

# Appendix A

## ImageCLEFphoto Query Topics

This appendix first states the narrative descriptions of the *ImageCLEFphoto 2006* query topics and explains the background and origin of each of them. Then, it gives an overview of the relevance assessments of all the topics in the main ad-hoc task as well as in the visual subtask. Finally, it presents the distribution of the topics with respect to several topic dimensions and lists all results for each topic in each of these dimensions.

### A.1 Topic Narratives and Origin

This section lists all the topic titles (in **bold**) of the *ImageCLEFphoto 2006* ad-hoc retrieval task, together with their narrative descriptions (in *italics*) to uniquely identify what constitutes a relevant image or not. Moreover, it explains the motivation for each topic and presents further background information (we double-checked each of these topics with the employees, guides and customers of *viventura* in order to further strengthen the realistic nature of the query topics). Finally, three sample images (relevant to the specific search request and used in CBIR approaches) are displayed for each topic.

#### **Topic 1: Accommodation with swimming pool**

*Relevant images will show the building of an accommodation facility (e.g. hotels, hostels, etc.) with a swimming pool. Pictures without swimming pools or without*

*buildings are not relevant.* Tourists often want to stay at an accommodation with a swimming pool and therefore look for accommodation facilities with a pool.



Figure A.1: Sample images for Topic 1.

### **Topic 2: Church with more than two towers**

*Relevant images will show a church, cathedral or a mosque with three or more towers. Churches with only one or two towers are not relevant. Buildings that are not churches, cathedrals or mosques are not relevant even if they have more than two towers.* Tourists did not remember the name of the Basilica in Quito, but did remember that it had more than two towers.

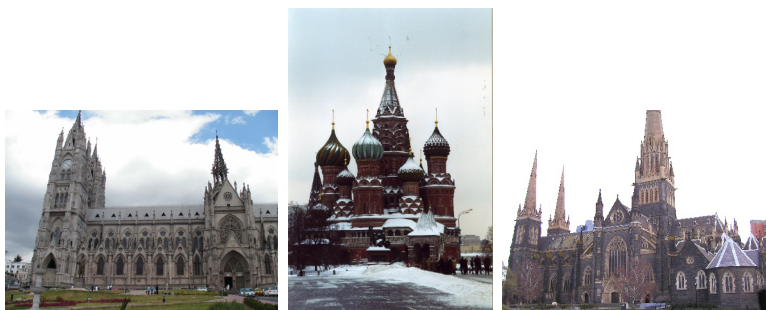


Figure A.2: Sample images for Topic 2.

### **Topic 3: Religious statue in the foreground**

*Relevant images will show a statue of one (or more) religious figures such as gods, angels, prophets etc. from any kind of religion in the foreground. Non-religious statues like war memorials or monuments are not relevant. Images with statues that are not the focus of the image (like the front view of church with many small statues) are not relevant. The statues of Easter Island are not relevant as they do*

*not have any religious background.* Tourists often take pictures of statues, and they often look for these statues then too. Since the database also contains many images of churches with statues in the background, we created this topic to investigate if retrieval systems can handle the distinction between foreground and background. The adjective “religious” was added to narrow the concept.



Figure A.3: Sample images for Topic 3.

#### **Topic 4: Group standing in front of mountain landscape in Patagonia**

*Relevant images will show a group of at least three people posing in front of a mountain landscape in Patagonia. Patagonia is a large region in the very south of South America, including the Argentine provinces of Neuquén, Río Negro, Chubut and Santa Cruz, the Chilean regions of Aysen and Magallanes, and Tierra del Fuego. Images with a single person or a couple are not relevant, and images that do not show at least two mountains in the background are not relevant either. Images with groups of people that are not standing are not relevant. Images from northern Chile, northern Argentina or other countries are not relevant.* Patagonia is one of the most breathtaking regions in the world, and *viventura* takes their customers to some spots with a very picturesque background, like the Cerro Campanario in Bariloche or the Torres del Paine National Park. Tourist groups often use these scenic backgrounds for group pictures and later request these images from the database. This topic is very difficult for the retrieval systems, because it involves some advanced geographic knowledge to determine the locations in Patagonia.

