Spatial Cognition 2012
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Identifying touristic places

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Changing the query

- Spatial decision making and preferences
  - Depending on previous knowledge/expectations
  - Vague place models
    - Supervaluation
    - Qualitatively augmented fuzzy footprints
  - Classical query:
    - Does location x belong to region R?
- Semantic negotiation
  - e.g. communication
- Spatial relatedness
  - e.g. flocking effect (Laube/Purves 2006)
- Shared beliefs
  - Do A and B both believe that location x belongs to place P? (Schlieder/Henrich 2011)

(Social) visibility

- Preferences as result of social interaction processes
  - Framed by preconception
    - Prepared check list
  - Social framed
    - Tourist brochures etc.
  - Spatial framed
    - Affordance of an urban environment
- Place popularity
  - as cognitive imagnation

- Place popularity
  - marginal return model
  - action at site as vote: contribution to popularity
    - Place p
    - Person x in visitor set T_P, |x| = k
    - n pictures taken vs.
    - t minutes of stay time
  - Photos taken

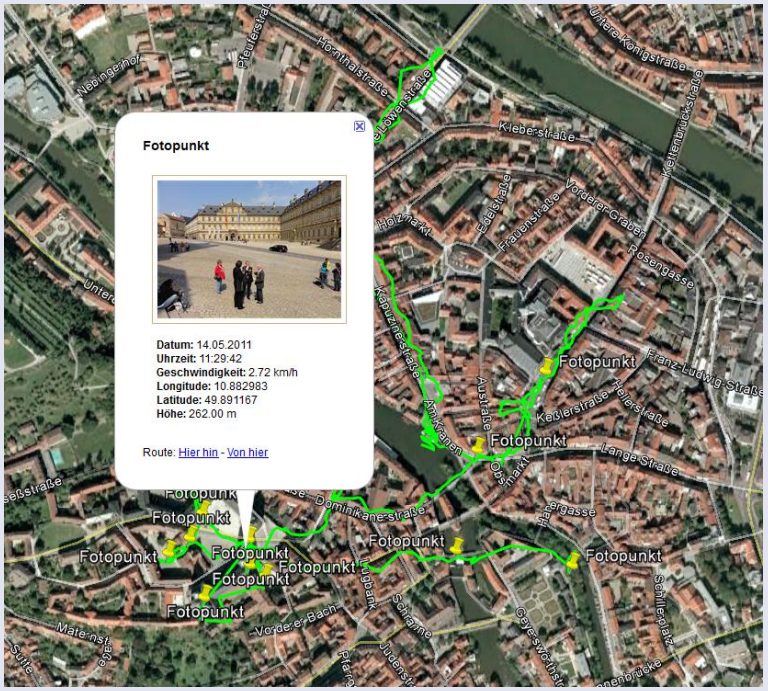
$$pop_{image}(p) = k + \sum_{x \in T_p} \log n(x)$$

  - Stay time

$$pop_{time}(p) = k + \sum_{x \in T_p} \log t(x)$$

Close monitoring (n=17)

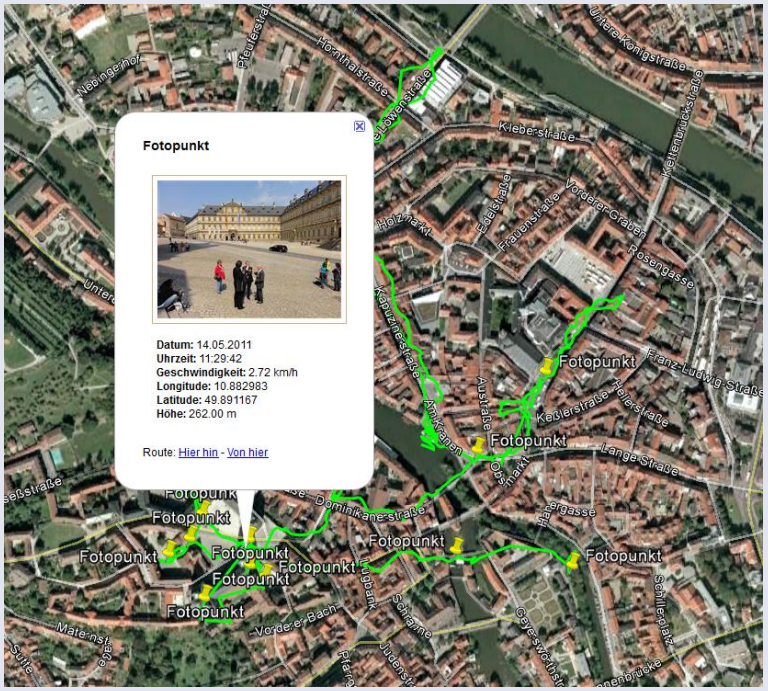
- Old town of Bamberg
  - UNESCO world heritage site (1.4 km²)
  - avg. duration: 212 min (120 – 420 min)
  - avg. length: 5.44 km (2.99 – 10 km)
  - avg. velocity: 1.59 km/h
  - avg. photos taken: 58 (15 – 234)
  - photo rate: 15.6/h (3.5 – 33.4/h)



Example record

Identifying places

- Possible indicators
  - Photo sequence
  - Resting behavior
  - Microexploration
  - Photo content (tags)
- Possible extraction
  - Prototypical Point
  - Bounding box
  - Convexe hull
  - Network hull, e.g. OSM



Example record

Some basic measures

- Place popularity
  - Image-based popularity

Place	OC	OT	CA	GP	GC	LV	MP	MM	NR	UP	RO
images	16	34	40	4	3	30	23	17	19	4	36
visitors	7	12	14	4	3	11	6	7	11	3	10
pop.	16,1	28,8	32,5	8,0	6,0	25,8	14,9	16,3	24,0	6,3	24,3
rank	7	2	1	9	11	3	8	6	5	10	4

  - Time-based popularity

Place	OC	OT	CA	GP	GC	LV	MP	MM	NR	UP	RO
time	98,0	270,2	150,0	52,7	15,7	44,3	90,9	80,6	113,9	11,9	151,4
visitors	15	16	16	6	3	9	6	7	15	4	12
pop.	41,6	51,7	45,7	23,4	11,7	24,5	18,0	20,5	43,0	14,5	36,7
Rank	4	1	2	7	11	6	9	8	3	10	5

OC = Old Court, OT = Old Townhall, CA = Cathedral, GP = Geyerswörth Park, GC = Geyerswörth Castle, LV = Little Venice, MP = Michaelsberg Park, MM = Michaelsberg Monastery, NR = New Residence, UP = Upper Parish, RO = Rosegarden

Overall agreement: 0.85 (Spearman rank correlation)

Types of consumption behavior

- Old Court

  $rank(pop_{image}) = 7$

  $rank(pop_{time}) = 4$

  - Ensemble that enables exploration, but provides no spectacular vista

- Little Venice

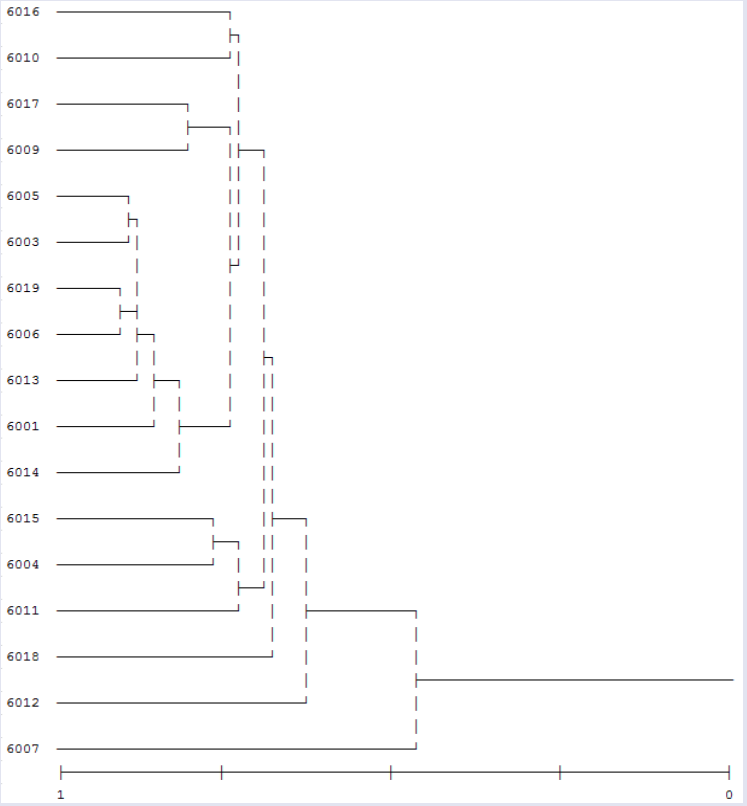
  $rank(pop_{image}) = 3$

  $rank(pop_{time}) = 6$

  - Scenic view on Bamberg riverside that is explored in a few minutes

Types of tourists

- User similarity (stay time)
  - Group lens, nearest neighbour
  - Core cluster (6006/6019) spent most time at the top 3 places (social framed)
  - Case 6007 focused entirely on visiting a monastery and its park (framed by preconception)



Suggestions to workshop challenge

1. There is no single location of place. Beyond vagueness different socially framed conceptualization coexist.

2. Empirical studies, e.g. close monitoring of spatial behavior, can help analyzing these conceptualizations.

3. Thus, a place name should not be mapped on one single (fuzzy) footprint, but on a set of footprints, different for different social frames (communities, activities, topics, …)

- Thank you for your attention! I appreciate questions and comments!