc62'}]
327
      },
328
329
         featureType: 'road.highway.controlled_access',
330
         elementType: 'geometry',
         stylers: [{color: '#e98d58'}]
332
333
      },
334
         featureType: 'road.highway.controlled_access',
         elementType: 'geometry.stroke',
336
         stylers: [{color: '#db8555'}]
      },
338
         featureType: 'road.local',
340
         elementType: 'labels.text.fill',
341
         stylers: [{color: '#806b63'}]
342
      },
343
344
         featureType: 'transit.line',
345
         elementType: 'geometry',
346
         stylers: [{color: '#dfd2ae'}]
347
      },
348
349
         featureType: 'transit.line',
350
         elementType: 'labels.text.fill',
351
         stylers: [{color: '#8f7d77'}]
352
      },
353
         featureType: 'transit.line',
355
         elementType: 'labels.text.stroke',
356
         stylers: [{color: '#ebe3cd'}]
357
      },
359
         featureType: 'transit.station',
360
         elementType: 'geometry',
361
         stylers: [{color: '#dfd2ae'}]
362
      },
363
```

```
364
         featureType: 'water',
365
         elementType: 'geometry.fill',
366
         stylers: [{color: '#b9d3c2'}]
367
       },
368
       {
369
         featureType: 'water',
         elementType: 'labels.text.fill',
371
         stylers: [{color: '#92998d'}]
       }
373
    ],
374
375
    hiding: [
376
       {
377
         featureType: 'poi.business',
378
         stylers: [{visibility: 'off'}]
379
       },
380
       {
381
         featureType: 'transit',
382
         elementType: 'labels.icon',
383
         stylers: [{visibility: 'off'}]
384
       }
386
    };
387
```

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