

# Identification of relevant context parameters

Location Based Services  
VU 126.099

Martin Fleischhacker	0626610
Manuela Handl	0525868
Connie Kwok	0728030
Klemens Lagler	0626468
Bernd Moser	0625569

## 1. Introduction

The key point of our project is to collect data to identify relevant context parameters for a mobile guide in the Zoo of Vienna, Schönbrunn. Context parameters include demographic information and some other information (such as weekday, daytime, weather conditions, time pressure, if the visitors are accompanied, first visit, ...). For our project we divided the task into two parts: 1) investigate, how people behave in different context and 2) identify relevant context parameters. In our data analysis we will concentrate on the first sub-task as a preparatory step to identify significantly relevant context parameters. To make useful conclusions, about 50 trajectories of visitors had to be collected.

## 2. Data Collection

First of all we asked the zoo's permission to work inside the zoo for our project. A service point was built up, so we could start.

For the data collection we used GPS Loggers and Garmin e-Trex.

We had to encourage people to carry those trackers with them while walking through the zoo. After they returned the trackers at our service point, a short questionnaire was filled out. So we got some more information about the carriers of our trackers like mentioned in the introduction. A sample of the questionnaire is attached.

All together we spent three days in Vienna Zoo encouraging people to carry our trackers. The result was about 50 collected trajectories of all kinds of visitors in different weather conditions and different time of the day.

The collected trajectories and the informations of the questionnaire are the input data for our analysis part.

The following picture shows our service point in the Zoo of Vienna.



### 3. Data Analysis

After the data collection, we converted the collected data from the GPS – trackers into \*.gpx - format. One by one we projected all trajectories onto Bing – Maps with an aerial photo in the background to get a visual overview of the different paths.

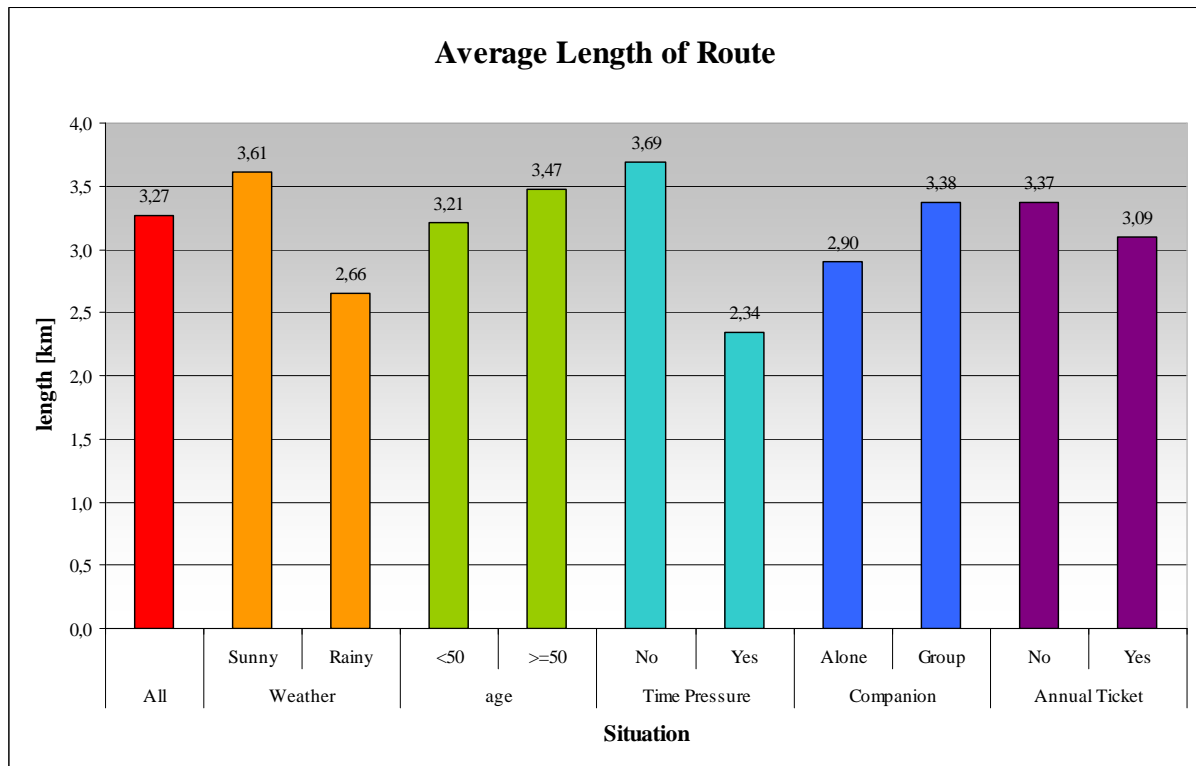
Furthermore we noted down the length of each route and the duration of every visit.