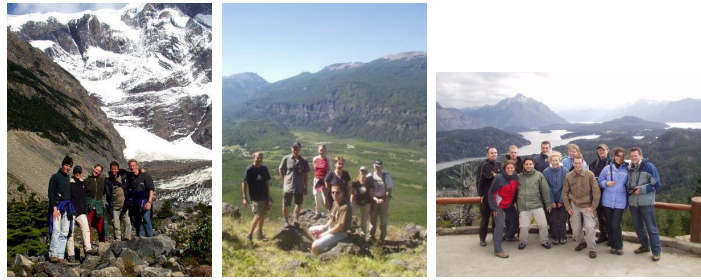


Figure A.4: Sample images for Topic 4.

### Topic 5: Animal swimming

*Relevant images will show one or more animals (fish, birds, reptiles, etc.) swimming in a body of water. Images of people swimming in water are not relevant. Images of animals that are not swimming are not relevant.* Many tours of *viventura* include parts in which swimming animals can be observed, especially the trips to the Isla de la Plata during the mating period of the humpback whales, or the trips to the Galápagos Islands. Most customers actually look for specific animals in their searches (*e.g.* humpback whale swimming), while other request are of a more general nature. We used the latter request in order to have (1) more relevant images for the relevance judgments and (2) to create an additional text retrieval challenge (specific *vs.* general concepts).



Figure A.5: Sample images for Topic 5.

### Topic 6: Straight road in the USA

*Relevant images will show a straight road or highway (either empty or with traffic) in the United States of America. A road is considered to be a straight road if there is no curve visible in the image. Images with roads with a curve are not relevant. Images with straight roads that are not in the USA are not relevant. Images with*



*roads too short to determine whether they are straight or not (like side views) are not relevant.* Tourists made an enquiry for group photos taken on the Pan-American Highway in South America. We changed this topic to USA because (1) the database contains many images of straight roads in the USA, and (2) to test the systems' ability to deal with abbreviations.



Figure A.6: Sample images for Topic 6.

### **Topic 7: Group standing in salt pan**

*Relevant images will show a group of at least three people standing in a salt pan posing for a photo. At least one member of the group has to be standing. Images with an individual person or a couple are not relevant. Images of groups not standing in a salt pan are not relevant even if there is a salt pan in the background.* Users were looking for a group photo at the Salar de Uyuni, Bolivia, but could not remember the name of that specific salt lake.



Figure A.7: Sample images for Topic 7.

### **Topic 8: Host families posing for a photo**

*Relevant images will show one or more members of a host family who provide accommodation to tourists. Images of people who are not hosts are not relevant. Images*

*that show buildings or rooms without people are not relevant.* Language students often stay with host families in order to practice their language skills outside the classroom as well, and they often want to see who they will be staying with before they travel to South America.



Figure A.8: Sample images for Topic 8.

### **Topic 9: Tourist accommodation near Lake Titicaca**

*Relevant images will show various views of tourist accommodation near Lake Titicaca. This includes the Peruvian towns of Puno, Chifrón, Llachón, Pomata, Capachica, Juli and Juliaca and the Bolivian towns of Copacabana, Desaguadero and Tiahuanaco. Images of tourist accommodation not located in the aforementioned towns are not relevant. Images other than tourist accommodation are not relevant.* One hotel operator in Puno had decided to renovate a couple of rooms although they were already booked and confirmed. Hence, *viventura* guides had to look for alternative arrangements near Lake Titicaca to accommodate the tourists.



Figure A.9: Sample images for Topic 9.

## Topic 10: Destinations in Venezuela

*Relevant images will show tourist destinations in Venezuela. Tourist destinations include natural landmarks (e.g. waterfalls, mountains, rivers, beaches, etc.), as well as man-made landmarks (e.g. cities, monuments, squares, etc.). Images of accommodation are not relevant, and neither are images of tourist destinations not located in Venezuela. *viventura* organised a Venezuela tour for the first time in 2005. We assume that many customers did not know anything about possible sights in Venezuela, which would explain the log file entries for this topic.*



Figure A.10: Sample images for Topic 10.

## Topic 11: Black and white photos of Russia

*Relevant images are black and white photographs taken anywhere in Russia. Coloured images are not relevant; black and white images that were not taken in Russia are also not relevant. Created as a visual topic.*



Figure A.11: Sample images for Topic 11.

## Topic 12: People observing football match

*Relevant images will show people watching a football (soccer) match. This includes spectators watching the match in a stadium or at a normal football ground, and also people watching it on TV. Images are relevant if spectators are visible (in the foreground or background) and if it is obvious that they are watching a football (soccer) game. Images with spectators watching any other sport or a different code of football (American Football, Australian Football, Rugby Union, Rugby League, Gaelic Football, Canadian Football, International Rules Football, etc.) are not relevant. Images of football (soccer) games without spectators are not relevant either. We created this topic to test (1) the retrieval of photos with actions and (2) the discriminating power of query terms (because the database contains many photos of football matches without spectators). This topic also includes a bit of pettifoggery as only football (soccer) images are relevant and no other codes.*



Figure A.12: Sample images for Topic 12.

## Topic 13: Exterior view of school buildings

*Relevant images will show the exterior view of a school building, either in its whole or a part of it. Images of other buildings than schools are not relevant. Interior views of schools (like classrooms) are not relevant either. Participants of Peru tours often get the chance to visit a local school in the Arequipanian suburb of Villa Cerrillos. This school had been built by *viventura* in one of their social programs and is a quite colourful, blue and white building with red doors located in the middle of a light-brown desert and thus an object that tourists and guides take photos of. Only that the name of the suburb (Villa Cerrillos) is often forgotten (or misspelled), thus people then just look for this more general term.*



Figure A.13: Sample images for Topic 13.

#### Topic 14: Scenes of footballers in action

*Relevant images will show football (soccer) players in a game situation during a match. Images with footballers that are not playing (e.g. players posing for a group photo, warming up before the game, celebrating after a game, sitting on the bench, and during the half-time break) are not relevant. Images with people not playing football (soccer) but a different code (American Football, Australian Football, Rugby Union, Rugby League, Gaelic Football, Canadian Football, International Rules Football, etc.) or some other sport are not relevant. See Topic 12.*



Figure A.14: Sample images for Topic 14.

#### Topic 15: Night shots of cathedrals

*Relevant images will show churches or cathedrals at night: the building is illuminated and/or the background is black. Images of cathedrals or churches during the day are not relevant. Other night shots without cathedrals are not relevant. Many tours visit, for example, the Plaza de Armas in Lima or the Cerro Santa Ana in Guayaquil at night, and tourists normally take pictures of the illuminated cathedrals there.*



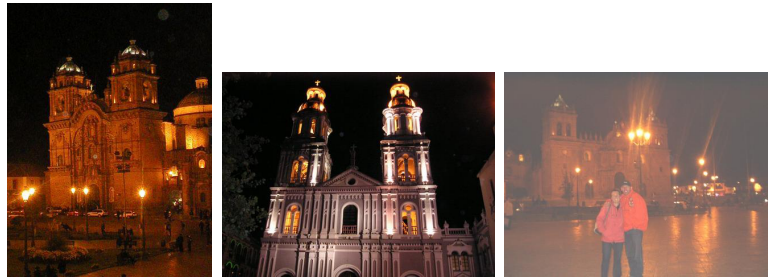


Figure A.15: Sample images for Topic 15.

### Topic 16: People in San Francisco

*Relevant images will show the Californian city of San Francisco with at least one person. Images of San Francisco without people are not relevant. Images of people not in San Francisco are not relevant.* There are many log file entries for “people from X” in the database, where X can be a city or a country. We changed this to San Francisco, because it is a nice challenge for word ambiguity as there are many churches called “San Francisco” in the database.



Figure A.16: Sample images for Topic 16.

### Topic 17: Lighthouses at the sea

*Relevant images will show lighthouses near the sea (the sea must be visible in the image). Images of lighthouses without water in the foreground or background are not relevant. Images of the sea without a lighthouse are not relevant.* People seem to like photos of lighthouses, they are an attractive landmark everywhere. Especially the lighthouse in the Beagle Canal near Ushuaia (Argentina) seems to be very popular with *viventura* customers.



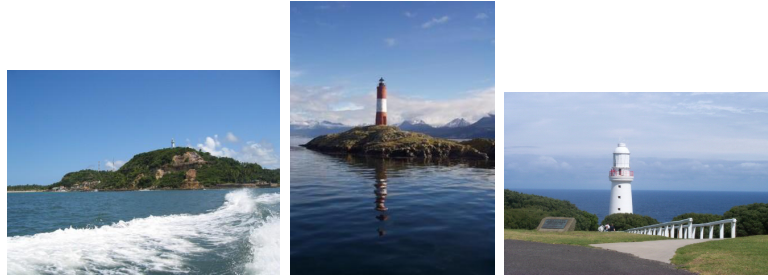


Figure A.17: Sample images for Topic 17.

### Topic 18: Sport stadium outside Australia

*Relevant images will show sport stadia anywhere in the world but Australia. This includes interior (grandstands with or without spectators, sports field) and exterior views. Stadia in Australia are not relevant. Buildings outside of Australia or stadia that are not used for sports are not relevant.* This topic is similar to the one offered in 2005: “royal visits in Scotland (not Fife)” to investigate whether systems can handle negations. “Sport stadium” was used to form a group with topics 12 and 19, and “outside Australia” uses a negative spatial operator.



Figure A.18: Sample images for Topic 18.

### Topic 19: Exterior view of sport stadia

*Relevant images will show exterior view of stadia, either in the focus of the image or in the background. Interior views of stadia (grandstands, sports field, etc.) are not relevant. Exterior views of buildings that are not stadia are not relevant.* See also Topic 13. We changed this topic to sport stadia because the database contains (1) many photos annotated with “exterior views of accommodations” and (2) many “interior views of sport stadia”, which creates a nice challenge for the participants.



Figure A.19: Sample images for Topic 19.

## Topic 20: Close-up photograph of an animal

*Relevant images will show close-up pictures of animals. Close-up pictures of humans (although technically speaking we are animals as well!) are not relevant. Photos with more than one animal are not relevant. Animals and nature play a vital part of *viventura*'s trips; especially on those that visit the Galápagos Islands, the Isla de la Plata or Magdalena Island, where tourists and guides get really close to animals and make close-up shots. And *viventura* uses these photos as an advertisement - you can get extremely close with animals without them running away.*

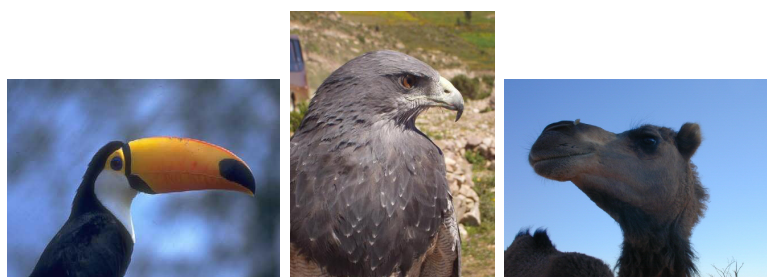


Figure A.20: Sample images for Topic 20.

## Topic 21: Accommodation provided by host families

*Relevant images will show guest rooms provided by host families to tourists. Family photos of host families or exterior views of their buildings are not relevant. Photos of rooms or accommodations that are not provided by host families are not relevant either. Language students often stay with host families to practice their language skills outside the classroom as well, and they want to see where they will be staying and what their rooms will look like before they book and travel to South America.*



Figure A.21: Sample images for Topic 21.

## Topic 22: Tennis player during rally

*Relevant images will show one or more tennis players during a rally on a tennis court. A rally starts as soon as the server begins the serving routine and ends when the point is decided. Images of tennis players during a break, between a point or before/after a match are not relevant. Statues of tennis players are not relevant.* This is a topic for a general action to satisfy the topic creation requirements. The database contains many sports photos, and without query topics for general actions, the set of topics would not cover a good cross-section of the images in the database.



Figure A.22: Sample images for Topic 22.

## Topic 23: Sport photos from California

*Relevant images will depict sports activities in the state of California. Both sporting competitions and sport for recreation, fun or as a hobby are relevant. Competitions outside of California are not relevant. Images from California that are not sport are also not relevant.* This is a topic for a sports action, plus a nice specific *vs.* general challenge that requires geographic knowledge of locations in California. The image collection contains many sports photos, thus, this topic was also created to satisfy

the criterion to cover a good cross-section of the images in the collection (see also Topic 22).

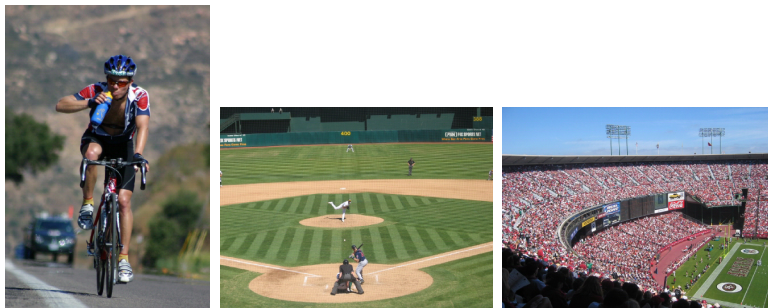


Figure A.23: Sample images for Topic 23.

## Topic 24: Snowcapped buildings in Europe

*Relevant images will show snow-covered buildings in Europe. It must be clear in the image that there is snow on at least one part of the building. Images of buildings with no snow on them (or snow just lying around the building) are not relevant. Snowy buildings outside of Europe are not relevant. Buildings from the Asian part of Russia (Siberia) are not relevant either. The original query in the log file was: “snow-covered mountains in South America”. Since there too many relevant images for this topic, we changed “mountains” to “buildings” and “South America” to “Europe” providing a nice geographical and text retrieval challenges (specific *vs.* general concepts).*



Figure A.24: Sample images for Topic 24.



## Topic 25: People with a flag

*Relevant images show one or more persons with a flag in their hand. Images of flags that are not held by a person are not relevant. Images of people without flags are not relevant.* This is a general topic with several origins. For example, there is a Bolivian flag on a salt pile in the Salt Lake of Uyuni, and tourist groups normally use this pile as a chance for a group photo.



Figure A.25: Sample images for Topic 25.

## Topic 26: Godson with baseball cap

*Relevant images will show male godchildren wearing a baseball cap. Female godchildren or godchildren that are not wearing baseball caps but hats, beanies, etc. are not relevant. Images of boys that are not godsons are not relevant.* One tourist wanted to sponsor an Ecuadorian boy from Quilotoa and only remembered that he was always wearing a baseball cap, but not his name.



Figure A.26: Sample images for Topic 26.

## Topic 27: Motorcyclists racing at the Australian Motorcycle Grand Prix

*Relevant images will show motorcyclists racing at the Australian Motorcycle Grand Prix on Phillip Island. Motorcyclists at the Grand Prix that are not riding their*

*motorcycles (e.g. winners at the awards ceremony) are not relevant. Images of people riding a motorcycle but not at the Grand Prix are not relevant. Images of motorcycles without riders are not relevant.* Topic for a general action to satisfy the topic creation requirements. The database contains many sports photos, and without query topics for general actions, the set of topics would not cover a good cross-section of the images in the database.



Figure A.27: Sample images for Topic 27.

## Topic 28: Cathedrals in Ecuador

*Relevant images will show cathedrals (or churches) in Ecuador. Images with cathedrals that are not in Ecuador are not relevant. Images from Ecuador that do not show a cathedral or church are not relevant. The Ecuador-trips visit many cathedrals.*



Figure A.28: Sample images for Topic 28.

## Topic 29: Views of Sydney's world-famous landmarks

*Relevant images will show all views of one of Sydney's three world-famous landmarks: Opera House, Harbour Bridge, Bondi Beach. Images of other landmarks in*



*Sydney are not relevant (although they might be considered as well-known by Australians). Images of landmarks that are not in Sydney are not relevant. Sydney's landmarks like the Opera House, the Harbour Bridge and Bondi Beach speak for themselves. It is thus not a surprise to find this query in the log file.*



Figure A.29: Sample images for Topic 29.

### **Topic 30: Room with more than two beds**

*Relevant images will show rooms with three or more beds. The beds do not have to be fully visible, but the number of beds in a room must be clearly identifiable. Rooms with only two or less beds are not relevant. Groups or families often request a room with more than two beds.*



Figure A.30: Sample images for Topic 30.

### **Topic 31: Volcanos around Quito**

*Relevant images will show one of the following volcanos near Quito: Cotopaxi, Antisana, Cayambe, Illiniza, Atacazo, Pichincha, Pululahua. The volcano must clearly be visible in the image and can be in the foreground or background. Images with other volcanos than the ones mentioned before are not relevant. Images near these volcanos but not showing them (like refuges) are not relevant. There are many volcanos around Quito, but most of them with names like Tungurahua, Pinchincha,*

*etc.* that are quite easy to forget. Tourists therefore subsequently produce a rather general search request.



Figure A.31: Sample images for Topic 31.

### **Topic 32: Photos of female guides**

*Relevant images will show one or more female tourist guides. Images with only male guides or with women that are not tourist guides are not relevant. It seems like some tourists plan their trips with slightly different priorities and do not base their decisions on tourist destinations but on other factors.*



Figure A.32: Sample images for Topic 32.

### **Topic 33: People on surfboards**

*Relevant images will show people standing, sitting, lying or paddling on surfboards in the sea or on a beach. Images with people carrying surfboards or standing or lying next to surfboards are not relevant. Many trips to Ecuador include the possibility of a “learning how to surf” day in Montañita, and while tourists are trying to ride the waves, the guides are taking photos of them.*



Figure A.33: Sample images for Topic 33.

### Topic 34: Group pictures on a beach

*Relevant images will show a group of (at least three) people posing on a beach. Images are just relevant if the group is aware that it is being photographed and if at least one person is looking or waving at the camera. Images of people not aware that they are being photographed (snap shots), individual persons, couples or just crowded beaches are not relevant. Group photos that were not taken on beaches are not relevant either.* Tourists love beautiful beaches, and there are many of them in South America, so they often take group pictures there (or let the guides take one for them). Since many tours start or finish at a beach, the guides often take group photos on beaches as “welcome” or “farewell” photos.



Figure A.34: Sample images for Topic 34.

### Topic 35: Bird flying

*Relevant images will show one or many birds in the act of flying. Birds that are not flying are not relevant. Other flying objects that are not birds are not relevant either.* Peru trips take tourists to one of the deepest canyons in the world: the Colca Canyon, which is three times deeper than the Grand Canyon in the USA and home to one of the biggest flight birds in the world, the condor. Condor-watching is therefore a fixed point in many itineraries, and tourists take spectacular photos

of these birds with spread wings and the blue sky in the background. The retrieval of these photos creates a nice visual challenge.

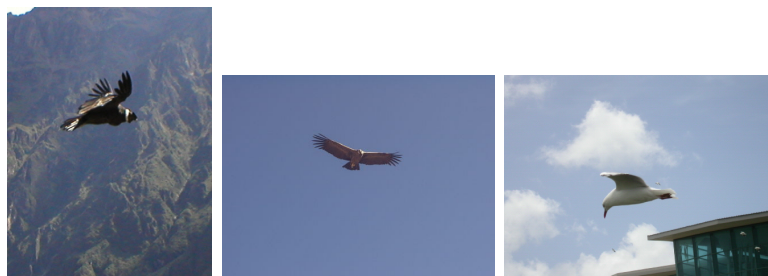


Figure A.35: Sample images for Topic 35.

### Topic 36: Photos with Machu Picchu in the background

*Relevant images will show the ruins of Machu Picchu in the background. Images are relevant if there is some other object or a group of objects (like tourist groups) in the foreground. Images with the ruins in the focus of the image are not relevant. Images with other ruins in the background are not relevant either. Group photos with the ancient ruins of Machu Picchu are a must for every Peru trip. *viventura* guides offer group photos and individual photos with Machu Picchu in the background.*

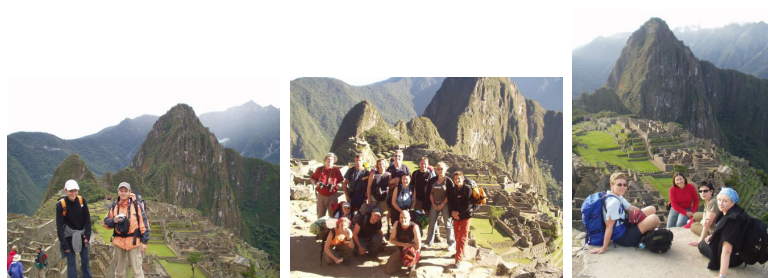


Figure A.36: Sample images for Topic 36.

### Topic 37: Sights along the Inka-Trail

*Relevant images will show both natural and man-made sights along the Inka<sup>1</sup>-Trail on the way to the ruins of Machu Picchu. This includes waterfalls as well as ruins*

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<sup>1</sup>We spelled “Inka-Trail” with a “k” because all the signs along this trail consistently spell the Inka-Trail with a “k” as well. We therefore treated “Inka-Trail” as a proper name and did not change its spelling, although this might differ from the more commonly used version (“Inca”) in the English language.

like *Wiñay Wayna*, *Chachabamba* or the *Sun Gate*, but not *Machu Picchu*. Images of sights which are not located along the *Inka-Trail* or images of people walking on the *Inka-Trail* are not relevant. *viventura* offers two and four-day hikes alongside the *Inka-Trail* with its many attractions (*Chachabamba*, *Wiñay Wayna*, etc.). For many tourists, this walk to Machu Picchu is the highlight of their trip in Peru, and therefore such queries are not seldom. This particular request, though, was submitted by one customer who wanted to write a university report about the *Inka-Trail* and therefore looked for this information.



Figure A.37: Sample images for Topic 37.

### **Topic 38: Machu Picchu and Huayna Picchu in bad weather**

*Relevant images will show the ruins of Machu Picchu and the mountain Huayna Picchu in bad weather (rain, fog, snow, hail, etc.). Images of Machu Picchu and Huayna Picchu in good (sunshine, blue sky) or average (overcast, cloudy) weather are not relevant. Images of other places with bad weather are not relevant either.* Tourists are often worried about the weather when they go on a tour with a fixed itinerary and apparently have a look at the worst case scenario, especially for extremely scenic places like the panorama of Machu Picchu and Huayna Picchu to get an idea of the worst possible case there, and what they would still be able to see in that case.





Figure A.38: Sample images for Topic 38.

### Topic 39: People in bad weather

*Relevant images will show people in bad weather conditions (rain, hail, fog, wind, storm, heavy snowfall, etc.). Images of bad weather without at least one person are not relevant. People in good (sunshine, blue sky) or average (overcast, cloudy) weather conditions are not relevant either. See also Topic 38. Many customers often double-check the weather of trips, and when they cannot decide between two different destinations, they sometimes base their decisions on the expected weather and decide for the trip with the least amount of photos with bad weather.*



Figure A.39: Sample images for Topic 39.

### Topic 40: Tourist destinations in bad weather

*Relevant images will show tourist sights in bad weather conditions (rain, hail, fog, wind, storm, heavy snowfall, etc.). Tourist destinations include natural landmarks (like waterfalls, mountains, rivers, beaches, etc.) as well as man-made landmarks (cities, monuments, squares, etc.). Tourist destinations in good or average weather conditions (sunshine, overcast, cloudy) are not relevant. This topic forms a group with topics 38 and 39. Tourists are often worried about the weather when they*



go on a tour with a fixed itinerary and apparently have a look at the worst case scenario to get an idea of the worst possible case at several tourist destinations, and what they would still be able to see in that case.

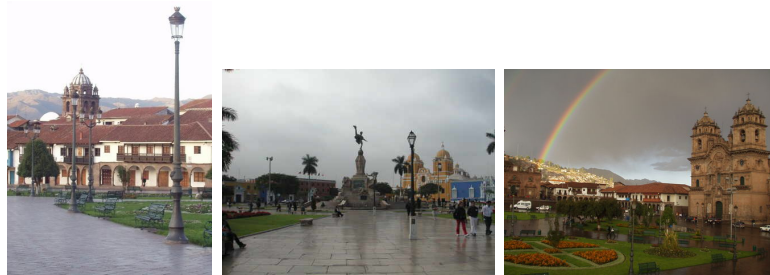


Figure A.40: Sample images for Topic 40.

#### Topic 41: Winter landscape in South America

*Relevant images will show a mostly snow-covered landscape in South America. Images of landscapes with a snow-cover of less than 50% are not relevant. Images of a landscape not in South America are not relevant.* Due to the high altitude of some landscapes in the Andes or the latitude of some landscapes in Patagonia, tourists often get to take photos of snowed-in sceneries. Guides then often speak of a “winter landscape”, and tourists subsequently request exactly this topic.



Figure A.41: Sample images for Topic 41.

#### Topic 42: Pictures taken on Ayers Rock

*Relevant images are those taken by a person on Ayers Rock (Uluru) in which at least a part of Ayers Rock is visible. Images of Ayers Rock taken from the ground or taken from a viewing area are not relevant.* The original log file entry was “pictures taken on Cotopaxi”. We changed this topic from “Cotopaxi” to “Ayers

Rock”, because (1) there were not enough relevant photos in the database that were taken on Cotopaxi, (2) Ayers Rock is a nice challenge for translation systems as many are expected to actually translate the noun “rock”, and (3) it is actually a quite explosive topic to discuss in Australia, because the Aboriginal landowners of the Ayers Rock (Uluru) in Australia do not like people climbing their rock; not that the actual fact of climbing is an insult to them, but they feel responsible for every person that dies on their land, and the more people climb the rock, the more fall off it and die, which causes distress to them.



Figure A.42: Sample images for Topic 42.

### Topic 43: Sunset over water

*Relevant images will show the sun setting above a body of water. Images are relevant if the sun is visible in the image, and the body of water will meet the horizon where the sun is going to be setting. Images of sunsets in which the sun is not visible or will not be setting over water are not relevant.* Tourists are obsessed with photos of sunsets, especially at the beach or when water is involved because of the reflections. So the frequent occurrence of this request in the log file is not surprising. Furthermore, CBIR should produce very good results for this topic.

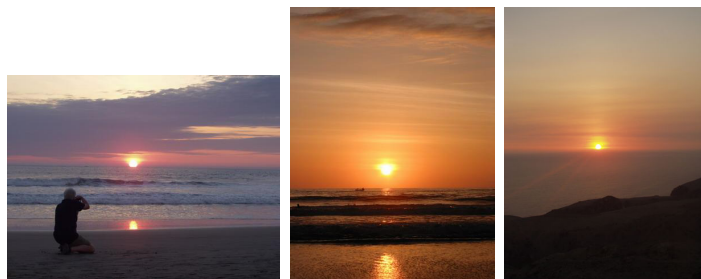


Figure A.43: Sample images for Topic 43.