

Geography 485L/585L - Internet Mapping

Karl Benedict

Spring 2018

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

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <link rel="stylesheet" type="text/css" href="css/mapPage.css">
5      </head>
6
7      <body>
8          <h1>Sample Map - Styled (POIs Highlighted)</h1>
9          <div id="map_canvas"></div>
10
11      <!-- Let's put our JavaScript down here ----->
12      <!-- Load the external JavaScript file with the map definition code -->
13      <script src="js/mapPage_styled.js"></script>
14
15      <!-- Load the API in asynchronous mode and execute the initialize function when done -->
16
17      <script async defer
18          src="https://maps.googleapis.com/maps/api/js?callback=initialize&key=<YourKey>">
19      </script>
```

```
20     </body>
21 </html>
```

mapPage_styled.js

```
1 function initialize() {
2     var classroom = new google.maps.LatLng(35.084280,-106.624073)
3     var myOptions = {
4         zoom: 8,
5         center: classroom,
6         mapTypeId: google.maps.MapTypeId.ROADMAP,
7         styles: [
8             {
9                 featureType: "water",
10                 stylers: [
11                     { visibility: "on" },
12                     { hue: "#0008ff" }
13                 ]
14             },{
15                 featureType: "road.highway",
16                 stylers: [
17                     { hue: "#ffa00" }
18                 ]
19             },{
20                 featureType: "road.arterial",
21                 stylers: [
22                     { hue: "#ffa200" },
23                     { visibility: "simplified" }
24                 ]
25             },{
26                 featureType: "road.local",
27                 stylers: [
28                     { visibility: "off" }
29                 ]
30             },{
31                 featureType: "administrative",
32                 stylers: [
33                     { visibility: "simplified" }
34                 ]
35             },{
36                 featureType: "poi",
37                 stylers: [
38                     { visibility: "on" },
39                     { hue: "#00ffff" }
40                 ]
41             },{
42                 featureType: "poi",
43                 stylers: [
44                     { visibility: "on" }
45                 ]
46             }
47         ]
48     };
49 }
```

```

50     var map = new google.maps.Map(
51         document.getElementById("map_canvas"),
52         myOptions);
53 }

```

Google Fusion Tables

Fusion Tables Introduction

Sample Fusion Table from the previous NAWRS Mapper example: <https://www.google.com/fusiontables/DataSource?docid=1v2IIIFJqat2tTSBA8e4guqlzMGR8iW4yXP25Kg>

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

Bringing It All Together - [link](#)

gmaps_events.html

```

1  <!DOCTYPE html>
2  <html>
3      <head>
4          <link rel="stylesheet" type="text/css" href="css/event_mapPage.css">
5          <title>Karl's Event Diary</title>
6      </head>
7
8      <body>
9          <h1>My diary of endurance events that I've participated in since joining
10             Team in Training
11          </h1>
12
13          <p>In 2008 Cynthia and I joined the Leukemia and Lymphoma Society's
14             (<a href="http://www.lls.org/">LLS</a>) Team in Training
15             (<a href="http://www.teamintraining.org/">TNT</a>,
16             <a href="http://youtu.be/GMSKG8L6K78">info video</a>) program as
17             participants to train for the Animas Valley/Steamworks Half Marathon and
18             raise money for blood cancer research and patient services. In spite of
19             our not having any direct connection to blood cancer (at that time),
20             we found the goals of LLS admirable, the combined training and
21             fund-raising program of TNT a great idea, and made many new friends
22             over the many seasons that we have been involved with TNT.</p>
23
24          <p>From 2008 through early 2015 we continued to volunteer with TNT, as
25             participants, mentors, and since 2010 I was a coach (check out my
26             <a href="http://youtu.be/GMSKG8L6K78">half-second</a> of fame in the
27             info video at 2:13) for TNT with an emphasis on training walkers for
28             full- or half-marathons. This page provides a summary of the events that
29             I've participated in in some capacity since 2008. </p>
30
31          <!-- based on the example provided by Google -
32             https://developers.google.com/maps/documentation/javascript/examples/
33             style-selector -->
34          <div id="style-selector-control" class="map-control">
35              <select id="style-selector" class="selector-control">

```