For the data analysis concentrate on the following five context parameters:

- Weather condition
  - o Sunny
  - o Rainy
- Age
  - o <50
  - o >=50
- Time pressure
  - o No
  - o Yes
- Companion
  - o Alone
  - o group
- Annual ticket
  - o No
  - o Yes

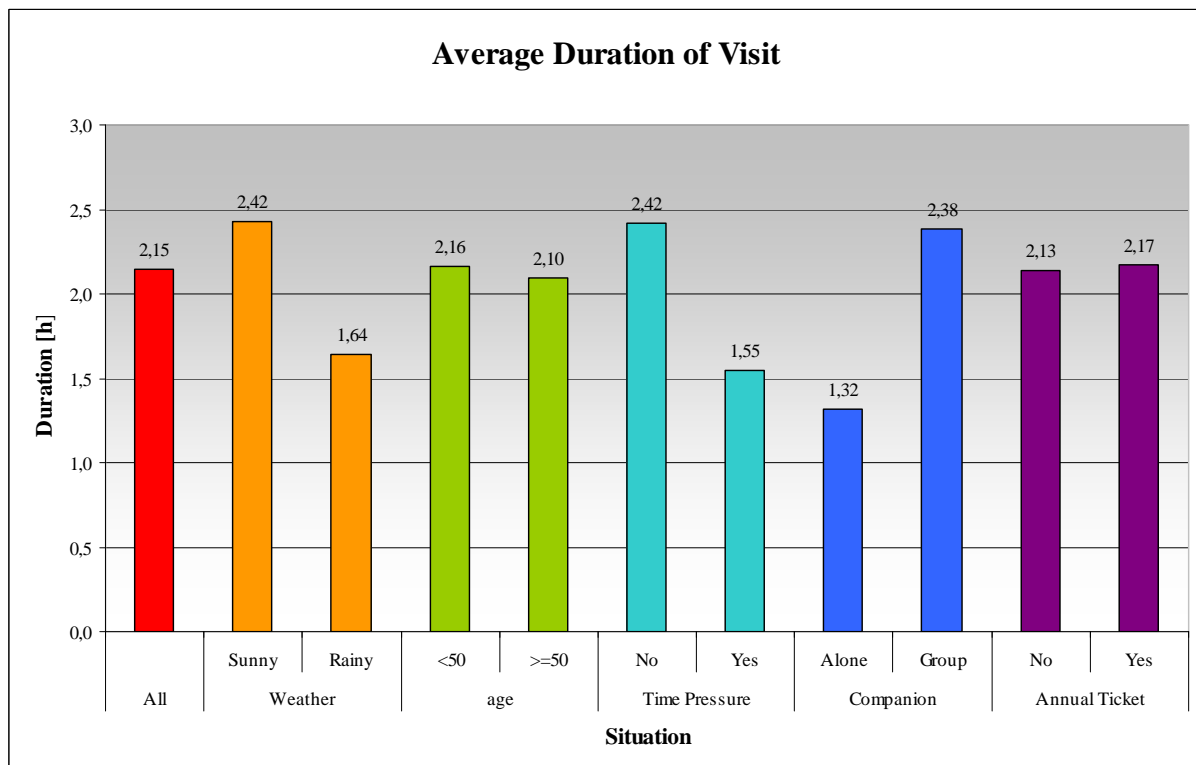
We combined the information from the questionnaire and the trajectory informations in excel and filtered the relevant data for our statistical evaluation.

