Idea elaboration: Zooming Game

Abstract

The Zooming Game encourages a 2-player collaborative effort to identify geographical locations where certain news articles take place. By narrowing down a location the players receive points according to the level of detail, but only if they both agree on a location. The game is played simultaneously and in each round a news item is presented to both players. They then have to decide what location on the map this article could be relevant to (country, state, city, neighbourhood, etc.). If they agree, they move into the next detailed map. If they disagree, another news item is presented and another round is started. During the game, information about news items is collected and verified.

Motivation

Our goal is to close the gap between news and the geographical location they are most relevant to. Machine learning algorithms and natural language processing can do a bulk of work by analyzing texts for semantics and geographical entities. However, there are tasks that are easier and more accurately done by humans. So, when it comes to allocating news items to relevant neighbourhoods, human import is highly valuable. Thus, we want to create a mechanism in form of a game to motivate people to provide this data. Luis von Ahn has coined the term Games with a Purpsoe (GWAP) where human players are encouraged to provide valuable data while playing and being entertained. We took this as a motivation to create the following game where players gradually narrow down geographical aras with relevance to specific news items.

Introducing the Zooming Game

When a player starts a new game, she is paired with another player preferred from a close-by area (according to IP). A timer is set to 4 minutes and the first article or news item is presented. Along with the news item the most important keywords will be presented as well in order to facilitate the information intake. This could be presented in form of a pre-processed tag-cloud (Fig. 1).

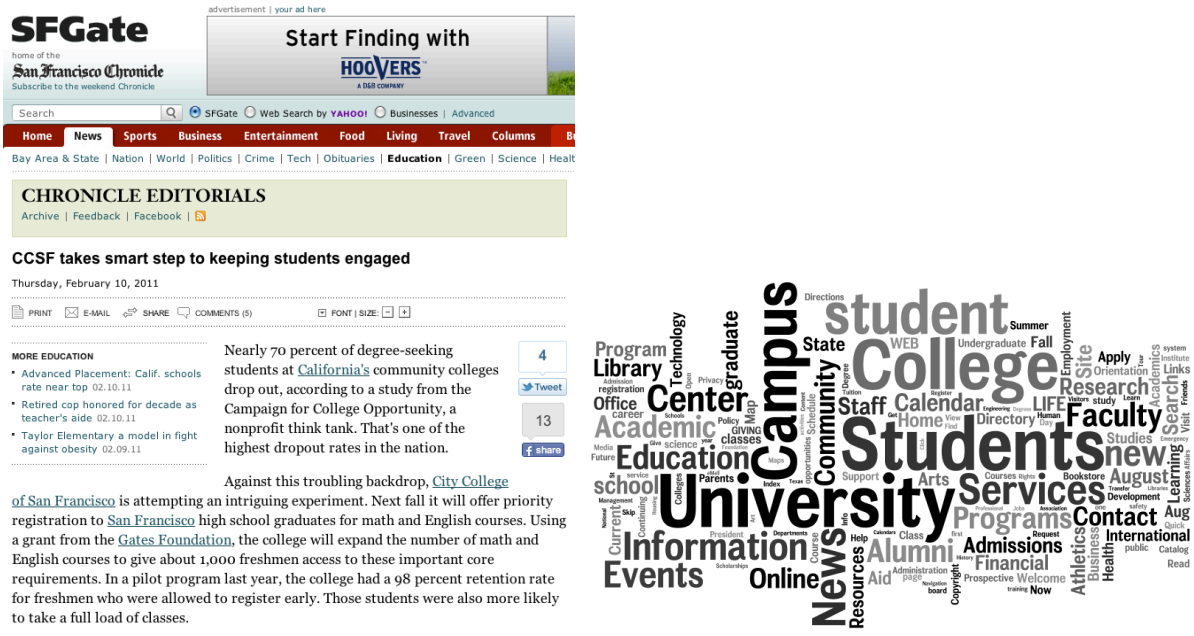

Fig 1.: Presentation of news item: full article and tag-cloud.

Both players are presented with the same news item as well as a map (Fig. 2).

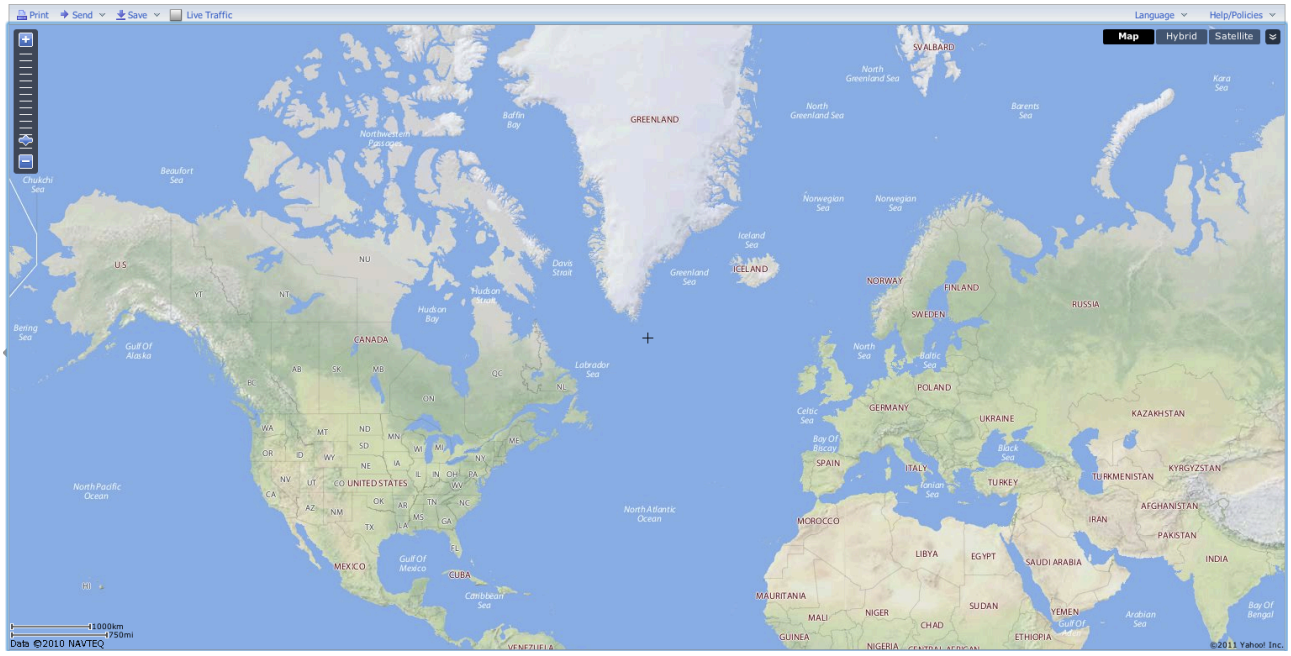

Fig 2.: Interactive map for capturing user input.

There are 6 levels of detailed for the map view:
- 0: continents
- 1: countries
- 2: states
- 3: regions
- 4: cities
- 5: neighbourhoods

On the first level both players have to select a continent where the news item is most relevant to. By clicking on the map, a continent is selected. A double click submits the selection. Only if both palyers have submitted their selection, feedback is provided. If both players agree on one continent, the players receive points and the maps zooms into the selected contintent. Now, the players have to agree on a specific country and so on. The map's level of detail gets more refined the further the players narrow down a location. Also, they receive exponentially more points for more detailled selections.

Up to the city-level shapes to click on are pre-defined. When selecting a neighbourhood, customary shapes can be used to select an area by drawing a circle, rectangle or polygon. The more the polygon input of the players overlap, the more points they get.
Once the players disagree on a location, negative feedback is provided and another news item is presented, so another round of narrowing down a location begins.

After 4 minutes the rally is over and a point summary is given and each player is assigned the sum to her overall score. This makes this game truly collaborative instead of competitive.

Data Retrieval, Collection and Verification

The news items presented are retrieved from a database that we host filled with articles where there is a potential interest for location tagging. This database can be filled

automatically via crawlers and furthermore contains data items from related tagging projects.

The first thing to note about the game is that we do not need any previous information about the article. The tag-cloud is created by automatically analyzing the text, thus combining computer and human computation of texts.
However, if previous information about a news item is present, the game can be used to verify or refine this information. At some point it gives the opportunity to start the starting zoom level at a more detailed point. Let's say we already know from previous games or tagging data that an article is relevant to Northern California. Players can directly be presented with a detailed view of Northern California and asked to select the specific region, city and neighbourhood.
This way, the game does not rely on pre-tagged data, but provides the functionality to incorporate such data for further refinement and verification.

Verification takes place through iteratively feeding the same articles to different players. Each time the game is played, a set of articles is being processed. After some time we will have a pretty good guess from the user input where this article is situated, e.g. after 10 congruent location selections. The threshhold for verification is to be determined.

The quality of the data is assumed to be quite high thanks to the collaborative game design. Players are randomly (maybe depending on ISP location) paired and thus don't know each other. However, in order to be successful at the game and reach a high score, they need to make rational guesses about the items' locations. Thus, the likelihood for spamming is relatively low and can be easily discarded as outliers once a specific news item has been passed through several game rounds.

Implementation

The game runs in a web browser retrieving data such as news items from our server. Using Flash will be considered as well as a combination of Javascript, HTML(5), CSS and various APIs to interface with (such as Yahoo Maps API, YUI3).
The server needs to be able to record several sessions simultaneously. NodeJS could present itself useful for this kind of scenario.

Important for a compelling game is a smooth game flow. Thus, special considerations need to be given to the selection of regions and the zooming into different levels of details.

Conclusion

The beauty of this game is the combination of a fun player experience and the harvesting of useful data in order to geo-tag news items. Another useful aspect is the potential usage of raw data as well as pre-tagged data. New informational items can be fed into the system just as well as already pre-tagged data for further refinement and verification.

Also, each game session can be recorded, so that a single player could potentially play against a previously recorded session thereby providing more data for the news item collection.