



VAST RANK
college rankings by the people

Using AJAX APIs to Navigate User-Generated Content

Who am I?

- ▶ Software Developer & Independent Consultant – Proactive Logic LLC since 2005
- ▶ Worked on many online sites up until and through the “bubble”
- ▶ Worked at barnesandnoble.com (the fourth largest online retailer at the time) – learned a ton about large scale web apps there



Introduction to Vast Rank

- ▶ Vast Rank is a College Ranking & Review website focused on **user reviews and ratings**
- ▶ 40,000 uniques/month looking for college reviews – and growing
- ▶ Side project of mine on 1/hr a day of programming
- ▶ **Google APIs helped create really useful tools**

"Students at Clemson are happy "



Clemson University (Clemson, South Carolina)



Kim Rank

6 days ago

1 Person found this Rating/Review Interesting

Review Notes:

Students at Clemson are drawn to the university by its friendly atmosphere, its school spirit, and, of course, its warm weather. Although lower level classes routinely enroll 100+ students, more advanced classes tend to have fewer than 30, leading to increased contact between professors and students. Out of state students may initially feel somewhat strange since many of Clemson's students are from South Carolina and have attended high school together, but it's easy to get involved, and students are generally very welcoming. Northern students who attend Clemson should rest assured that culture shock isn't much of an issue: there are many students from Northern states who attend Clemson and who enjoy the relatively laid back lifestyle and excellent balance between academics and athletics. Dorms are reputed to be well-kept, but a very high percentage of students eventually choose to move off campus. Overall, however, Clemson is striking for the number of students who are genuinely happy to be there.

Ratings:

★★★★★★★★★★ Social Life

★★★★★★☆☆☆☆ Academics

★★★★★★★★★★ Sports

★★★★★★★★★★ Greek Life

★★★★★★☆☆☆☆ Food

What are we going to look at?

- ▶ Creative ways to use the Google AJAX APIS
- ▶ End to End code walkthrough of the Ranking Map
- ▶ Client side - Google Maps API, Google Marker Manager, Client Location API, Languages API & jQuery
- ▶ Server side – design to support AJAX lookups
- ▶ Personalization – utilizing Client Location to tailor the users-experience

Ranking Map - Live Demo



The Ranking Map shows rankings based on your view.

First, show me the top ranked schools in view for
Academics 10 Results

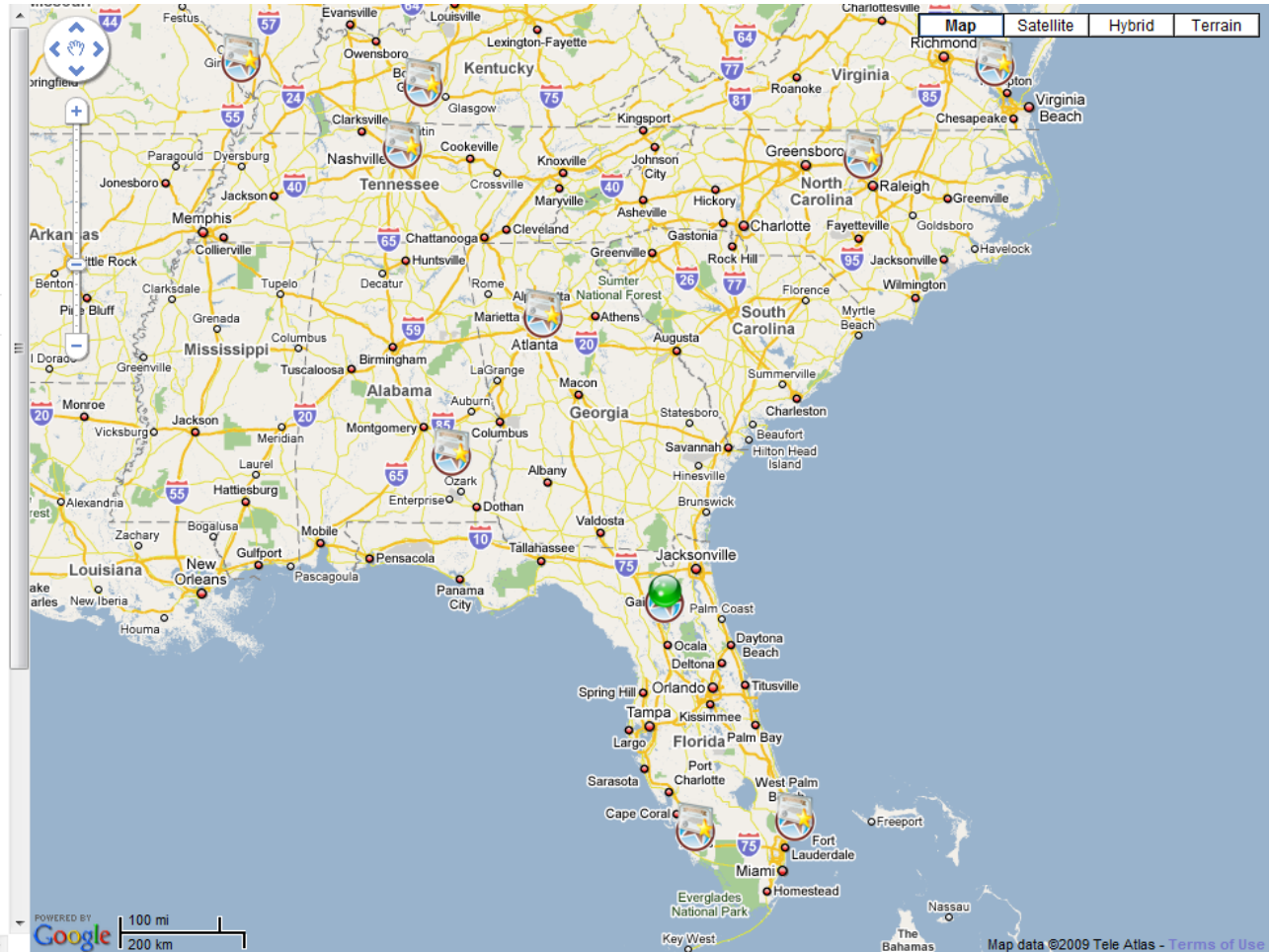
Center Map
(Enter address or location, just like google maps)

[Link to current view](#)

Rankings for what's in view

Top 10 in view for Academics

- #1 University of Florida**
★★★★★★★★★
#10 in USA
- #2 College of William & Mary**
★★★★★★★★★
#16 in USA
- #3 Vanderbilt University**
★★★★★★★★★
#19 in USA
- #4 Duke University**
★★★★★★★★★
#42 in USA
- #5 Georgia Institute of Technology**
★★★★★★★★★
#47 in USA
- #6 Florida Atlantic University**
★★★★★★★★★
#48 in USA
- #7 Western Kentucky University**



My Original Vision

- ▶ Originally was creating PartyColleges.com
- ▶ Evolved into a more general college rating site
- ▶ Each college to have a MySpace like profile, with comments and ratings
- ▶ Leaderboard of “top-ranked” colleges based on user-ratings



Jon



I think I can, I think I can, I know I can, I know I can

Male
31 years old
Howell, NEW JERSEY
United States

Last Login:
5/8/2009

View My: [Pics](#) | [Videos](#)

Contacting Jon

- | | |
|--------------------------------|-----------------------------------|
| Send Message | Forward to Friend |
| Add to Friends | Add to Favorites |
| IM / Call | Block User |
| Add to Group | Rank User |

Jon's Interests

General	NICOLE, recording, writing, singing, making history
Music	deftones, nas, zoltar subterranean (best trance and progressive house dj out there), velvet revolver, pink floyd, mudvayne (if you see me in the gym, this is what i'm listening to a notch below making my ears bleed) 3

Jon is in your extended network
[view more](#)

Jon's Latest Blog Entry [[Subscribe to this Blog](#)]

[My Girl](#) ([view more](#))

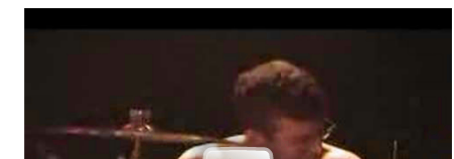
[taking it easy on a friday night](#) ([view more](#))

[Amsterdam](#) ([view more](#))

[\[View All Blog Entries\]](#)

Jon's Blurbs


About me:
Check out my new blog at <http://www.jonkragh.com>. Also check out www.vastrank.com - College Ranking by the People a new website I created.



The College Profile

- ▶ This is where I started using the Google APIs
- ▶ The Map is where you would see a profile picture, or the video spot on YouTube, etc.

Jon



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Jon is in your extended network
[view more](#)

Jon's Latest Blog Entry [[Subscribe to this Blog](#)]

[My Girl](#) (view more)


taking it easy on a friday night (view more)

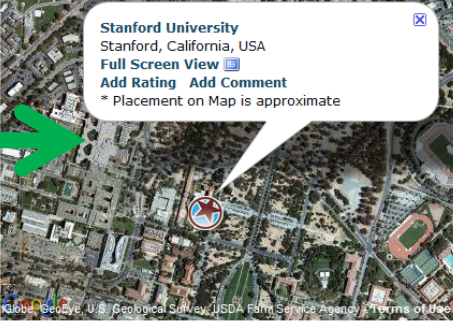
[Amsterdam](#) (view more)

[[View All Blog Entries](#)]

Jon's Blurbs

About me:
Check out my new blog at <http://www.jonkragh.com>. Also check out www.vastrank.com - College Ranking by the People a new website I created.





Stanford University
Stanford, California, USA
[Full Screen View](#)
[Add Rating](#) [Add Comment](#)
* Placement on Map is approximate


[Review/Rate this College](#) [Add Comment](#)

From the Administrators

Administrators have not added their information.
If you are an administrator, [learn how to add your content.](#)

Latest Ratings / Reviews and Comments

"My Review of Stanford University"



Tom Rank
14 days ago
1 Person found this Rating/Review Interesting

Review Notes:
Large universities are often overshadowed by bureaucratic reputations. Stories of students having to jump through hoops at registration or with financial aid abound, and students seem to complain frequently about problems with how the university is run. Stanford is set apart from these

Profile Views: 275

[Review/Rate this College](#)

[Share on Facebook](#)
[Share on MySpace!](#)

Vast Rank URL:
<http://www.vastrank.com/US/C/>
www.stanford.edu

Rankings & Ratings

Academics (5 Ratings)
9.6 ★★★★★
#6 in USA

Social Life (2 Ratings)
9.0 ★★★★★
#55 in USA

Professors (5 Ratings)
10 ★★★★★
#1 in USA

Girl Looks (2 Ratings)
7.0 ★★★★★
#94 in USA


Guy Looks (2 Ratings)
7.0 ★★★★★
#64 in USA

Housing (2 Ratings)
8.0 ★★★★★
#53 in USA


Food (2 Ratings)
9.0 ★★★★★
#17 in USA

Sports (2 Ratings)
★★★★★

Interesting for you

 **University of Notre Dame** (Notre Dame, Indiana)
Tom Rank 8 days ago

A Well-Rounded Education Notre Dame has more than just a great football team—they also offer top notch academics. The university is consistently ranked highly in various national ranking systems. The university as a whole ranks highly, and a number of graduate programs have received international more

 **Columbia University in the City of New York** (New York, New York)
Jenny Rank 12 days ago

~9 miles from you

When prospective college students think of Ivy League schools, the first thing that usually comes to mind is academic excellence. Students are quick to imagine the classrooms, the libraries, the images of other students sitting at desks, books piled high, completely lost in

~10,000 College Profiles

- ▶ Cache of 10,000 college entities in memory on the server
- ▶ Originally in memory to support fast lookup for SEO URLs
<http://www.vastrank.com/US/CA/Stanford/StanfordUniversity/>
- ▶ Rankings were on the object as well (important for the ranking map)

Rutgers, the State University of New Jersey
New Brunswick, New Jersey, USA
Full Screen View
Add Rating Add Comment
* Placement on Map is approximate

Profile Views: 963
Review/Rate this College
Share on Facebook
Share on MySpace!
Vast Rank URL:
<http://www.vastrank.com/US/NJ>
www.rutgers.edu

Rankings & Ratings

- Academics** (23 Ratings)
7.7 ★★★★★
#124 in USA
- Social Life** (23 Ratings)
8.0 ★★★★★
#22 in USA
- Professors** (20 Ratings)
6.5 ★★★★★
#252 in USA
- Girl Looks** (14 Ratings)
6.8 ★★★★★
#5 in USA
- Guy Looks** (11 Ratings)
5.8 ★★★★★
#9 in USA
- Housing** (20 Ratings)
6.2 ★★★★★
#27 in USA
- Food** (18 Ratings)
6.9 ★★★★★
#3 in USA
- Sports** (22 Ratings)
7.0 ★★★★★
#29 in USA
- Bars** (17 Ratings)
8.2 ★★★★★
#1 in USA
- Greek Life** (15 Ratings)
7.0 ★★★★★
#8 in USA
- On Weekends** (13 Ratings)
Most people stay on campus (92% of votes)
- Party Night** (14 Ratings)
Thursday (78% of votes)

From the Administrators
Administrators have not added their information.
If you are an administrator, [learn how to add your content.](#)

Latest Ratings / Reviews and Comments
"Unlimited opportunities"

jamierank
9 days ago
1 Person found this Rating/Review Interesting

Review Notes:
One of the oldest public universities in the country (246 years and counting), Rutgers educates 50,000 students annually and is home to a dazzling array of academic programs and research institutes. With more than 4,000 courses, undergraduates can major in virtually any academic area imaginable. The school also offer students the opportunity earn certificates in more than 100 areas, and to choose specializations within their majors. Student majors are divided into nine categories, including Nursing, Pharmacy, Engineering, Performing Arts and Journalism. RU also offers strong pre-professional programs (pre-med, pre-law, pre-vet) and additionally gives students the option of "fast-tracking" their studies and earning both undergraduate and professional degrees in law, medicine, and business, public administration, and public policy. 18 departments are nationally ranked, and in 2006, the university overhauled its undergraduate program to

Interesting for you

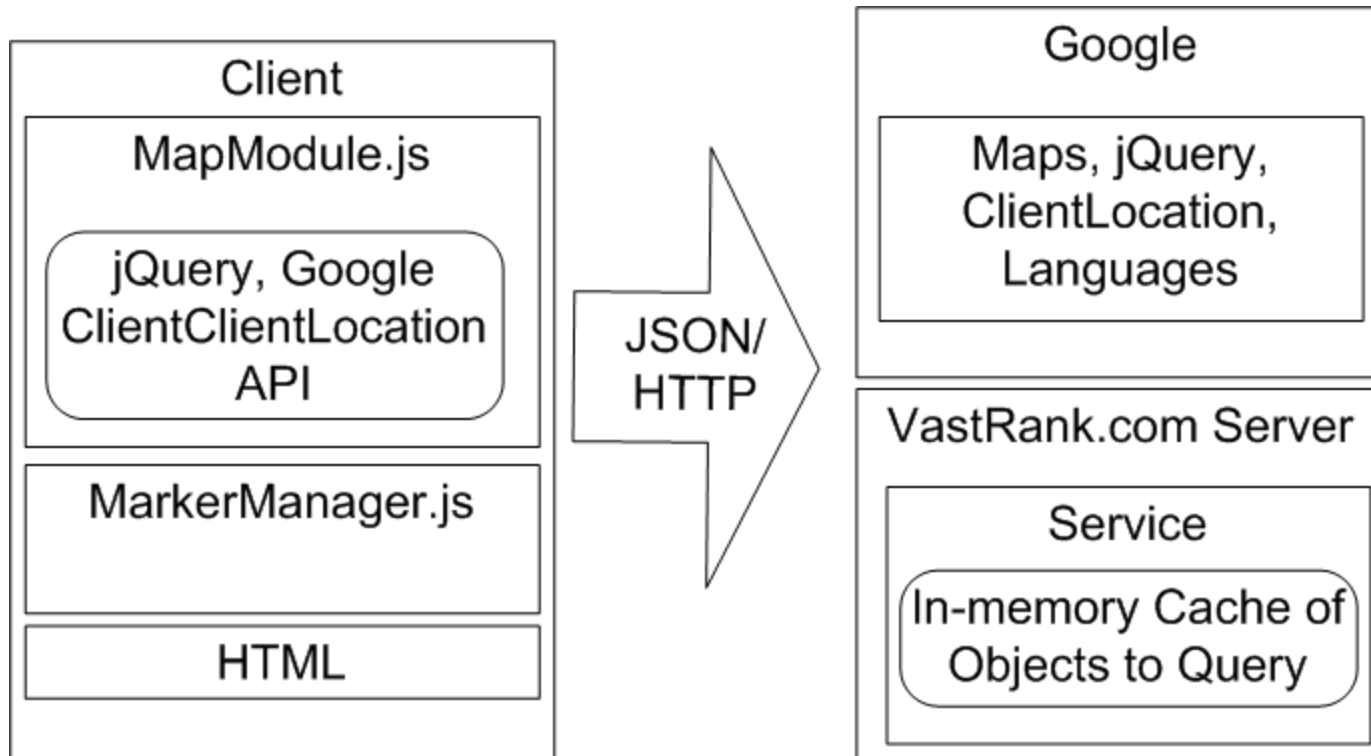
- Butler Business School** (Bridgeport, Connecticut)
veronica (Guest)
2 months ago
~52 miles from you
This school is a complete rip-off dont go here! The teachers come and go, you dont learn much of anything that actually goes on in the office, This was the biggest mistake i made, i would recommend porter and chester! [more](#)
- Ocean County College** (Toms River, New Jersey)
kmc (Guest)
7 months ago
~59 miles from you
classes transfer easily, class size fairly small, profs care about you, counseling and reg depts easy to deal w, overall good experience [more](#)
- Hudson Valley School of Massage Therapy** (Highland, New York)
tara (Guest)
1 month ago
~61 miles from you
teachers were great if they could keep them a semester.. So unprofessional. The women that owns the school is only worried about money and would fail people just to get

My “Ah-Ha” Moment – the Ranking Map

- ▶ Wouldn't it be cool to use the Google Map to query my ranked colleges?
- ▶ I had most of the pieces in place: Some Maps code & Cached Data on the Server

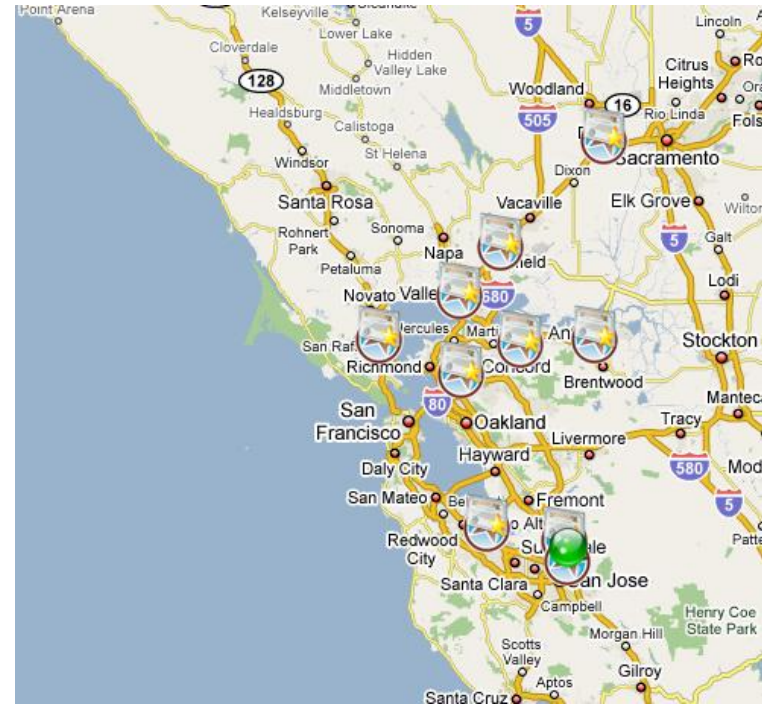


VastRank.com Client Architecture



Map First Steps - Setting Map Center

- ▶ For college profiles set an explicit map center
- ▶ Ranking Map center on the clients physical location (google.loader.ClientLocation.latitude)



Register for key events to load Markers and Detail Nodes

- ▶ When the map loads - add markers and the details for the markers on the left
- ▶ When key map events occur - reload the markers (movestart, moveend, filter changed)

```
GEvent.addListener(gMap, "movestart", function() {  
    handleMapMoveStart(); });
```

```
GEvent.addListener(gMap, "moveend", function() {  
    handleMapMoveEnd(); });
```

Loading Markers – Querying the Server



The Ranking Map shows rankings based on your view.

First, show me the top ranked schools in view for
Academics 10 Results

Center Map
(Enter address or location, just like google maps)

Link to current view

Rankings for

Academics

10 Results

Center Map

(Enter address or location, just like google maps)

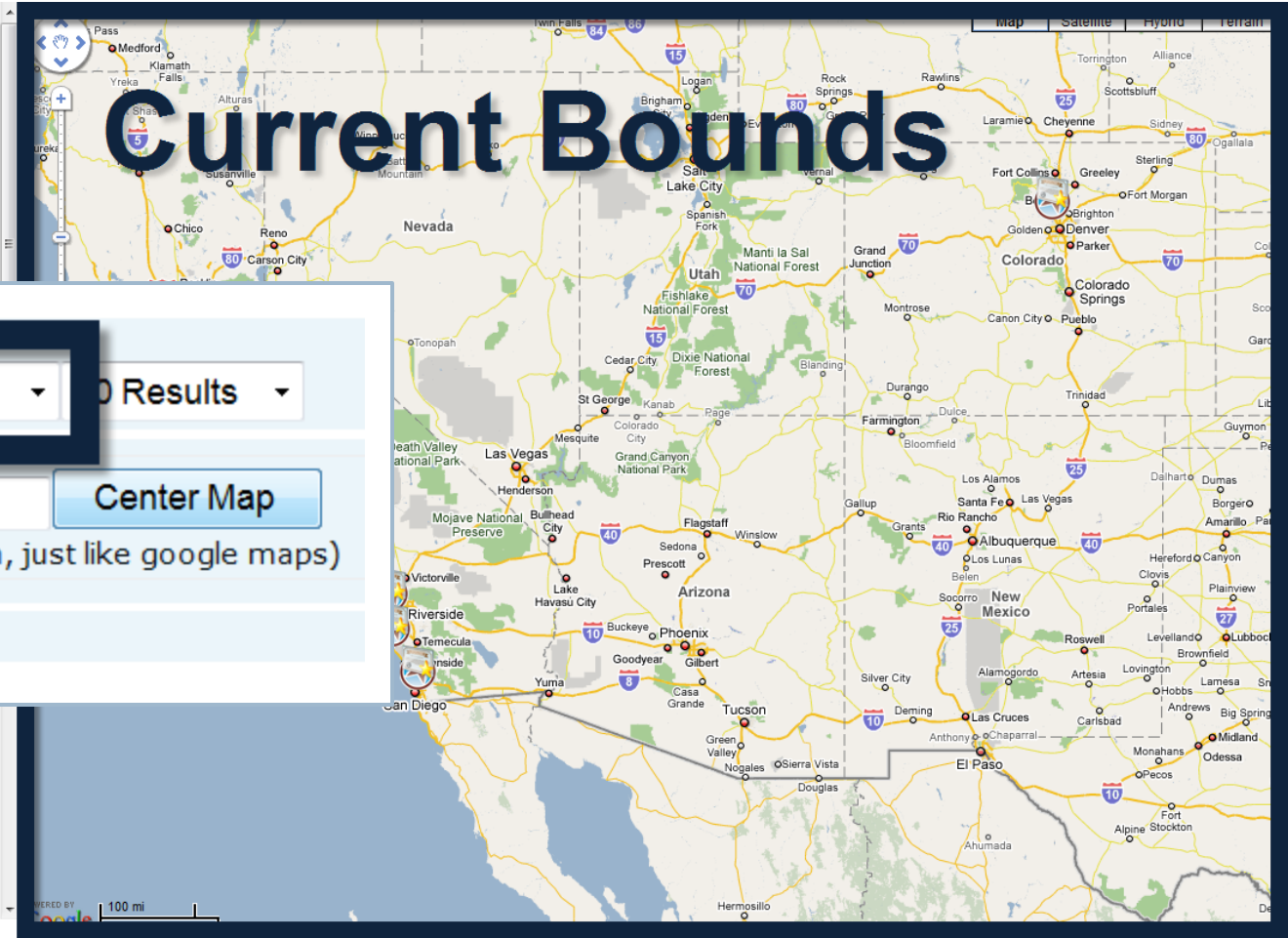
Link to current view

research university located in Los Angeles. There are over 16,000 undergrads"

#3 University of California, Berkeley
★★★★★★★★

#17 in USA

"The University of California —Berkeley has earned for itself one of the finest



Server Side - Determining what is in view on the user's map

- ▶ Client passes `gMap.getBounds()` – returns `GLatLngBounds`
- ▶ `GLatLngBounds.getSouthWest()` – returns `GLatLng`
- ▶ `GLatLngBounds.getNorthEast()` – returns `GLatLng`



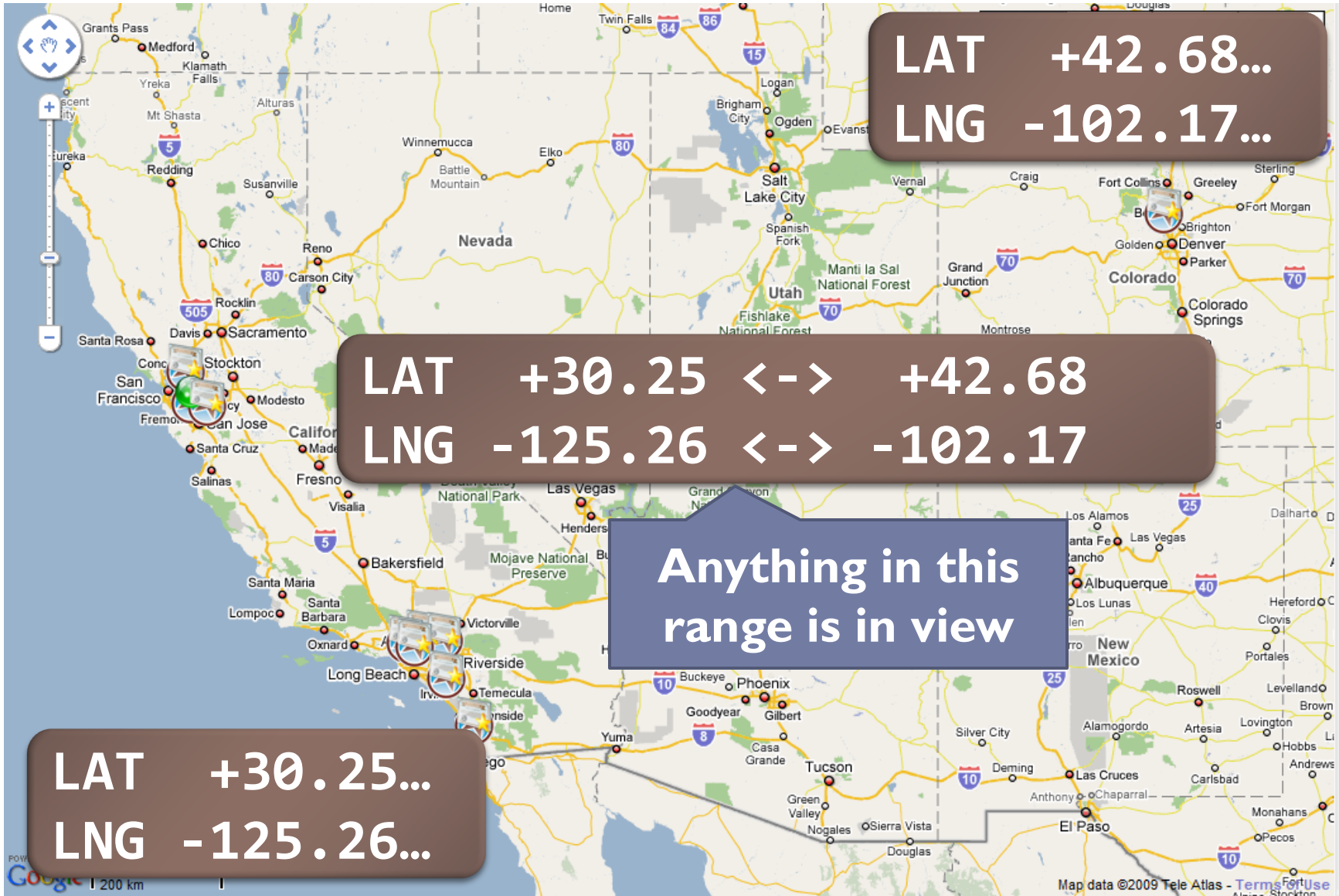
Review of Lat/Lng signs



Scenario 1 – User’s View - No Overlap

- ▶ Easiest scenario – bounds all have the same signs

User’s View	+ LNG + LAT
- LNG - LAT	+ LNG - LAT



LAT +42.68...
LNG -102.17...

LAT +30.25 <-> +42.68
LNG -125.26 <-> -102.17

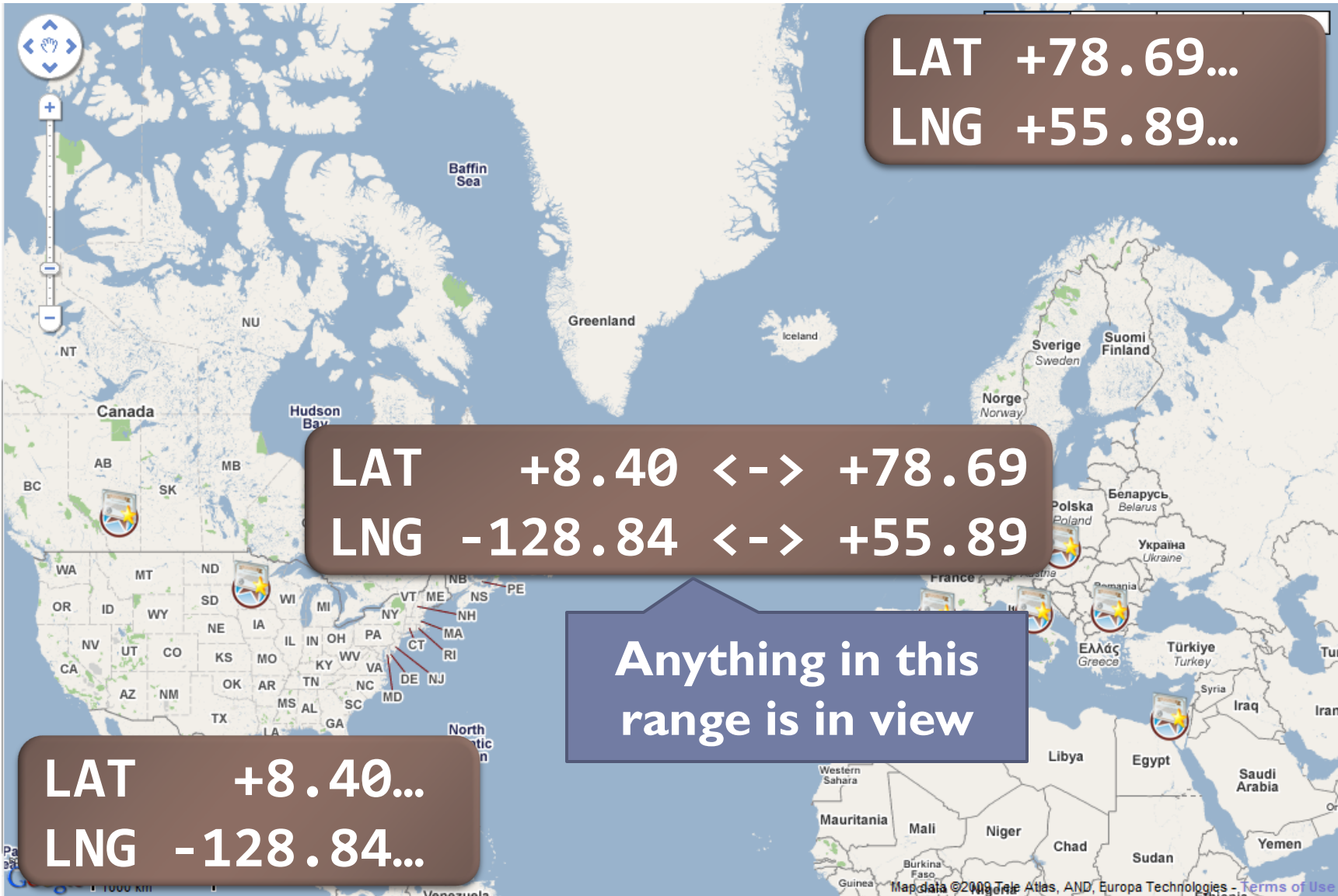
Anything in this range is in view

LAT +30.25...
LNG -125.26...

Scenario 2 – User’s View – Overlaps the Prime Meridian

- ▶ Longitude points from `getBounds()` are negative and positive

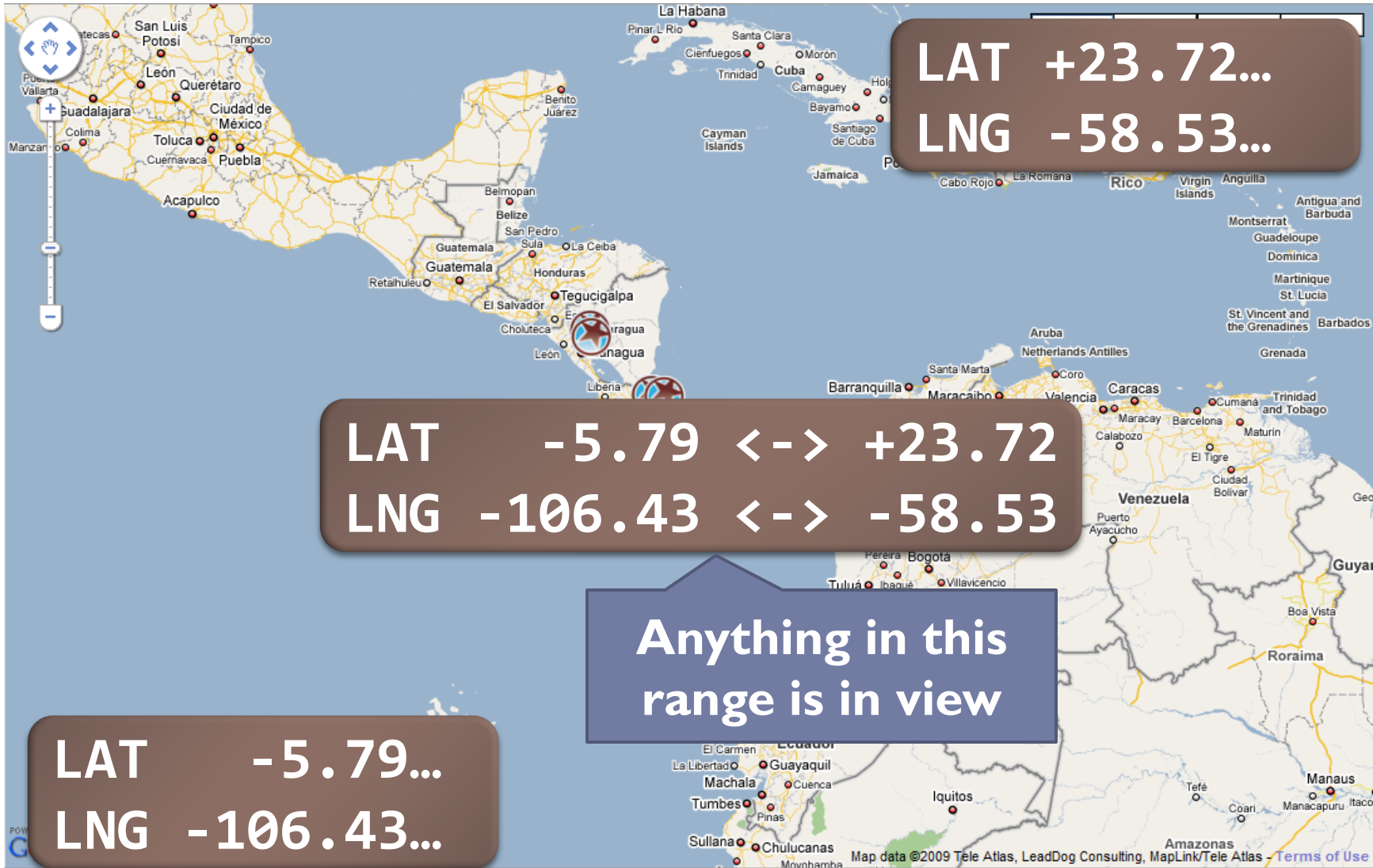
-	L	User's View	LNG
+	L		LAT
-	LNG	+	LNG
-	LAT	-	LAT



Scenario 3 – User’s View – Overlaps the Equator

- ▶ Latitude goes from positive to negative

- LNG + LAT	+ LNG + LAT
User's View	
- LNG - LAT	+ LNG - LAT



LAT +23.72...
LNG -58.53...

LAT -5.79 <-> +23.72
LNG -106.43 <-> -58.53

Anything in this range is in view

LAT -5.79...
LNG -106.43...

Variations that worked so far

Users View	+ LNG + LAT
- LNG - LAT	+ LNG - LAT

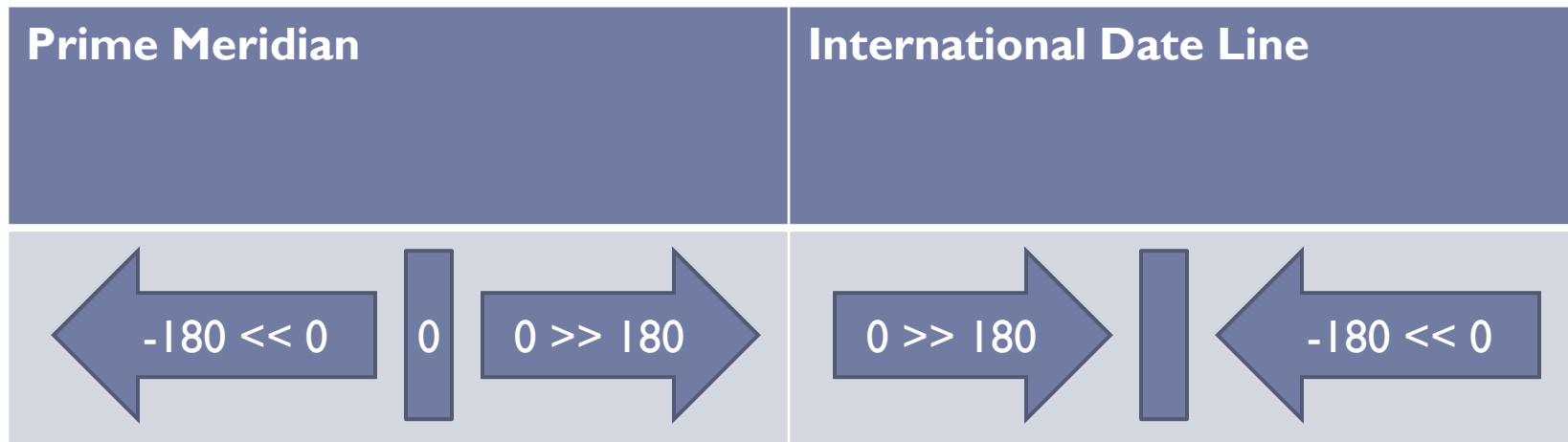
- LNG + LAT	Users View	LNG LAT
- LNG - LAT	+ LNG - LAT	

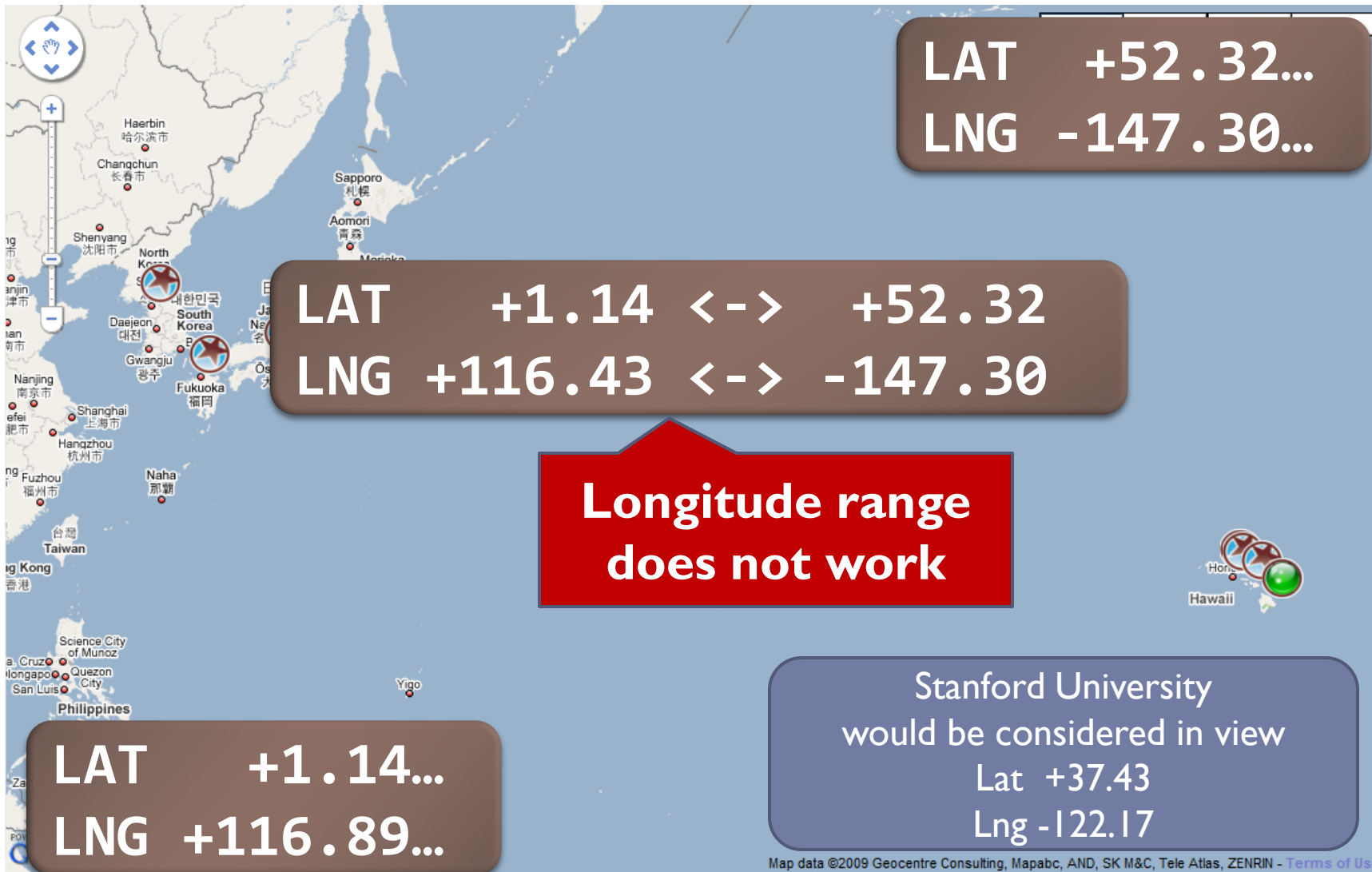
- LNG + LAT	Users View	+ LNG + LAT
- LNG - LAT	+ LNG - LAT	

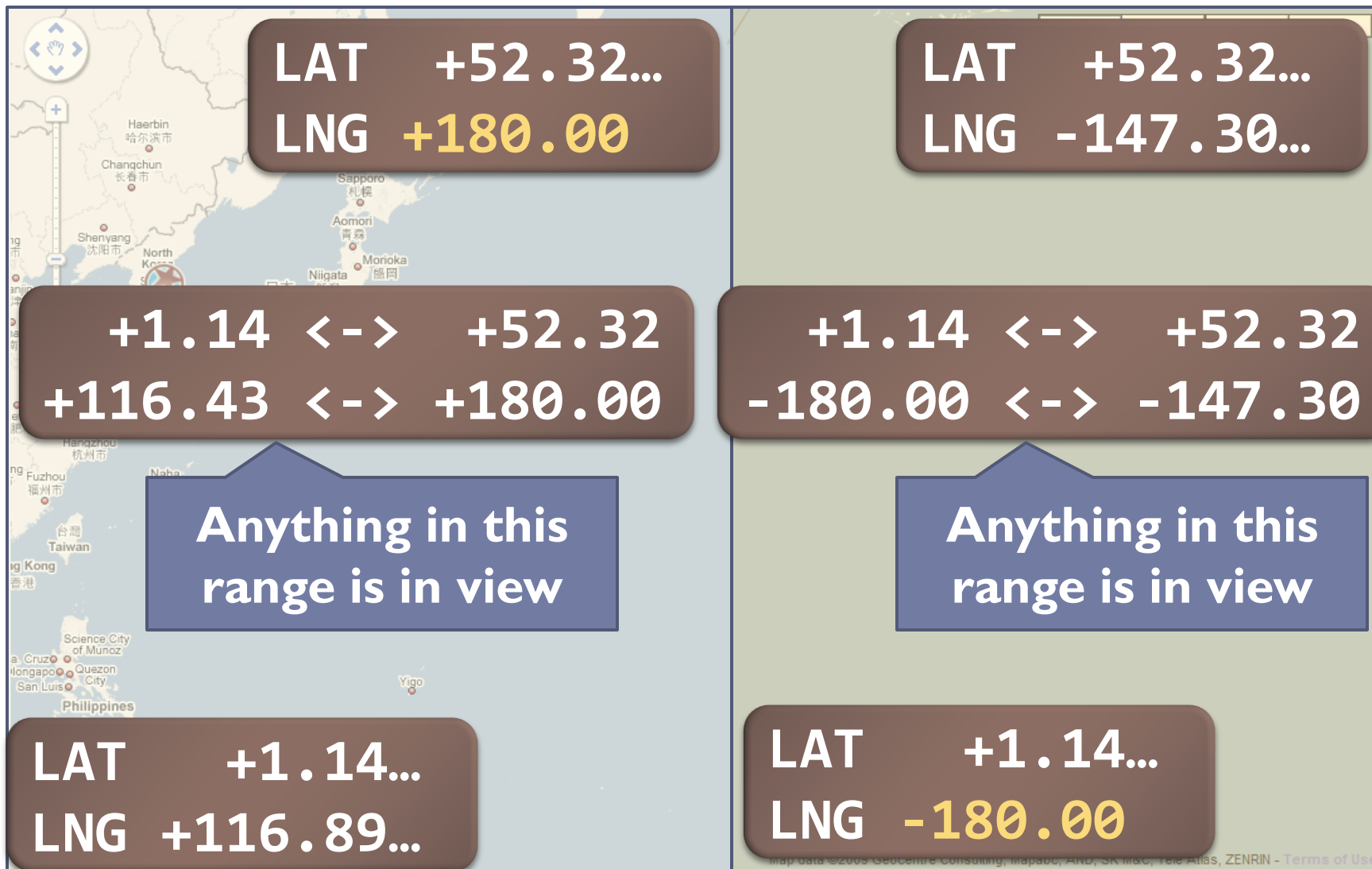
The “Gotcha” – Crossing the International Date Line

- LNG	+ Users View	LNG
+ LAT		LAT
- LNG	+ LNG	- LNG
- LAT	- LAT	- LAT

- ▶ Abrupt jump from +180 to -180 at the International Date Line – the longitude range no longer works







The Server Side is FAST

- ▶ Big surprise on performance

ONLY ~12 MS
to run these queries / filters on the
server

Client - Add a detail node and a marker for each returned college

```
// results are in rating order
for (var i = 0; i < colleges.length; i++) {
  var detail = createDetailNodeFromCollege(colleges[i]);
  var marker = createMarkerFromCollege(colleges[i]);
  markerBatch.push(marker);
  if (i === 0) {
    mapMarkerToOpen = marker;
    detailToSelect = detail;
  }
  if (colleges[i].CurrentRankingNumber > 0) {
    rankedCount++;
    rankedCont.append(detail);
  }
  else {
    nonRankedCount++;
    nonRankedCont.append(detail);
  }
}
// reverse order of markers so top rated are on top
markerBatch.reverse();
markerMgr.clearMarkers();
markerMgr.addMarkers(markerBatch, 0, 17);
markerMgr.refresh();
```



The Ranking Map shows rankings based on your view.

First, show me the top ranked schools in view for

Academics 10 Results

Center Map
(Enter address or location, just like google maps)

[Link to current view](#)

Rankings for what's in view

Top 10 in view for Academics

- #1 **Stanford University** ★★★★★★
#6 in USA
"Stanford University is a residential teaching and research university. About 6,200 undergraduates and about 4,350 graduate students live on campus, a"
- #2 **University of Southern California** ★★★★★★
#8 in USA
"Big School, Big Fun University of Southern California (USC) is a private research university located



What if there are no ranked colleges in view?

► Show colleges closest to center



The Ranking Map shows rankings based on your view.

First, show me the top ranked schools in view for
Academics 10 Results

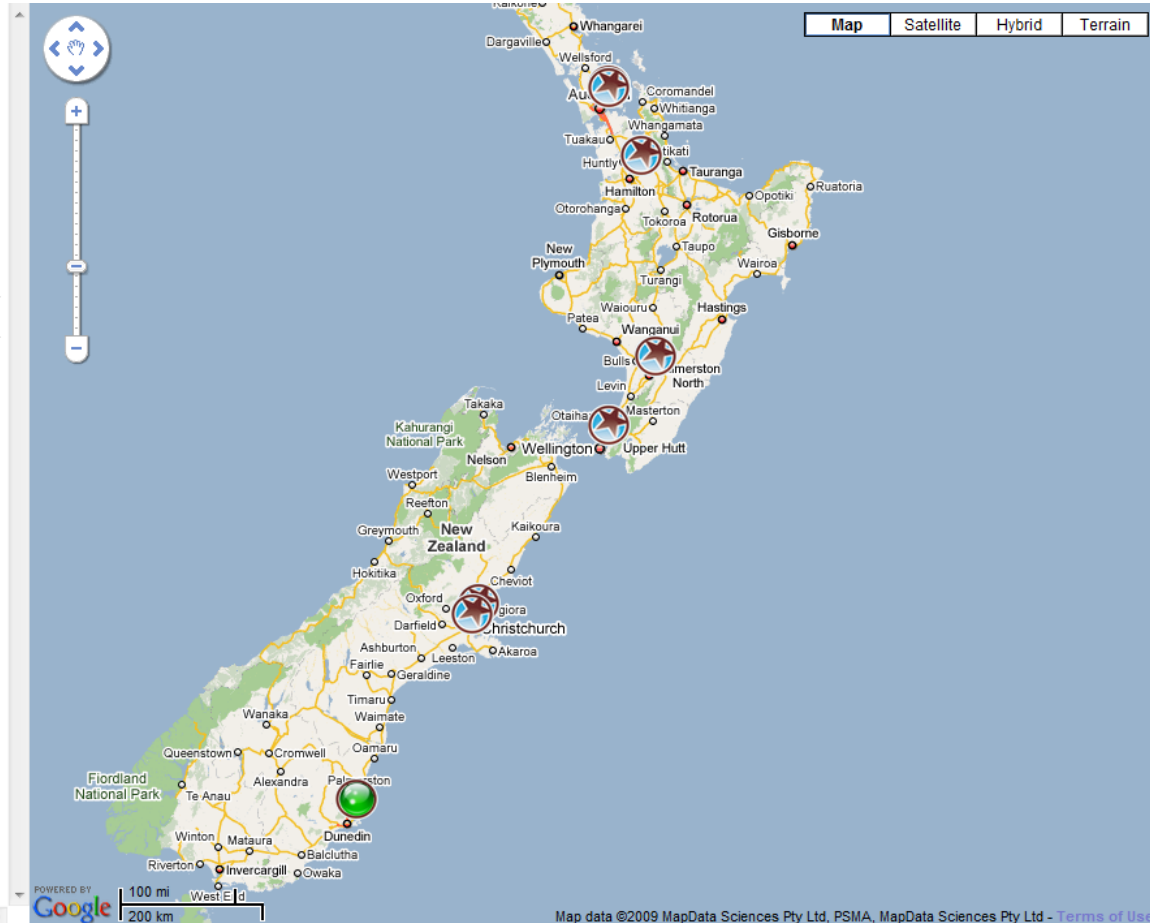
new zealand Center Map
(Enter address or location, just like google maps)

[Link to current view](#)

Rankings for what's in view

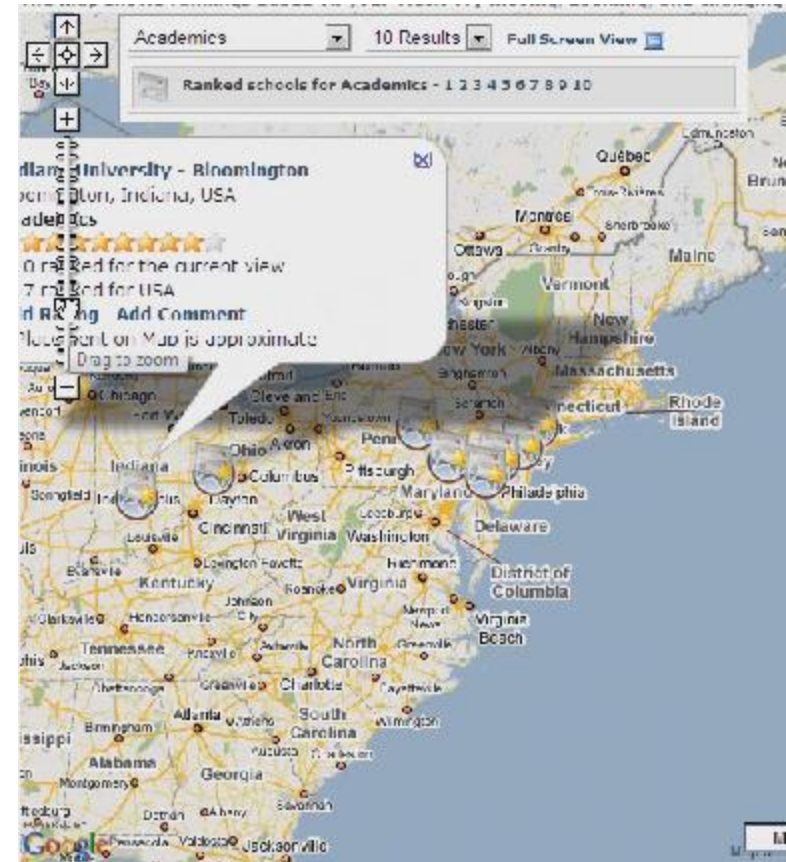
9 Non-Ranked (closest to center)

- University of Otago
- Lincoln University
- University of Canterbury
- Victoria University of Wellington
- Massey University
- University of Waikato
- New Zealand College of Chiropractic
- University of Auckland
- Auckland University of Technology



My Marker InfoWindow Dilemma

- ▶ Original map used the standard GInfoWindow
- ▶ Issue was that moving a map to make the InfoWindow in view would change the rankings



New Design for Markers

- ▶ Show detail nodes on left
- ▶ Keep in sync visually with Map Markers
- ▶ jQuery made this design a lot easier (mouseover on divs, etc)

VAST RANK
college rankings by the people

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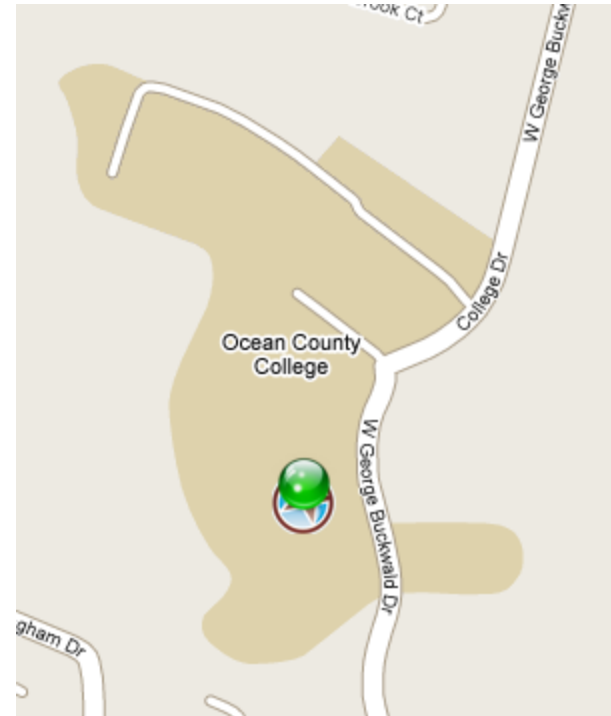
Top 10 in view for Academics

#1	Rice University	★★★★★★★★★	#4 in USA
#2	Stanford University	★★★★★★★★★	#6 in USA
#3	University of Southern California	★★★★★★★★★	#8 in USA
#4	University of California, Berkeley	★★★★★★★★★	#15 in USA
#5	Carleton College	★★★★★★★★★	#17 in USA

POWERED BY Google | 200 mi | 200 km

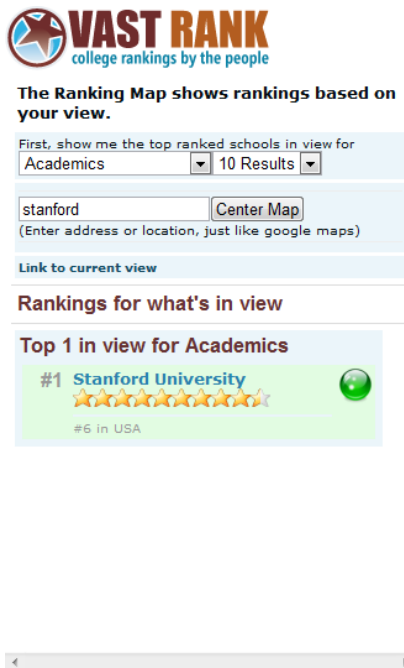
Geocoding – HTTP Geocoder

- ▶ I used the Google HTTP Geocoder to geocode my colleges in advance
- ▶ Many Colleges were geocoded with an accuracy of “9” Premise (building name, property name, shopping center, etc.) level accuracy



Geocoding – Client Geocoder

- ▶ Use the client geocoder for allowing the user to center the map anywhere they want
- ▶ The client geocoder is great – Geocode addresses and even terms such as “Stanford”, “Penn State”, etc.



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Academics 10 Results

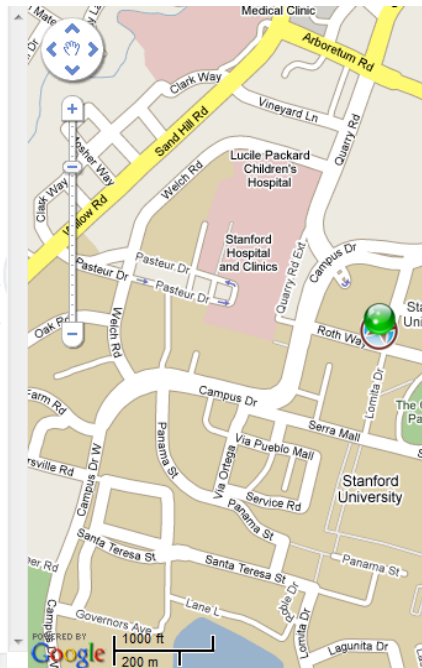
stanford Center Map
(Enter address or location, just like google maps)

Link to current view

Rankings for what's in view

Top 1 in view for Academics

#1 Stanford University
★★★★★
#6 in USA



```
function centerMapOnAddress(address) { 42
    var geocoder = new GClientGeocoder();
    geocoder.getLatLng(
        address,
        function(point) {
            if (!point) {
                alert(address + " not found");
            } else {
                mapModuleMap.setCenter(point);
            }
        }
    );
}
```

Personalization

- ▶ How do I show visitors colleges they may be interested in programmatically?

Hey you should check out Brown University!

Kim



Personalization – Data That I Have

▶ Previous visitor Jaime

Jamie looked at these colleges



Rutgers University



Brown University



Florida State University

Personalization – Data That I Have

- ▶ New user Kim is checking out Rutgers

Kim



Rutgers University

Possible Suggestions

Kim



Jamie



Client Location – Refine suggestions based on user location

- ▶ Kim lives in Northern NJ and is close to Rhode Island
- ▶ Use of `google.loader.ClientLocation.latitude`, `google.loader.ClientLocation.longitude`

Kim



Suggest Brown University, based on related colleges close to Kim

Brown University

Omit Florida State based on Distance

Florida State University

Personalization – Final Results – better targeting using geographic information

Rutgers, the State University of New Jersey
New Brunswick, New Jersey, USA
Full Screen View
Add Rating Add Comment
* Placement on Map is approximate

Profile Views: 1021
Review/Rate this
Share on Facebook!
Share on MySpace!
Vast Rank URL:
<http://www.vastrank.com/US/N...>

Ads by Google
Interesting for you

Brown University
(Providence, Rhode Island)
25 days ago
Jenny Rank
~156 miles from you
Located in Providence, Rhode Island, Brown University is a fantastic place to go to school for a small, college town feel and big time education. For starters, Brown has a lovely campus. Old architecture meets new style on a sprawling, green campus on the hill. Immediately off campus are several more

Brown University
(Providence, Rhode Island)
25 days ago
Jenny Rank
~156 miles from you
Located in Providence, Rhode Island, Brown University is a fantastic place to go to school for a small, college town feel

Languages API – Simplified Translation

- ▶ On the server, detect users language via HTTP Header Accept-Languages
- ▶ If the user's language does not start with “en”, emit Javascript to call the Google Languages API

```
<script type="text/javascript">
function <%=this.ClientID%>_Trans () {
    var text = document.getElementById("<%=this.ClientIDToUse%>").innerHTML;
    google.language.translate(text, "en", "<%=UserLanguage%>",
        function(result) {
            var t = document.getElementById("<%=this.ClientIDToUse%>");
            if (result.translation) {
                t.innerHTML = result.translation;
                google.language.getBranding(t);
            }
        });
}
google.setOnLoadCallback(<%=this.ClientID%>_Trans);
</script>
```


Non-translated Content – Browser Languages [en-us], [en]



Tom Rank

1 month ago

1 Person found this Rating/Review

Interesting

Review Notes:

Large universities are often overshadowed by bureaucratic reputations. Stories of

Large universities are often overshadowed by bureaucratic reputations. Stories of students having to jump through hoops at registration or with financial aid abound, and students seem to complain frequently about problems with how the university is run. Stanford is set apart from these other large institutions. Despite its size and stature, Stanford is actually very well known for how smoothly the

Does just that.

Translated Content - Browser set to German [de]



Tom Rank

1 month ago

1 Person found this Rating/Review

Interesting

Review Notes:

Große Universitäten oft überschattet durch bürokratische

Große Universitäten oft überschattet durch bürokratische Ruf. Geschichten von Studenten, die durch Reifen zu springen bei der Registrierung oder mit finanzieller Unterstützung gibt es, und Studenten scheinen sich zu beklagen häufig über Probleme wie mit der Universität wird. Stanford ist abgesehen von den anderen großen Institutionen. Trotz seiner Größe und Statur, Stanford ist

Forschungs - Universität reibungslos funktioniert und nicht

zwingen Studenten

Reifen-und Stanfo

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Additional AJAX Google APIs

- ▶ Libraries API – I utilized this for jQuery when reworking the MapModule.js code from regular DOM manipulation

Any questions on the code?

If there are no questions, I have a section on building the site on an hour a day



Extras – Building the site on an hour a day

- ▶ To do-lists
- ▶ Coding Mindset
- ▶ Hosting at home

To-do Lists

- ▶ Scrum, GTD, etc – pretty much glorified To-Do lists
- ▶ Recommended – Joel Spolsky’s Painless Software Schedules:
<http://www.jelonsoftware.com/articles/fog0000000245.html>
- ▶ Here is my attempt...

	A	B	C	D	E
1	Must Have	Priority	Effort	Category	Task
2	Yes			Launch	Make Video
3				Launch	Run [pc_GetOtherCollegesPeopleViewed], [vwUserLinkedColleges],[PersonalizedHist], [vr_GetRatings]. vr_Ano
4					create urgent@vastrank.com and sales@vastrank.com
5					minimize map box
6	Yes				Update Country and State Tables based on data from google
7	Yes				International page that lists all countries
8	Yes				State Profile page update to handle administrative area name
9	Yes				Maps update to handle international colleges
10	Yes				update ranking engine to rank by country - consider ranking for an international page as well
11				Launch	Run alter script which has data population for existing schools - in addition create script to move international sc
12					Add tagging
13					Add name translations (NJ->New Jersey) Either via simple database or scrape wikipedia (much harder - and may
14					New home page

Code Hygiene Does Not Matter

- ▶ Often, I find people who do stuff in their free time focus on the wrong things
- ▶ You don't need some great architecture
- ▶ Side projects are a time to experiment
- ▶ Nobody is going to review your code – does the code work? Have you thought it through a bit? Then, move on.

Hosting – My Perspective

- ▶ Traditional hosting too limiting
- ▶ Amazon EC2 is too expensive
- ▶ I chose to build my own computer and host on my cable modem with static IP Service
- ▶ I say throw any old computer in a closet and host there (unless you have paying customers!)



Closing - Developers - We are lucky!

- ▶ Huge opportunities are out there for the ambitious developer
- ▶ All that you need is a compiler and an idea
- ▶ No funding needed