The first diagram shows the average length of the routes in different situations.



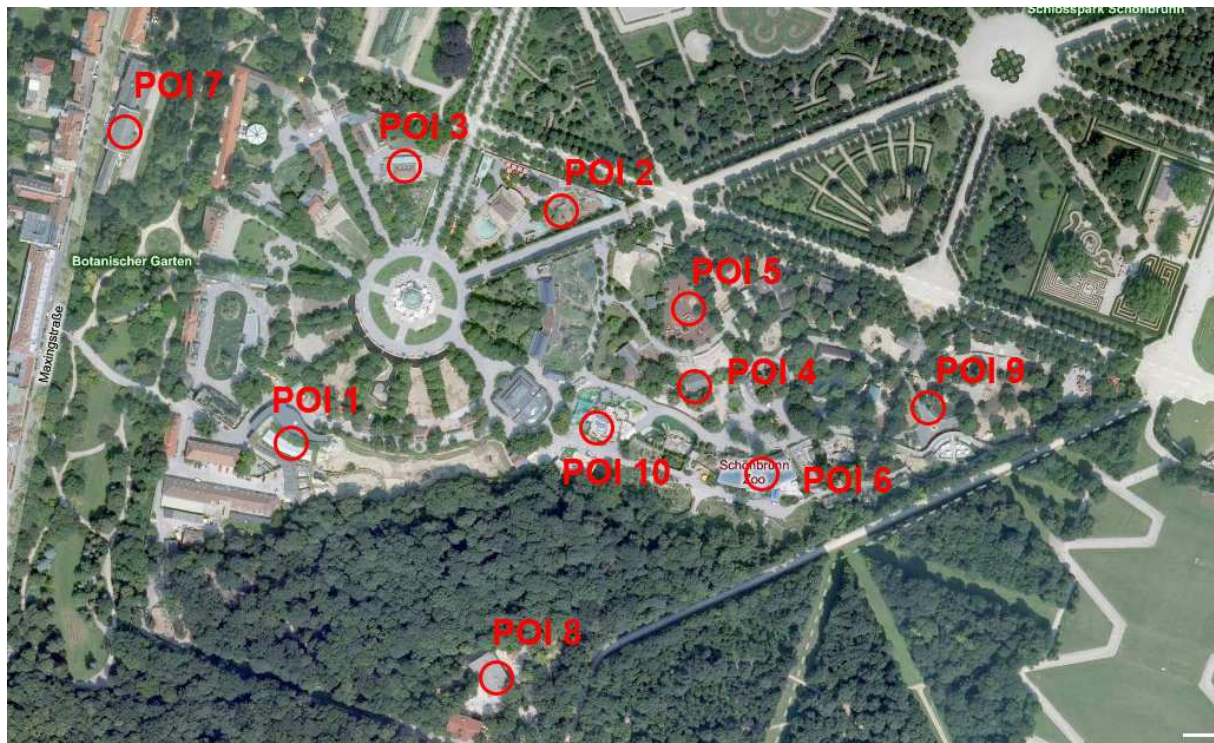
The diagram shows, that the average length of all visitors is about 3,3 km. There is a larger difference in the length of route under different weather conditions and different time pressure. In all other situations the differences are not obvious.

The following diagram represents the average duration of a visit in the Zoo.



