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Photo Odyssey

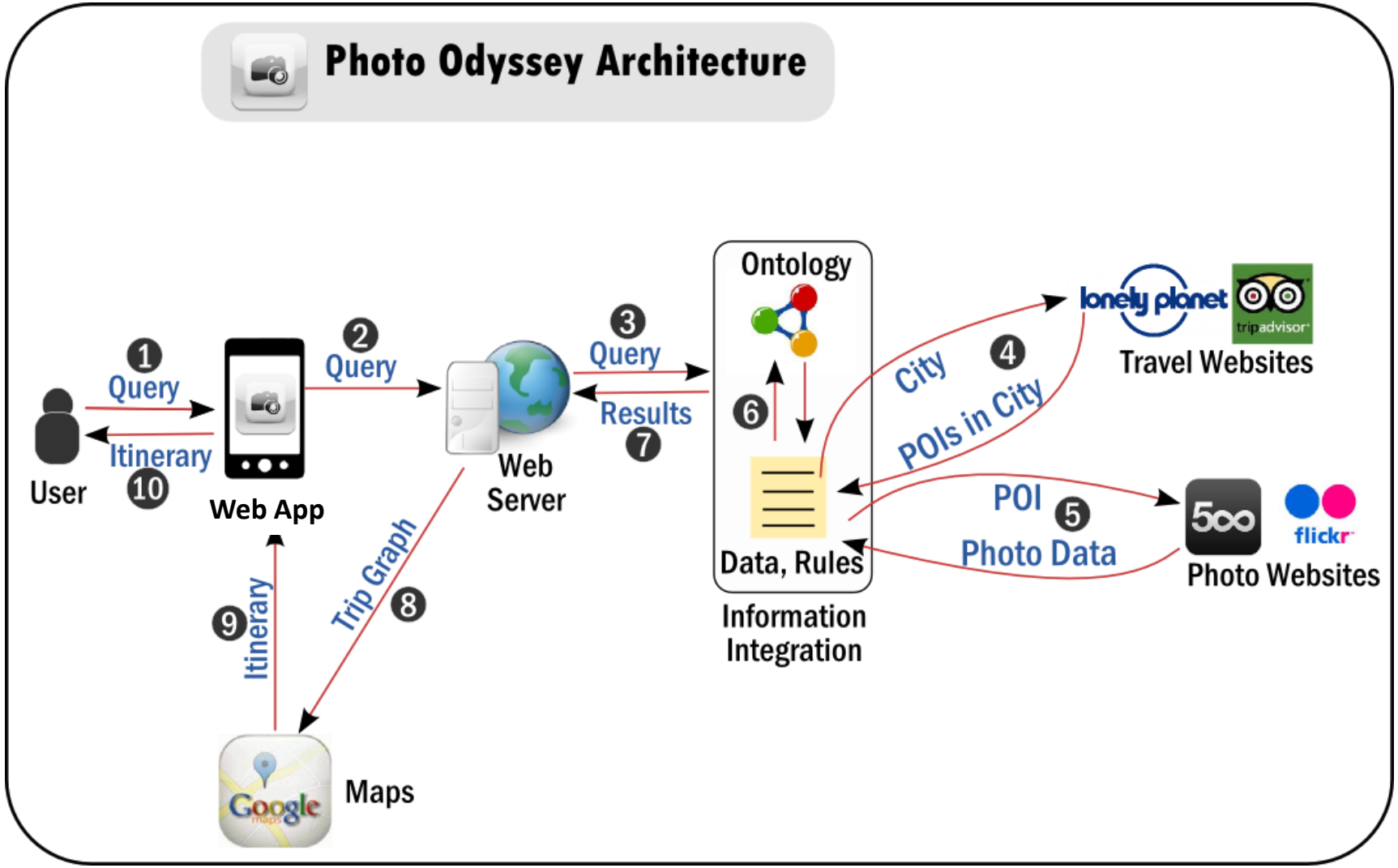
Create Personalized Photography Itineraries in Realtime