```

36         <option value="default">Default</option>
37         <option value="silver">Silver</option>
38         <option value="night">Night mode</option>
39         <option value="retro" selected="selected">Retro</option>
40         <option value="hiding">Hide features</option>
41     </select>
42 </div>
43
44 <div id="event-map" name="event-map"></div>
45
46 <table>
47
48 <thead>
49 <th>Date</th>
50 <th>Event Name</th>
51 <th>Event Time</th>
52 <th>Location on Map</th>
53 </thead>
54
55 <tbody>
56 <tr>
57     <td>1/8/2017</td>
58     <td>Disney World Marathon</td>
59     <td>7:14</td>
60     <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
61     10)">approx. map</a></td>
62 </tr>
63
64 <tr>
65     <td>10/16/2016</td>
66     <td>Duke City Half Marathon </td>
67     <td>~2:55</td>
68     <td><a href="#event-map" onclick="recenter(map, eventPlaces[0].point,
69     11)">map</a></td>
70 </tr>
71
72 <tr>
73     <td>11/13/2015</td>
74     <td>Avengers Half Marathon </td>
75     <td>3:17:55</td>
76     <td><a href="#event-map" onclick="recenter(map, eventPlaces[5].point,
77     12)">approx. map</a></td>
78 </tr>
79
80 <tr>
81     <td>1/11/2015</td>
82     <td>Disney World Marathon (Goofy - Day 2)</td>
83     <td>6:21:01</td>
84     <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
85     10)">approx. map</a></td>
86 </tr>
87
88
89 <tr>

```

```

90         <td>1/10/2015</td>
91         <td>Disney World Half Marathon (Goofy - Day 1)</td>
92         <td>2:45:55</td>
93         <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
94             10)">approx. map</a></td>
95     </tr>
96
97     <tr>
98         <td>10/19/2014</td>
99         <td>Duke City Half Marathon</td>
100        <td>2:45:17</td>
101        <td><a href="#event-map" onclick="recenter(map, eventPlaces[0].point,
102            11)">map</a></td>
103    </tr>
104
105    <tr>
106        <td>2/23/2014</td>
107        <td>Princess Half Marathon</td>
108        <td>3:07:11</td>
109        <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
110            10)">approx. map</a></td>
111    </tr>
112
113    <tr>
114        <td>2/22/2014</td>
115        <td>Princess Enchanted 10k</td>
116        <td>1:42:43</td>
117        <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
118            10)">approx. map</a></td>
119    </tr>
120
121    <tr>
122        <td>9/1/2013</td>
123        <td>Disneyland Half Marathon</td>
124        <td>2:56:57</td>
125        <td><a href="#event-map" onclick="recenter(map, eventPlaces[5].point,
126            12)">approx. map</a></td>
127    </tr>
128
129
130    <tr>
131        <td>1/13/2013</td>
132        <td>Disney World Marathon (Goofy - Day 2)</td>
133        <td>6:46:57</td>
134        <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
135            10)">approx. map</a></td>
136    </tr>
137
138
139    <tr>
140        <td>1/12/2013</td>
141        <td>Disney World Half Marathon (Goofy - Day 1)</td>
142        <td>3:22:48</td>
143        <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,

```

```

144         10)">approx. map</a></td>
145     </tr>
146
147
148     <tr>
149         <td>9/29/2012</td>
150         <td>Hot Chocolate 15k </td>
151         <td>1:56:46</td>
152         <td><a href="#event-map" onclick="recenter(map, eventPlaces[6].point,
153             10)">map</a></td>
154     </tr>
155
156
157     <tr>
158         <td>6/9/2012</td>
159         <td>Animas Valley/Steamworks Half Marathon</td>
160         <td>no time: coached</td>
161         <td><a href="#event-map" onclick="recenter(map, eventPlaces[1].point,
162             10)">map</a></td>
163     </tr>
164
165
166     <tr>
167         <td>1/9/2012</td>
168         <td>Disney World Marathon (Goofy - Day 2)</td>
169         <td>6:56:28</td>
170         <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
171             10)">map</a></td>
172     </tr>
173
174
175     <tr>
176         <td>1/8/2011</td>
177         <td>Disney World Half Marathon (Goofy - Day 1)</td>
178         <td>3:29:00</td>
179         <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
180             10)">map</a></td>
181     </tr>
182
183
184     <tr>
185         <td>6/19/2010</td>
186         <td>Animas Valley/Steamworks Half Marathon</td>
187         <td>no time: coached</td>
188         <td><a href="#event-map" onclick="recenter(map, eventPlaces[1].point,
189             10)">map</a></td>
190     </tr>
191
192
193     <tr>
194         <td>6/6/2010</td>
195         <td>San Diego Rock 'n' Roll Marathon</td>
196         <td>no time: coached</td>
197         <td><a href="#event-map" onclick="recenter(map, eventPlaces[2].point,

```

```

198         11)">map</a></td>
199     </tr>
200
201
202     <tr>
203         <td>10/18/09</td>
204         <td>Nike Women's Marathon</td>
205         <td>7:13:05</td>
206         <td><a href="#event-map" onclick="recenter(map, eventPlaces[3].point,
207             12)">map</a></td>
208     </tr>
209
210
211     <tr>
212         <td>9/6/2009</td>
213         <td>Disneyland Half Marathon</td>
214         <td>3:43:05</td>
215         <td><a href="#event-map" onclick="recenter(map, eventPlaces[5].point,
216             12)">map</a></td>
217     </tr>
218
219
220     <tr>
221         <td>1/11/2009</td>
222         <td>Disney World Marathon</td>
223         <td>6:57:42</td>
224         <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
225             10)">map</a></td>
226     </tr>
227
228
229     <tr>
230         <td>10/19/2008</td>
231         <td>Duke City Half Marathon</td>
232         <td>3:09:42</td>
233         <td><a href="#event-map" onclick="recenter(map, eventPlaces[0].point,
234             11)">map</a></td>
235     </tr>
236
237
238     <tr>
239         <td>6/21/2008</td>
240         <td>Animas Valley/Steamworks Half Marathon</td>
241         <td>3:14:52</td>
242         <td><a href="#event-map" onclick="recenter(map, eventPlaces[1].point,
243             10)">map</a></td>
244     </tr>
245 </tbody>
246 </table>
247
248
249 </body>
250
251 <!-- Let's put our JavaScript down here ----->

```

```

252      <!-- Load the external JavaScript file with the map definition code -->
253      <script src="js/mapPage_events.js"></script>
254
255      <!-- Load the API in asynchronous mode and execute the initialize
256      function when done -->
257
258      <script async defer
259          src="https://maps.googleapis.com/maps/api/js?callback=initialize&
260          key=<YourKey>">
261      </script>
262  </body>
263 </html>

```

gmaps_events.js

```

1  var map;
2  var eventPlaces;
3
4  function initialize() {
5      // Define a set of global coordinates for use throughout the web site
6      // Place coordinates derived from GNIS database: http://geonames.usgs.gov/
7      // pls/gnispublic
8      // from https://tools.wmflabs.org/geohack/geohack.php?
9      // pagename=Geographic_center_of_the_contiguous_United_States&
10     // params=39.828175_N_98.579500_W_region:US_type:landmark
11     geoCenter = new google.maps.LatLng(39.828175,-98.5795)
12     eventPlaces = [
13         {
14             name: "Albuquerque",
15             point: new google.maps.LatLng(35.0889356,-106.5747462),
16             label: "Albuquerque: Duke City Half Marathon"
17         },
18         {
19             name: "Durango",
20             point: new google.maps.LatLng(37.2752800,-107.8800667),
21             label: "Durango: Animas Valley/Steamworks Half Marathon"
22         },
23         {
24             name: "San Diego",
25             point: new google.maps.LatLng(32.7153292,-117.1572551),
26             label: "San Diego: San Diego Rock 'n' Roll Marathon"
27         },
28         {
29             name: "San Francisco",
30             point: new google.maps.LatLng(37.7749295,-122.4194155),
31             label: "San Francisco: Nike Women's Marathon"
32         },
33         {
34             name: "Orlando",
35             point: new google.maps.LatLng(28.5383355,-81.3792365),
36             label: "Orlando: Walt Disney World half- and full-marathon"
37         },
38         {
39             name: "Anaheim",

```



```

40         point: new google.maps.LatLng(33.8352932,-117.9145036),
41         label: "Anaheim: Disneyland Half Marathon"
42     },
43     {
44         name: "Albuquerque",
45         point: new google.maps.LatLng(35.0889356,-106.5747462),
46         label: "Hot Chocolate 15k"
47     }
48 ];
49
50
51 var myOptions = {
52     zoom: 4,
53     center: geoCenter,
54     mapTypeId: google.maps.MapTypeId.ROADMAP,
55     mapTypeControl: false};
56
57 map = new google.maps.Map(
58     document.getElementById("event-map"),
59     myOptions);
60
61 addMarkers(map,eventPlaces)
62
63 // Add a style-selector control to the map.
64 var styleControl = document.getElementById('style-selector-control');
65 map.controls[google.maps.ControlPosition.TOP_LEFT].push(styleControl);
66
67 // Set the map's style to the initial value of the selector.
68 var styleSelector = document.getElementById('style-selector');
69 map.setOptions({styles: styles[styleSelector.value]});
70
71 // Apply new JSON when the user selects a different style.
72 styleSelector.addEventListener('change', function() {
73     map.setOptions({styles: styles[styleSelector.value]});
74 });
75 }
76
77 function recenter(mapName, latlon, zoomLevel) {
78     mapName.setCenter(latlon);
79     mapName.setZoom(zoomLevel)
80 }
81
82 function addMarkers(mapName, markerArray) {
83     for (index = 0; index < markerArray.length; index++) {
84         myMarker = new google.maps.Marker({
85             position: markerArray[index].point,
86             title: markerArray[index].label
87         });
88         myMarker.setMap(mapName)
89     }
90 }
91
92 // styles generated by https://mapstyle.withgoogle.com
93 var styles = {

```

```

94  default: null,
95  silver: [
96    {
97      elementType: 'geometry',
98      stylers: [{color: '#f5f5f5'}]
99    },
100   {
101     elementType: 'labels.icon',
102     stylers: [{visibility: 'off'}]
103   },
104   {
105     elementType: 'labels.text.fill',
106     stylers: [{color: '#616161'}]
107   },
108   {
109     elementType: 'labels.text.stroke',
110     stylers: [{color: '#f5f5f5'}]
111   },
112   {
113     featureType: 'administrative.land_parcel',
114     elementType: 'labels.text.fill',
115     stylers: [{color: '#bdbdbd'}]
116   },
117   {
118     featureType: 'poi',
119     elementType: 'geometry',
120     stylers: [{color: '#eeeeee'}]
121   },
122   {
123     featureType: 'poi',
124     elementType: 'labels.text.fill',
125     stylers: [{color: '#757575'}]
126   },
127   {
128     featureType: 'poi.park',
129     elementType: 'geometry',
130     stylers: [{color: '#e5e5e5'}]
131   },
132   {
133     featureType: 'poi.park',
134     elementType: 'labels.text.fill',
135     stylers: [{color: '#9e9e9e'}]
136   },
137   {
138     featureType: 'road',
139     elementType: 'geometry',
140     stylers: [{color: '#ffffff'}]
141   },
142   {
143     featureType: 'road.arterial',
144     elementType: 'labels.text.fill',
145     stylers: [{color: '#757575'}]
146   },
147   {

```

```

148     featureType: 'road.highway',
149     elementType: 'geometry',
150     stylers: [{color: '#dadada'}]
151 },
152 {
153     featureType: 'road.highway',
154     elementType: 'labels.text.fill',
155     stylers: [{color: '#616161'}]
156 },
157 {
158     featureType: 'road.local',
159     elementType: 'labels.text.fill',
160     stylers: [{color: '#9e9e9e'}]
161 },
162 {
163     featureType: 'transit.line',
164     elementType: 'geometry',
165     stylers: [{color: '#e5e5e5'}]
166 },
167 {
168     featureType: 'transit.station',
169     elementType: 'geometry',
170     stylers: [{color: '#eeeeee'}]
171 },
172 {
173     featureType: 'water',
174     elementType: 'geometry',
175     stylers: [{color: '#c9c9c9'}]
176 },
177 {
178     featureType: 'water',
179     elementType: 'labels.text.fill',
180     stylers: [{color: '#9e9e9e'}]
181 }
182 ],
183
184 night: [
185     {elementType: 'geometry', stylers: [{color: '#242f3e'}]},
186     {elementType: 'labels.text.stroke', stylers: [{color: '#242f3e'}]},
187     {elementType: 'labels.text.fill', stylers: [{color: '#746855'}]},
188     {
189         featureType: 'administrative.locality',
190         elementType: 'labels.text.fill',
191         stylers: [{color: '#d59563'}]
192     },
193     {
194         featureType: 'poi',
195         elementType: 'labels.text.fill',
196         stylers: [{color: '#d59563'}]
197     },
198     {
199         featureType: 'poi.park',
200         elementType: 'geometry',
201         stylers: [{color: '#263c3f'}]

```

```

202 },
203 {
204     featureType: 'poi.park',
205     elementType: 'labels.text.fill',
206     stylers: [{color: '#6b9a76'}]
207 },
208 {
209     featureType: 'road',
210     elementType: 'geometry',
211     stylers: [{color: '#38414e'}]
212 },
213 {
214     featureType: 'road',
215     elementType: 'geometry.stroke',
216     stylers: [{color: '#212a37'}]
217 },
218 {
219     featureType: 'road',
220     elementType: 'labels.text.fill',
221     stylers: [{color: '#9ca5b3'}]
222 },
223 {
224     featureType: 'road.highway',
225     elementType: 'geometry',
226     stylers: [{color: '#746855'}]
227 },
228 {
229     featureType: 'road.highway',
230     elementType: 'geometry.stroke',
231     stylers: [{color: '#1f2835'}]
232 },
233 {
234     featureType: 'road.highway',
235     elementType: 'labels.text.fill',
236     stylers: [{color: '#f3d19c'}]
237 },
238 {
239     featureType: 'transit',
240     elementType: 'geometry',
241     stylers: [{color: '#2f3948'}]
242 },
243 {
244     featureType: 'transit.station',
245     elementType: 'labels.text.fill',
246     stylers: [{color: '#d59563'}]
247 },
248 {
249     featureType: 'water',
250     elementType: 'geometry',
251     stylers: [{color: '#17263c'}]
252 },
253 {
254     featureType: 'water',
255     elementType: 'labels.text.fill',

```

```

256     stylers: [{color: '#515c6d'}]
257 },
258 {
259     featureType: 'water',
260     elementType: 'labels.text.stroke',
261     stylers: [{color: '#17263c'}]
262 }
263 ],
264
265 retro: [
266     {elementType: 'geometry', stylers: [{color: '#ebe3cd'}]},
267     {elementType: 'labels.text.fill', stylers: [{color: '#523735'}]},
268     {elementType: 'labels.text.stroke', stylers: [{color: '#f5f1e6'}]},
269     {
270         featureType: 'administrative',
271         elementType: 'geometry.stroke',
272         stylers: [{color: '#c9b2a6'}]
273     },
274     {
275         featureType: 'administrative.land_parcel',
276         elementType: 'geometry.stroke',
277         stylers: [{color: '#dcd2be'}]
278     },
279     {
280         featureType: 'administrative.land_parcel',
281         elementType: 'labels.text.fill',
282         stylers: [{color: '#ae9e90'}]
283     },
284     {
285         featureType: 'landscape.natural',
286         elementType: 'geometry',
287         stylers: [{color: '#dfd2ae'}]
288     },
289     {
290         featureType: 'poi',
291         elementType: 'geometry',
292         stylers: [{color: '#dfd2ae'}]
293     },
294     {
295         featureType: 'poi',
296         elementType: 'labels.text.fill',
297         stylers: [{color: '#93817c'}]
298     },
299     {
300         featureType: 'poi.park',
301         elementType: 'geometry.fill',
302         stylers: [{color: '#a5b076'}]
303     },
304     {
305         featureType: 'poi.park',
306         elementType: 'labels.text.fill',
307         stylers: [{color: '#447530'}]
308     },
309     {

```

```

310     featureType: 'road',
311     elementType: 'geometry',
312     stylers: [{color: '#f5f1e6'}]
313 },
314 {
315     featureType: 'road.arterial',
316     elementType: 'geometry',
317     stylers: [{color: '#fdfcf8'}]
318 },
319 {
320     featureType: 'road.highway',
321     elementType: 'geometry',
322     stylers: [{color: '#f8c967'}]
323 },
324 {
325     featureType: 'road.highway',
326     elementType: 'geometry.stroke',
327     stylers: [{color: '#e9bc62'}]
328 },
329 {
330     featureType: 'road.highway.controlled_access',
331     elementType: 'geometry',
332     stylers: [{color: '#e98d58'}]
333 },
334 {
335     featureType: 'road.highway.controlled_access',
336     elementType: 'geometry.stroke',
337     stylers: [{color: '#db8555'}]
338 },
339 {
340     featureType: 'road.local',
341     elementType: 'labels.text.fill',
342     stylers: [{color: '#806b63'}]
343 },
344 {
345     featureType: 'transit.line',
346     elementType: 'geometry',
347     stylers: [{color: '#dfd2ae'}]
348 },
349 {
350     featureType: 'transit.line',
351     elementType: 'labels.text.fill',
352     stylers: [{color: '#8f7d77'}]
353 },
354 {
355     featureType: 'transit.line',
356     elementType: 'labels.text.stroke',
357     stylers: [{color: '#ebe3cd'}]
358 },
359 {
360     featureType: 'transit.station',
361     elementType: 'geometry',
362     stylers: [{color: '#dfd2ae'}]
363 },

```

```

364   {
365     featureType: 'water',
366     elementType: 'geometry.fill',
367     stylers: [{color: '#b9d3c2'}]
368   },
369   {
370     featureType: 'water',
371     elementType: 'labels.text.fill',
372     stylers: [{color: '#92998d'}]
373   }
374 ],
375
376 hiding: [
377   {
378     featureType: 'poi.business',
379     stylers: [{visibility: 'off'}]
380   },
381   {
382     featureType: 'transit',
383     elementType: 'labels.icon',
384     stylers: [{visibility: 'off'}]
385   }
386 ]
387 };

```

This work by Karl Benedict is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.