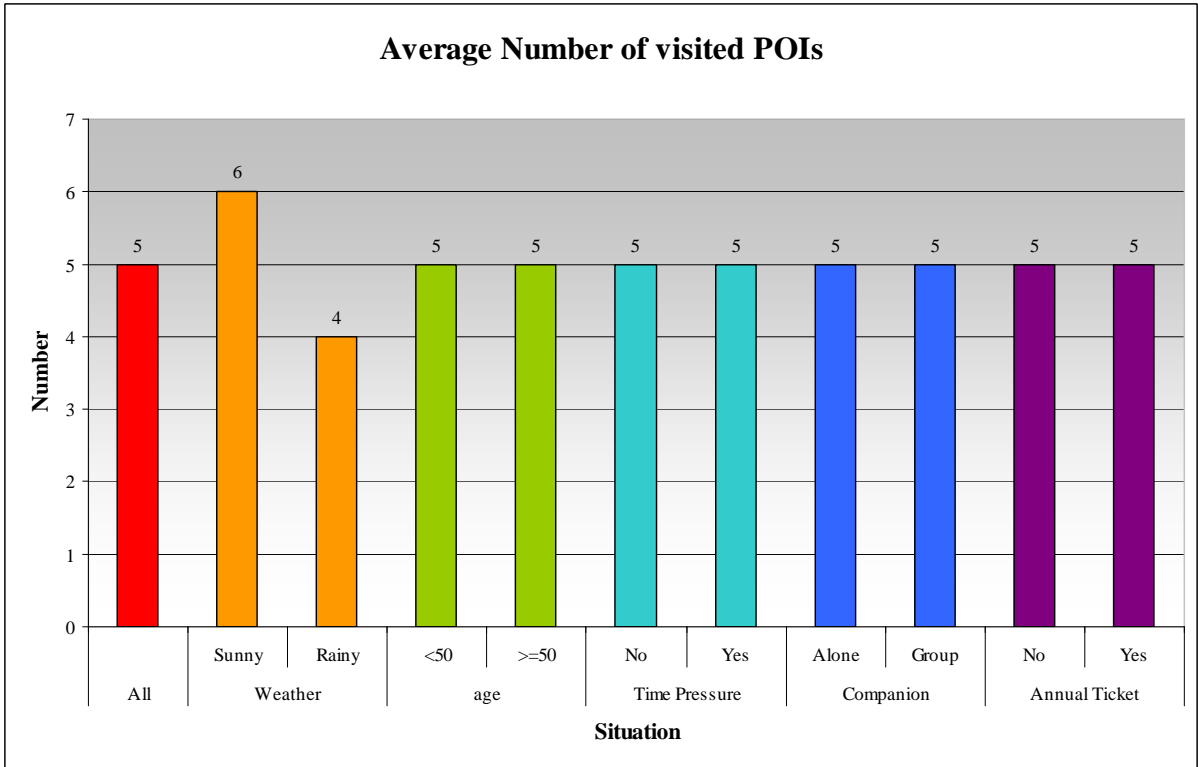
The average duration of visit is about 2 hours. The biggest differences in the duration of visit are the context parameters of weather, time pressure and companion. While there is no great difference in the context parameters of annual ticket and age.

The next analysis part is about Points of Interest (POI) and therefore it is necessary to define where these points are located. The orthophoto shows these selected locations.