Motivation

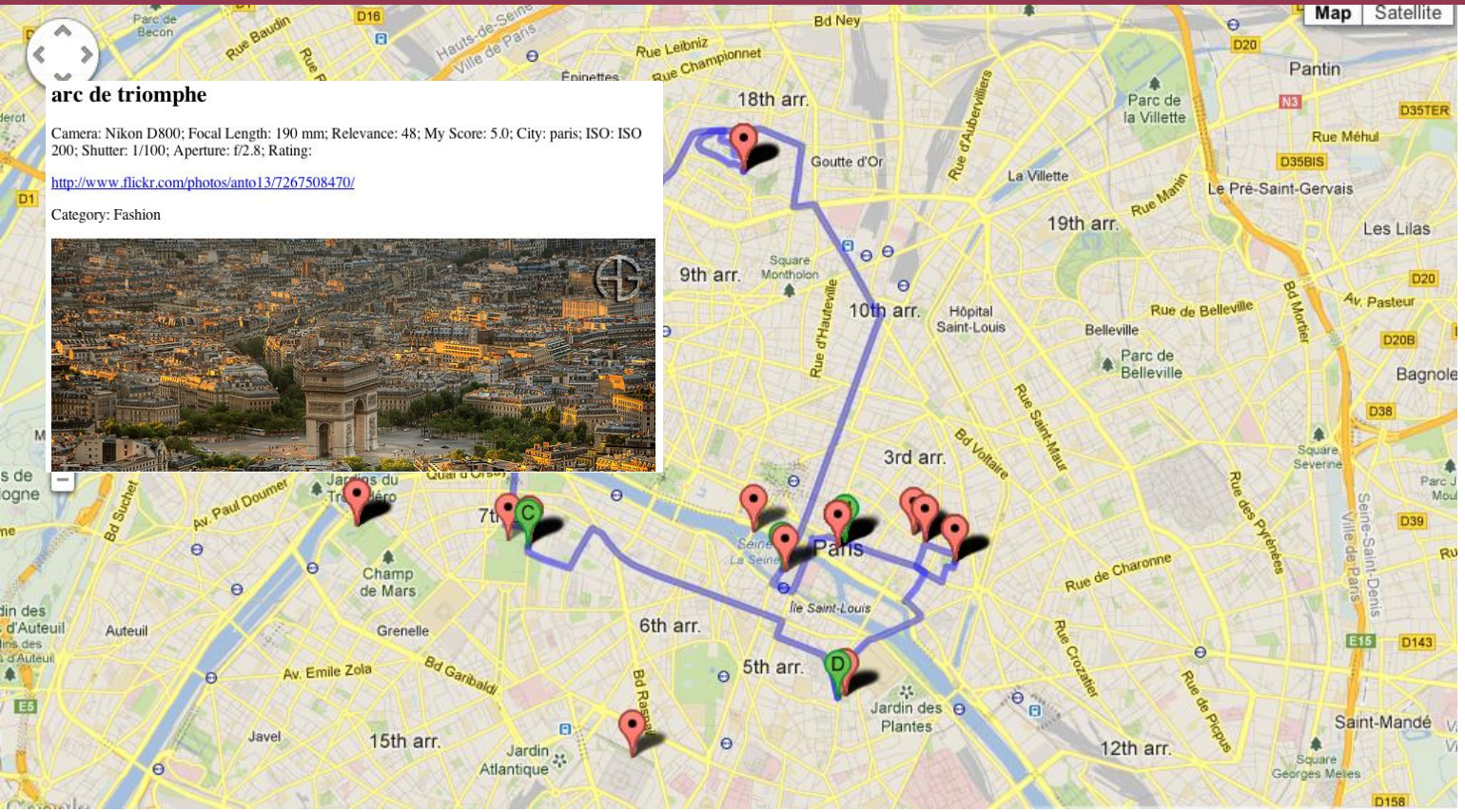
- Target users : Photography enthusiasts and tourists

- What is missing in state-of-the-art ?
  - Automatic trip planning for photography needs
  - Personalization options in itinerary
  - Search via Photography technical information and metadata
  - Semantic application for **realtime** integration from **photo streams**

Architecture



User Interface



Route Segment: 1
4 Place du Tertre, 75018 Paris, France to 4 Place du Tertre, 75018 Paris, France
1 m

Route Segment: 2
4 Place du Tertre, 75018 Paris, France to 13 Boulevard des Invalides, 75007 Paris, France
5.7 km

Route Segment: 3
13 Boulevard des Invalides, 75007 Paris, France to Les Arènes de Lutèce, Rue Monge, 75005 Paris, France
3.7 km

Route Segment: 4
Les Arènes de Lutèce, Rue Monge, 75005 Paris, France to 10 Place des Vosges, 75004 Paris, France
2.4 km

Route Segment: 5
10 Place des Vosges, 75004 Paris, France to 29 Rue de Rivoli, 75004 Paris, France
1.2 km

Choose Category:

☐ Black and White ☐ City & Architecture ☐ Uncategorized ☐ Still Life ☐ Nature ☐ Nude ☐ Fine Art ☐ People ☐ Trans
☐ Travel ☐ Film ☐ Animals ☐ Underwater ☐ Fashion ☐ Urban Exploration ☐ Commercial ☐ Macro ☐ Food

Choose Aperture Range:

1 — 22

Choose ISO Range:

1 — 3201

Choose Photo Relevance:

38 — 97

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Challenges

- ❑ Find whether point of interest (POI) crawled is valid
- ✓ Use Google Maps geocoding/decoding API to search for lat/long of POI and compare obtained city with user argument city

- ❑ Multiple users need to access system simultaneously
- ✓ Use Tornado, a non-blocking scalable Python-based web server

- ❑ Find highly rated photographs
- ✓ Solution : Use #views, #favorites and 500px pulse ratings

- ❑ Bad Data, Incompatible JSON encoding

Challenges (Fuzzy String Matching)

- ❑ Find relevant photos
  - ✓ **Jaro-Winkler** Distance (photo title + tags AND poi + city name)

- ❑ Eliminate duplicate/similar POI names
  - ✓ Token Set Ratio ($POI_{TripAdvisor}$ AND $POI_{LonelyPlanet}$)
    - Closely related to Jaccard distance
    - "Brandenburg Gate" = "Brandenburg Gate (Brandenburger Tor)"
    - "Olympic Stadium" = "Olympic Stadium (Olympiastadion)"

- ❑ Assign "category" to Flickr image
  - ✓ Hybrid weighted matching between POI+City and Title+Tags
  - ✓ Best score from
    - Levenshtein
    - Partial Ratio (~Smith-Waterman)
    - Token Sort (~Sorted string tokens)
    - Token Set (~Jaccard)
  - ✓ If confidence is low then label as "Uncategorized"

Itinerary Customization

- Category of Photographs
- Camera Model
- Aperture/ISO/Shutter Speed Range
- Photo Relevance, Rating, Score

Choose Category:

☐ Black and White ☐ City & Architecture ☐ Uncategorized ☐ Still Life ☐ Nature ☐ Nude ☐ Fine Art ☐ People ☐ Transportation ☐ Sport ☐ Performing Arts ☐ Family
☐ Travel ☐ Film ☐ Animals ☐ Underwater ☐ Fashion ☐ Urban Exploration ☐ Commercial ☐ Macro ☐ Food

Choose Camera:

☐ Canon EOS 40D ☐ X350,D575Z,C360Z ☐ Samsung WB500, WB510 / VLUU WB500 / Samsung HZ10W ☐ Canon EOS 5D Mark II ☐ Sony DSC-W120 ☐ Canon EOS 7D ☐ Nikon D90 ☐ OLYMPUS E-400 ☐ Sony DSLR-A850 ☐ Nikon D60 ☐ Nikon D300 ☐ Sony SLT-A99V ☐ Kodak EasyShare C763 Zoom ☐ Olympus SP500UZ ☐ Pentax K-7 ☐ Canon EOS 550D ☐ Sony DSLR-A550 ☐ HP pstc4400 ☐ Canon EOS Digital Rebel XS ☐ Canon EOS 5D ☐ Canon EOS 600D ☐ NIKON D600 ☐ SONY DSC-N1 ☐ Canon EOS REBEL T1i ☐ Sony DSLR-A700 ☐ Canon EOS 400D Digital ☐ Nikon D40 ☐ Canon EOS 300D Digital ☐ Sony DSLR-A500 ☐ Nikon D700 ☐ Nikon D7000 ☐ Nikon D800 ☐ Canon EOS 450D ☐ Olympus VR360,D760 ☐ Fujifilm FinePix S304 ☐ Nikon D80 ☐ Pentax K200D ☐ Nikon D3 ☐ Nikon E4600 ☐ Olympus E-3 ☐ Canon EOS 50D ☐ Nikon D5000 ☐ Canon PowerShot S95

Choose Photo Rating:

11 36

Choose Aperture Range:

1 22

Choose ISO Range:

1 3201

Choose Photo Relevance:

38 97

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Conclusions

- Photo Odyssey is an application for:
  - ✓ Automatically integrating photograph data from multiple source websites on-the-fly
  - ✓ Viewing relevant as well as highly rated photographs for points of interest in a city
  - ✓ Building customized itineraries according to photographic preferences
  - ✓ Spending lesser time searching for good photographs
  - ✓ Helping amateur photographers take better shots

❖ Live demo : http://kalu.usc.edu:9999