**World Seer: A Real-time Geo-Tweet Photo Mapping System**

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**Overview**

- A system showing geotagged Twitter messages with photos on the streetviews as well as online maps
  - Photo Clustering & Search by date, words, userid and places
  - “By-product” of the geo-tweet recording system.
  - “Main-product” is a recording system which monitors the Twitter stream. It stored 30 million geo-photo tweets.

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**Backgrounds**

- Some Twitter messages (Tweets) contain “geotags” and “photos” (we call them as “Geo-Photo Tweets”)
- Twitter can be regarded as being one of other sources of geotagged photos than Flickr.
- Twitter provides “Twitter search API”. However, the search term is limited for the latest 10 days.
- Twitter also provides “Twitter streaming API”, via which we can receive Twitter message stream continuously.

To do researches with Twitter geotagged photos, we have to monitor the Twitter stream, pick up geo-photo tweets and store them into the own database for several months.

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**Twitter vs Flickr on GeoPhotos**

- Everyday life (e.g. foods) <-> Travel or special event tweet messages <-> keywords
  - instant (online) uploading <-> offline uploading
  - the same user uploads a few photos at once
  - many photos at once
- 200,000 geo-photos/day <-> 150,000 photos/day
  - over 6 million nongeo-photos/day <-> 3 million photos/day

Characteristics of the photos are different from each other. We should use them considering their characteristics.

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**System Architecture**

- [Backend] Geo-tweet collection system
  - Data collection via Twitter streaming API
  - MySQL + Perl
  - Can search the DB via Search API (not public)
  - The DB is being updated every 5 minutes
  - Download and extract visual features from some parts of the photos (Japanese photos)

- [Frontend] Geo-tweet photo mapping systems
  1. A real-time mapping system
     - JavaScript code which runs on browsers
     - Feature extraction & K-means by Javascript (carried out on the client side)
  2. Event detection system system
     - Offline feature extraction & clustering

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**Objective: Collecting Geo-TwPhotos**

- [Data Collection System] Store geo-photo tweets picked up from the Twitter stream into a DB continuously.
  - Now it has 28,000,000 geo-photo tweets for 16 months.
  - [Visualizing System (Demo)] Map geo-photo tweets on the maps and the street-views. This system is a “by-product” system of the data collection system.

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**Potential Future Work**

- Event detection with photos
  - Geo-tweet photos clustering and mining with tag analysis
- Cultural difference detection
  - Visual analysis of differences of something depending on places (food, way of life(culture), damage of disasters)