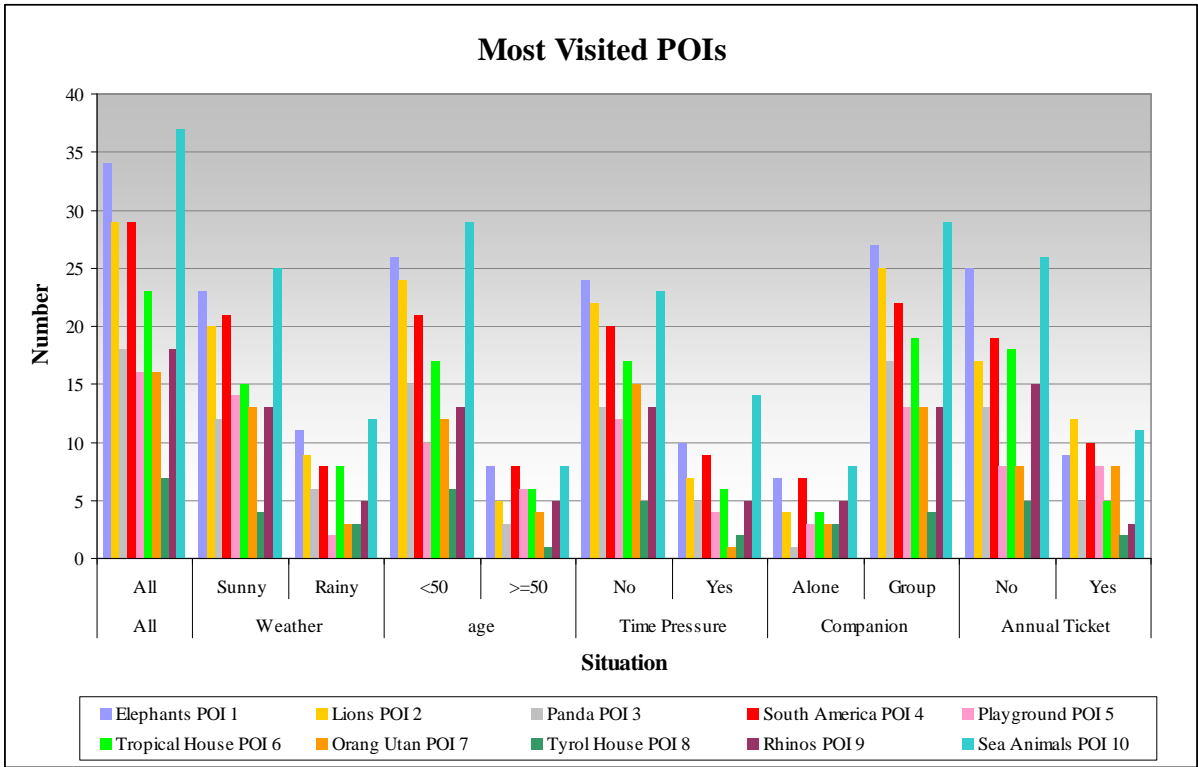
POI 1	Elephants
POI 2	Lions
POI 3	Pandas
POI 4	South America
POI 5	Playground
POI 6	Tropical House
POI 7	Orang Utan
POI 8	Tyrol House
POI 9	Rhinos
POI 10	Sea Animals

The following graph shows the average number of visited POIs.



In average, the participants visited 5 POIs of the Zoo. It is the same for all other context parameters except the one of weather. When the weather was good, the participants visited more POIs than when the weather was otherwise.

The last graph illustrates the frequency of the visit of the POIs.



The most visited POIs are the elephants and the sea animals. The Tyrol house is the least visited POI. You also can see that the new theme park South America is well frequented.

## 4. Conclusions

At the end we will list some informations we got from the data analysis which can not be shown in the statistical evaluation, but it is still interesting to mention it.

- In our Analysis we did not separate between children or adults as accompanists. But with the informations of our questionnaire it is possible to say that people with children often go to the playground.
- People with strollers did not go up the steep hill to the Tyrol House.
- The Orang Utans House is far away from other attractions and that is why it is not so well frequented.
- On a rainy day we had no participants with annual ticket.

Important to mention is that we had an excellent cooperation with Vienna Zoo.

For the data analysis we had to process about 50 trajectories. That's enough to get an overview on how people behave in Zoo of Vienna. In order to get more objective results, more samples of questionnaire and trajectories could be collected.

The first sub task is finished and it could be used as a base for future work. The next step will be to find context parameters which are relevant for mobile guiding.

Login for Bing Maps to access to all GPS trajectories:

Username: [locationbased5@hotmail.com](mailto:locationbased5@hotmail.com)

Password: lbs5lbs5





## Fragebogen

Ausgabezeit:

Rückgabezeit:

GPS- Type:

GPS- Nummer:

### Angaben zur Person:

Alter:

Geschlecht:

Heimatland:

Erster Wienbesuch: ja/nein

Erster Tiergartenbesuch: ja/nein

Jahreskartenbesitzer: ja/nein

In Begleitung: ja/nein

Zeitlimit: ja/nein

Haben Sie sich bewusst für einen Weg/Route im Tiergarten entschieden? ja/nein

Welchen?

### Wetterverhältnisse:

- Sonnig
- Bewölkt
- Regen

Temperatur: