

Itinerary Recommendation for Cruises: User Study

Laboratoire d'InfoRmatique en Image et Systèmes d'information

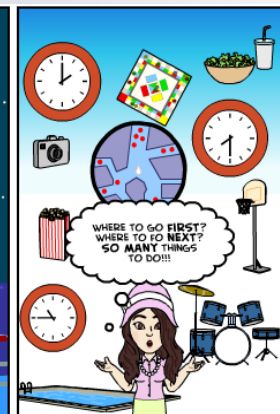
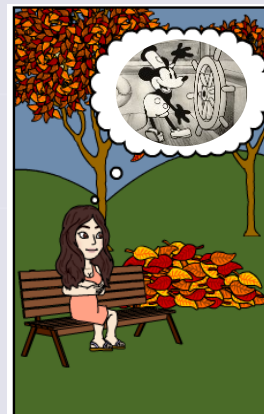
Diana Nurbakova, Léa Laporte, Sylvie Calabretto, Jérôme Gensel

Motivation

Morning		7:00	7:30	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30	12:45	1:00	1:15	1:30			
JUNIOR VISION	Junior Bell (G)	Family Movie Fun Time: Inside Out (PG)												Toy Story 2 (PG)												The Little Mermaid (G)			
BUENA VISTA THEATRE	Family Movie Fun Time: Inside Out (PG)																												
CHARACTERS	Junior Bell (G)	Family Movie Fun Time: Inside Out (PG)												Toy Story 2 (PG)												The Little Mermaid (G)			
OPEN FOR ALL AGES	Open House	Family Crafts												Captain's Signing												Jack-Jack's Super Hero Disney Trivia			
ADULTS	Friends of Bill W.	Art of The Theme Show Tour												Aquarians Senior Movie Quizzes Trivia												Singles' Lunch			
YOUNG	Footprint Analysis: Best Case Worst Case	Youth Activities Open House												Disney Animation: Career Paths												Ultimate Disney Trivia			
EDGE	Footprint Analysis: Best Case Worst Case	Youth Activities Open House												Disney Animation: Career Paths												Ultimate Disney Trivia			
OCCEANER LAB	Human Bingo	Youth Activities Open House												Disney Animation: Career Paths												Ultimate Disney Trivia			
OCCEANER CLUB	Human Bingo	Youth Activities Open House												Disney Animation: Career Paths												Ultimate Disney Trivia			
Afternoon	1:45	2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45	4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45	6:00	6:15	6:30	6:45	7:00	7:15	7:30	7:45	8:00			
JUNIOR VISION	Disney's Behind the Scenes: Frank Potts (11+)	The Lion King (G)												The Muppets (PG)												Cherrie (2015) (PG)			
BUENA VISTA THEATRE	Disney's Behind the Scenes: Frank Potts (11+)	The Lion King (G)												The Muppets (PG)												Cherrie (2015) (PG)			
CHARACTERS	Disney's Behind the Scenes: Frank Potts (11+)	The Lion King (G)												The Muppets (PG)												Cherrie (2015) (PG)			
OPEN FOR ALL AGES	Disney's Behind the Scenes: Frank Potts (11+)	The Lion King (G)												The Muppets (PG)												Cherrie (2015) (PG)			
ADULTS	Disney's Behind the Scenes: Frank Potts (11+)	The Lion King (G)												The Muppets (PG)												Cherrie (2015) (PG)			
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OCCEANER CLUB	Disney's Behind the Scenes: Frank Potts (11+)	The Lion King (G)												The Muppets (PG)												Cherrie (2015) (PG)			
Evening	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30	12:45	1:00	1:15	1:30		
JUNIOR VISION	Junior Bell (G)	Family Movie Fun Time: Inside Out (PG)												Toy Story 2 (PG)												The Little Mermaid (G)			
BUENA VISTA THEATRE	Junior Bell (G)	Family Movie Fun Time: Inside Out (PG)												Toy Story 2 (PG)												The Little Mermaid (G)			
CHARACTERS	Junior Bell (G)	Family Movie Fun Time: Inside Out (PG)												Toy Story 2 (PG)												The Little Mermaid (G)			
OPEN FOR ALL AGES	Open House	Family Crafts												Captain's Signing												Jack-Jack's Super Hero Disney Trivia			
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OCCEANER CLUB	Human Bingo	Youth Activities Open House												Disney Animation: Career Paths												Ultimate Disney Trivia			

Cruising Statistics

2016 – 24.2 mln passengers globally
 2017 - ≈25.3 mln expected
 1980-2017 - average annual passenger growth rate – 7%/annum
 2005-2015 – increase in demand for cruising – 62%
 2016 Deployed Capacity Share – 33.7% Caribbean/Bahamas (FCCA, 2017)

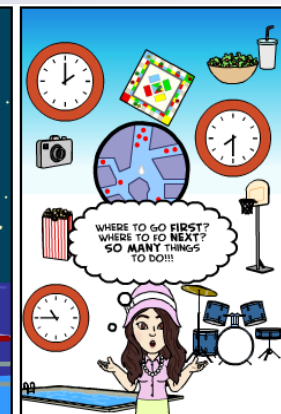


Motivation

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JUNIOR VISION	Disney Junior	Tinker Bell (G) Disney Junior										Toy Story 2 Disney Junior										The Little Mermaid (G) Disney Junior									
BUENA VISTA THEATRE		Family Movie Fun Time: Inside Out (PG) Duration: 1 Hour 45 Minutes										Avengers: Age of Ultron (PG-13) Duration: 2 Hours 23 Minutes										DOLBY 3D									
CHARACTERS		Jaka (11+) Minnie (11+) Sofia (11+) Minnie (11+)										Minnie (11+) Sofia (11+) Minnie (11+)										Minnie (11+) Sofia (11+) Minnie (11+)									
OPEN FOR ALL AGES		Open House Today: 10:00-11:00 11:00-12:00 12:00-1:00										Family Crafts Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00										Captain's Signing Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00									
ADULTS		Friends of Bill W. Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00										Art of The Theme Show Tour Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00										Aquarium Senior Movie Quizzes Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00									
YOUNG		Youth Activities Open House Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00										Youth Activities Open House Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00										Youth Activities Open House Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00									
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OCSEANER LAB		Human Bingo Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00										Human Bingo Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00										Human Bingo Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00									
OCSEANER CLUB		Youth Activities Open House Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00										Youth Activities Open House Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00										Youth Activities Open House Disney Junior Today: 10:00-11:00 11:00-12:00 12:00-1:00									
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JUNIOR VISION	Disney Junior	Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									
BUENA VISTA THEATRE		Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									
CHARACTERS		Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									
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JUNIOR VISION	Disney Junior	Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									
BUENA VISTA THEATRE		Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									
CHARACTERS		Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									
OPEN FOR ALL AGES		Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									
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YOUNG		Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									
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OCSEANER LAB		Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									
OCSEANER CLUB		Disney's Behind the Scenes: Frank Potts (11+)										The Lion King (G)										The Muppets (PG)									

Who Cruises?

- ➔ Preferred vacation choice for families, esp. with kids <18
- ➔ Kids are involved in decision process
- ➔ Millennials & Generation X : cruises > land-based vacations
- ➔ The best for relaxing and getting away from it all, for see and do new things (FCCA, 2017)

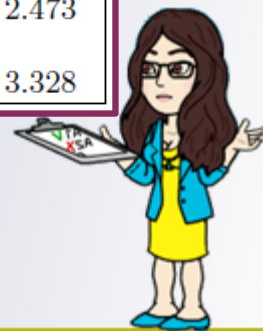


Motivation

Time Slot	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30	12:45	1:00	1:15	1:30
PERSONAL VISION	The Little Mermaid (G)															The Little Mermaid (G)											
BUENA VISTA THEATRE	Family Movie Fun Time: Inside Out (PG)															Avengers: Age of Ultron (PG-13)											
CHARACTERS	Jack Sparrow (PG)															Captain's Signing											
FUN FOR ALL AGES	Open House															Bingo Pre-Sales											
ADULTS	Friend of B.W.															Singles' Lunch											
YOUNG	Footprint Analysis															Ultimate Disney Trivia											
EDGE	Youth Activities Open House															Football Tournament											
OCCEANER LAR	Human Bingo															Lunch											
OCCEANER CLUB	Youth Activities Open House															Cribbies with Crafts											
Evening	The Muppets (PG)															The Muppets (PG)											
BUENA VISTA THEATRE	Disney's Behind the Scenes: Frank Potts (PG)															Cinderella (2015) (PG)											
CHARACTERS	Walt Disney															Bingo Pre-Sales											
FUN FOR ALL AGES	Open House															Bingo Pre-Sales											
ADULTS	Friend of B.W.															Singles' Lunch											
YOUNG	Footprint Analysis															Ultimate Disney Trivia											
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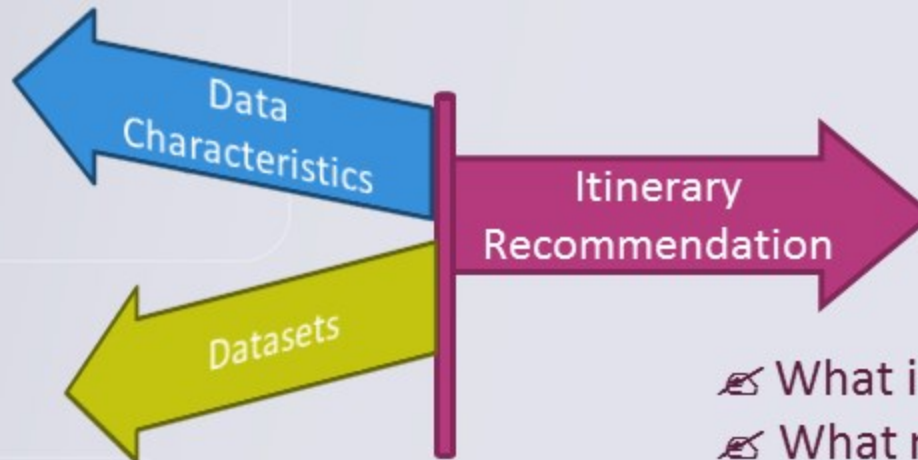


Time Slots	Activity	Travel Time, min
14:00 - 14:30	Towel Folding	3.999
14:15 - 15:00	Anyone Can Cook - Apple Strudel	3.193
15:45 - 16:15	Bingo Pre-Sales. Final Jackpot	1.701
16:15 - 17:00	Bingo: Final Jackpot	0.000
17:00 - 18:00	Professional Portraits	2.556
17:00 - 18:00	Talent Show Rehearsals	2.141
18:15 - 19:00	Disney's Believe	2.473
19:15 - 20:30	Professional Portraits	3.328
19:30 - 20:00	Mirror Mirror	2.141
21:30 - 22:30	Professional Portraits	2.141
21:45 - 22:15	Mirror Mirror	2.141
22:15 - 22:45	Club New Year's Eve	0.000
23:00 - 23:30	The Comedy & Magic of David Williamson	2.473
23:30 - 00:00	FireLites LIVE	3.328



Key Questions

✍ What are the data characteristics?



✍ What is it?

✍ What makes it challenging?

✍ Is there any existing dataset?



Itinerary Recommendation: Problem Statement

What We Have

- Set of Activities, $\mathcal{A} = \{a_i\}_{i=1,N}$:
 $a = \langle l, t, \delta, c, d \rangle$

$l = (x, y, z)$ – location

$t = (t_s, t_e)$ – time window (start & end)

$\delta \leq (t_e - t_s)$ – duration

$c = (c_1, c_2, \dots, c_k)$ – vector of categories

d – textual description

- Set of Users, $U = \{u_j\}_{j=1,M}$

- Users' History, \mathcal{M} :

$$\mathcal{M}_{ij} = \begin{cases} 1, & j^{th} \text{ user joined } i^{th} \text{ activity} \\ 0, & \text{otherwise} \end{cases}$$

What We Want

- Activity Sequence (itinerary),
 $\xi(u) = (a_{(1)} \rightarrow \dots \rightarrow a_{(s)} \rightarrow \dots \rightarrow a_{(s+k)}),$
 $1 \leq s \leq s+k \leq N$

- Activity availability constraint:

$$t_s(a_{(i)}) \leq start(a_{(i)}) \leq t_e(a_{(i)})$$

$$start(a_{(i)}) = \max\{start(a_{(i-1)}) + \delta(a_{(i-1)}) + time(a_{(i-1)}, a_{(i)}), t_s(a_{(i)})\}$$

- Time budget constraint:

$$\sum_{a_{(i)} \in \xi(u)} time(a_{(i-1)}, a_{(i)}) + \delta(a_{(i)}) \leq T_{max}$$

- User's Satisfaction :

■ w.r.t. activity $r(a, u)$, $r: \mathcal{A} \rightarrow \mathbb{R}^+$

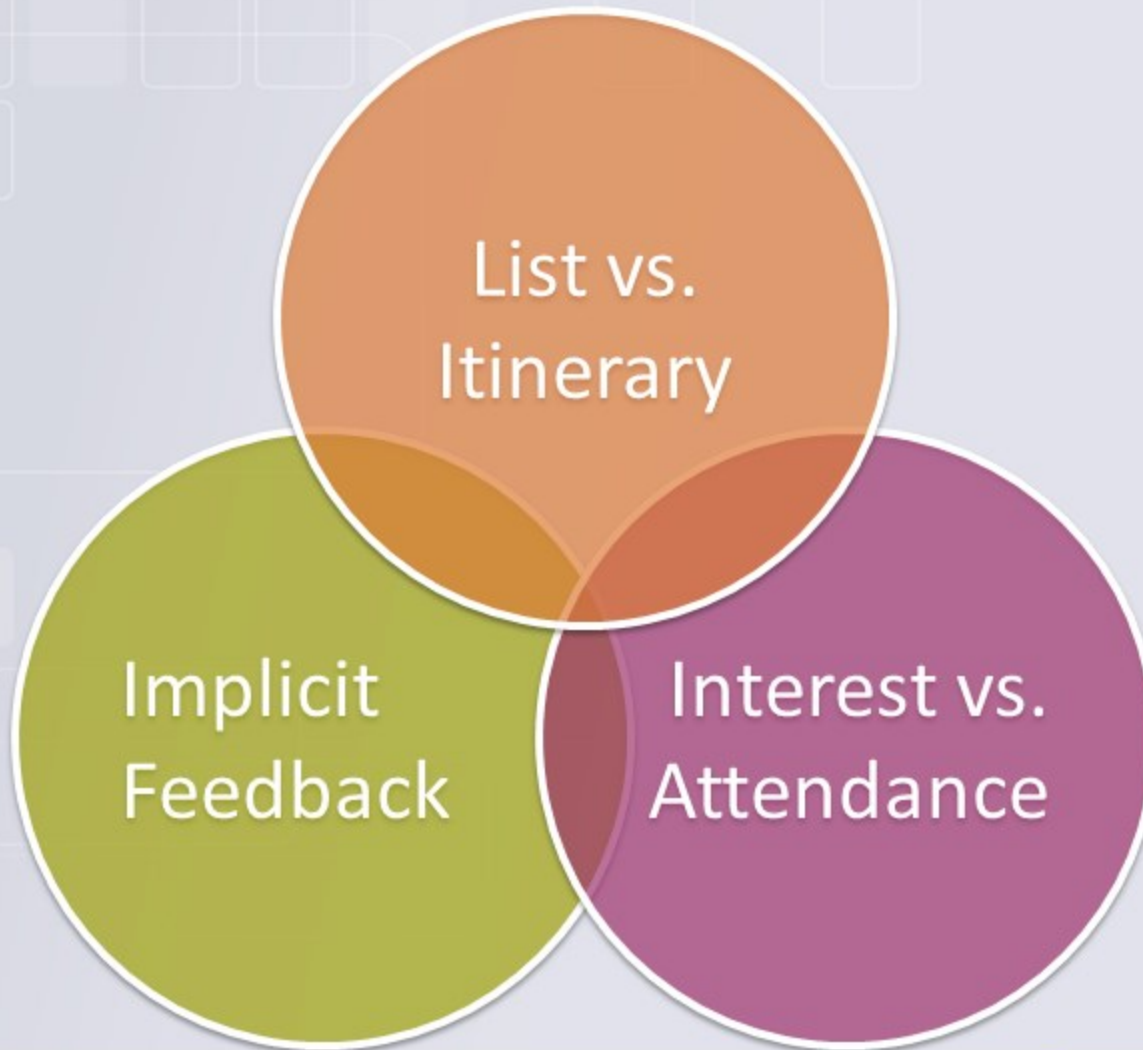
■ w.r.t. itinerary $\rho(\xi, u)$, $\rho: \Xi \rightarrow \mathbb{R}^+$

- Find: $\forall u \in U, \xi(u): \max \rho(\xi, u)$

(Nurbakova et al., 2017)



Challenges



Data Characteristics

ITEM

- *Time Windows*
- *Coordinates*
- *Service Time*
- *Categories*
- Description
- Price
- Item Additional Attributes

SEQUENCE

- Time Budget
- Starting/Ending Point
- Tour Additional Attributes

USER

- User's personal data

USER-ITEM

- *Historical data*
- Score

USER-USER

- Social links

Existing Datasets



Need for Dataset

Entity	Characteristic	Single Item									Schedule			Sequence	
		TREC CS'13 [3]	TREC CS'14 [4]	TREC CS'15 [2]	Yelp ¹	Foursquare_1 [14]	Foursquare_2 ²	Flickr [11]	Twitter [5]	Meetup [7]	MCTOPMTW [10]	Other OP-TW [12]	Other OP-based [12]	TripBuilder [6]	GeoLife [13]
Item	<i>Time windows</i>				✓						✓	✓			
	<i>Coordinates</i>	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	<i>Service Time</i>										✓	✓	✓		
	<i>Categories</i>									✓	✓			✓	
	<i>Price</i>					✓					✓			✓	
	<i>Item Additional Attributes</i>				✓			✓		✓					
	<i>Description</i>							✓	✓						
Sequence	<i>Time budget</i>										✓	✓	✓		
	<i>Starting/Ending Point</i>										✓	✓	✓	✓	
	<i>Tour Additional Attributes</i>			✓										✓	
User	<i>User's personal data</i>			✓						✓					
User-Item	<i>Historical Data</i>	✓	✓	✓		✓	✓	✓	✓	✓				✓	✓
	<i>Score</i>	✓	✓	✓		✓	✓				✓	✓	✓		
User-User	<i>Social links</i>				✓	✓	✓			✓					

¹ Yelp challenge dataset, http://www.yelp.com/dataset_challenge

² <https://github.com/jalbertbowden/foursquare-user-dataset>

User Study: Stats

Dataset Statistics

Number of users	23
Number of activities in overall program	595
Number of days	7
Number of DCL categories	10
Number of No DCL categories	42
Number of locations	47
Average time of completion	50min-1h



Link:

<https://goo.gl/forms/ZEX4LPhcg0qDAzlr1>

User Study Campaign

User Study Preferences

Please select the user study preferences based on your evaluation of the proposed activities (categories listed).

User Study Details

Please provide a (2) answer related to the User Study Feedback Survey on the Day 1.

Please, for the activities listed below select one of the grade:

- 1: Not interested at all and not recommended response is about 0.
- 2: Not interested.
- 3: Slightly.
- 4: Good.
- 5: Great.

User Study Feedback

Please provide a (2) answer related to the User Study Feedback Survey on the Day 1.

Day 1 of 7

Activity	Rating	Not going
1:00 - 1:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
1:30 - 2:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
2:00 - 2:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
2:30 - 3:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
3:00 - 3:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
3:30 - 4:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
4:00 - 4:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
4:30 - 5:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
5:00 - 5:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
5:30 - 6:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
6:00 - 6:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
6:30 - 7:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
7:00 - 7:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
7:30 - 8:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
8:00 - 8:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
8:30 - 9:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
9:00 - 9:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
9:30 - 10:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
10:00 - 10:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
10:30 - 11:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
11:00 - 11:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
11:30 - 12:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
12:00 - 12:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
12:30 - 1:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
1:00 - 1:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
1:30 - 2:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
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6:30 - 7:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
7:00 - 7:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
7:30 - 8:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
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9:30 - 10:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
10:00 - 10:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
10:30 - 11:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
11:00 - 11:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
11:30 - 12:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
12:00 - 12:30: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>
12:30 - 1:00: Disney Cruise Line	<input type="radio"/>	<input type="radio"/>

User Study: Part I



User Study Campaign

The aim of this questionnaire is to create a preliminary dataset that could be used in order to make personalised recommendations of itineraries. The survey consists of four parts. The first one deals with user's features and experience. The second part aims to learn the preferences of the user by asking to evaluate the list of activities. In the third one, users are asked to create daily itineraries by selecting activities. And the fourth part concludes the survey. The aim of this study is to better understand what "factors" influence our choice of activities to perform.

The list of activities used in the survey is taken from the personal navigators of Disney's Fantasy 7-nights Eastern Caribbean cruise. Activities dedicated exclusively for kids have been excluded from the current list of activities.

The original personal navigators can be found at:
<http://disneycruiselineblog.com/2015/07/personal-navigators-7-night-eastern-caribbean-cruise-on-disney-fantasy-itinerary-a-june-20-2015/>

The deck plan of the ship can be found at:
<http://disneycruiselineblog.com/ships/deck-plans-disney-dream-disney-fantasy/>

The screenshot of Disney Cruise Line official permitting the use of the personal navigators can be found at:
<https://drive.google.com/file/d/0BzEKHQGWnmE2czBPeTRncEthcEk/view?usp=sharing>

PS: the data will be used only in academic purpose

PART I. USER PROFILE

This part contains questions on basic user's features and their experience.

Your gender

Please, choose your gender.

- ☐ Female
☐ Male

Have you already experienced DCL (Disney Cruise Line)?

☐ Yes

USER PROFILE

Number of questions – 10

Basic users' features and their cruising experience

Examples:

1. Your gender
2. Have you already experienced DCL (Disney Cruise Line)
3. Have you tried any other cruise?
4. The type of group you were/are travelling with. *Please, choose, the option that best describes you.*
5. If you were travelling with a group, have you split to attend different activities or you mostly preferred to stay together?

User Study: Part II

USERS PREFERENCES

Number of questions – 311

Evaluation of a list of proposed activities on 5-point scale: 1 – Never (not interested at all and won't recommend to anyone to attend it), 5 – Won't miss

Examples:

A Pirate's Life For Me. Don't Miss Event.

Description: Calling all Pirates, we be! If ye have an adventurous spirit or pirate savvy, come spin the "Wheel of Destiny" fer a treasure trove of fun be ripe for the takin' in this action packed pirate game show.

Available: Day 4, 18:30-19:00, *Location:* D Lounge & Day 4, 21:30-22:00, *Location:* D Lounge

Never ○ ○ ○ ○ ● Won't Miss

User Study Campaign

PART II. USERS PREFERENCES

This part aims to learn user's preferences based on user's evaluation of a list of proposed activities (category-based)

Fun for All Ages

Please, for the activities listed below select one of the grade:

- 1 - Never (not interested at all and won't recommend to anyone to attend it);
- 2 - Not interested;
- 3 - Neutral;
- 4 - Interested;
- 5 - Won't miss

A Fantasy Come True. Event of the Day.

Description: Join us tonight in the beautiful Walt Disney Theatre for a magical, musical journey through the wonderland of the Disney Fantasy featuring the Walt Disney Theatre Cast; World Famous Disney Characters and the Comedy and Ventriloquism of David Crone. Available: Day 1, 18:15-19:00, Location: Walt Disney Theatre & Day 1, 20:30-21:30, Location: Walt Disney Theatre

1 2 3 4 5

Never ○ ○ ○ ○ ● Won't Miss

A Pirate's Life For Me. Don't Miss Event.

Description: Calling all Pirates, we be! If ye have an adventurous spirit or pirate savvy, come spin the "Wheel of Destiny" fer a treasure trove of fun be ripe for the takin' in this action packed pirate game show. Available: Day 4, 18:30-19:00, Location: D Lounge & Day 4, 21:30-22:00, Location: D Lounge

1 2 3 4 5

Never ○ ○ ○ ○ ● Won't Miss

Andrea & Rafaela LIVE.

Available: Day 6, 22:30-23:00, Location: Lobby Atrium

1 2 3 4 5

Never ○ ○ ○ ○ ● Won't Miss

User Study: Part III

User Study Campaign

Part III. ITINERARY PLANNER

In this part users are asked to organise the activities into a day-wise itinerary.

Day 1 of 7

Ship: Disney Fantasy
Destination: Eastern Caribbean
Itinerary: A

Date: 20.06.2015
Weekday: Saturday
Sunrise: 06:25
Sunset: 20:21
Evening Attire: Cruise Casual
Port: Port Canaveral, Florida

Weather:
Today: Sunny
Tomorrow: Partly Sunny

Today High 86F 30C
Tomorrow High 84F 29C
Special Holiday Edition: No
Holiday: No

Day 1 of 7

	Going	Not going
11:30 - 15:00. Character Meet & Greet Ticket Distribution . Category: Characters. Location: Port Adventures Desk. Don't Miss Event	<input type="radio"/>	<input type="radio"/>
13:00 - 13:30. Walking Ship Tour . Category: Fun for all ages. Location: Preludes. Don't Miss Event	<input type="radio"/>	<input type="radio"/>
13:45 - 15:15. Poolside Jams with Cruise Staff DJ . Category: Fun for all ages. Location: Deck 11 Stage	<input type="radio"/>	<input type="radio"/>
13:45 - 15:00. Spa Open House . Category: Adults. Location: Senses Spa & Salon	<input type="radio"/>	<input type="radio"/>
14:00 - 14:30. Walking Ship Tour . Category: Fun for all ages.	<input type="radio"/>	<input type="radio"/>

ITINERARY PLANNER

Number of questions – 593

Organisation of daily planner of activities by indicating the intention 'Going' or 'Not Going'

Examples:

Event	Going	Not going
-------	-------	-----------

14:00 - 14:30.

Walking Ship Tour .

Category: Fun for all ages.

Location: Preludes.

Don't Miss Event



User Study: Part IV

AFTERWARDS

Number of questions – 5

Concluding questions

Examples:

1. Could you, please, select the categories of activities that represented the most interest for you.
2. When you were having a choice among different activities of your interest, did you consider the distance to the venue while making your choice? *If you prefer a nearby activity rather than an activity on the opposite part of the ship, please select yes. If the distance doesn't matter for you, please select no.*
3. How do you usually manage the list of activities to perform during your vacations?

User Study Campaign

PART IV. AFTERWARDS

This part contains some conclusion questions.

Could you, please, select the categories of activities that represented the most interest for you

Please, select the categories of activities that you tried not to miss

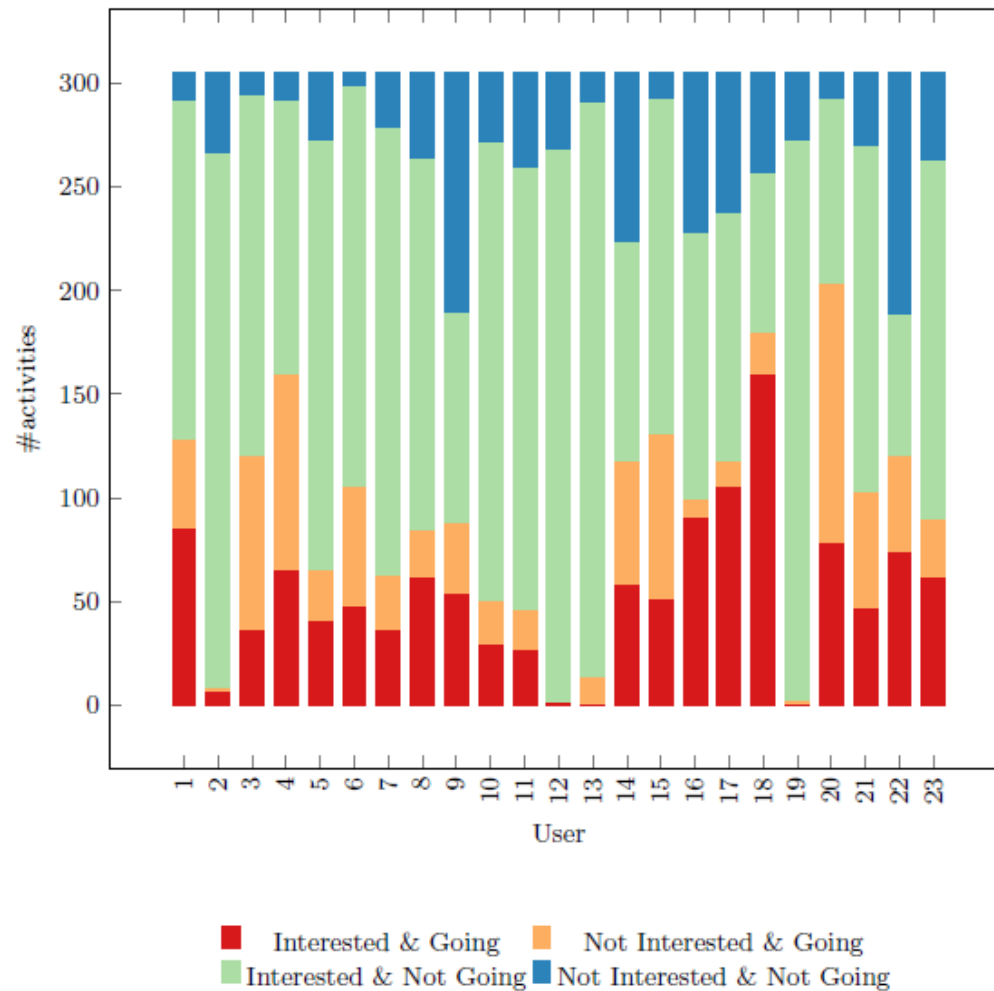
- ☐ Animation Classes
- ☐ Bingo
- ☐ Board Games
- ☐ Clubbing
- ☐ Cooking Workshops
- ☐ Crafts
- ☐ Dance Party
- ☐ Game Show
- ☐ Guided Tour
- ☐ Karaoke
- ☐ Live Music
- ☐ Meeting Characters
- ☐ Movies
- ☐ Seminars
- ☐ Sport
- ☐ Tasting Classes
- ☐ Theatre
- ☐ Trivia
- ☐ Variety Show
- ☐ Other:

When you were having a choice among different activities of your interest, did you consider the distance to the venue while making your choice?

If you prefer a nearby activity rather than an activity on the opposite part of the ship, please select yes. If the distance doesn't matter for you, please select no.

☒ Yes

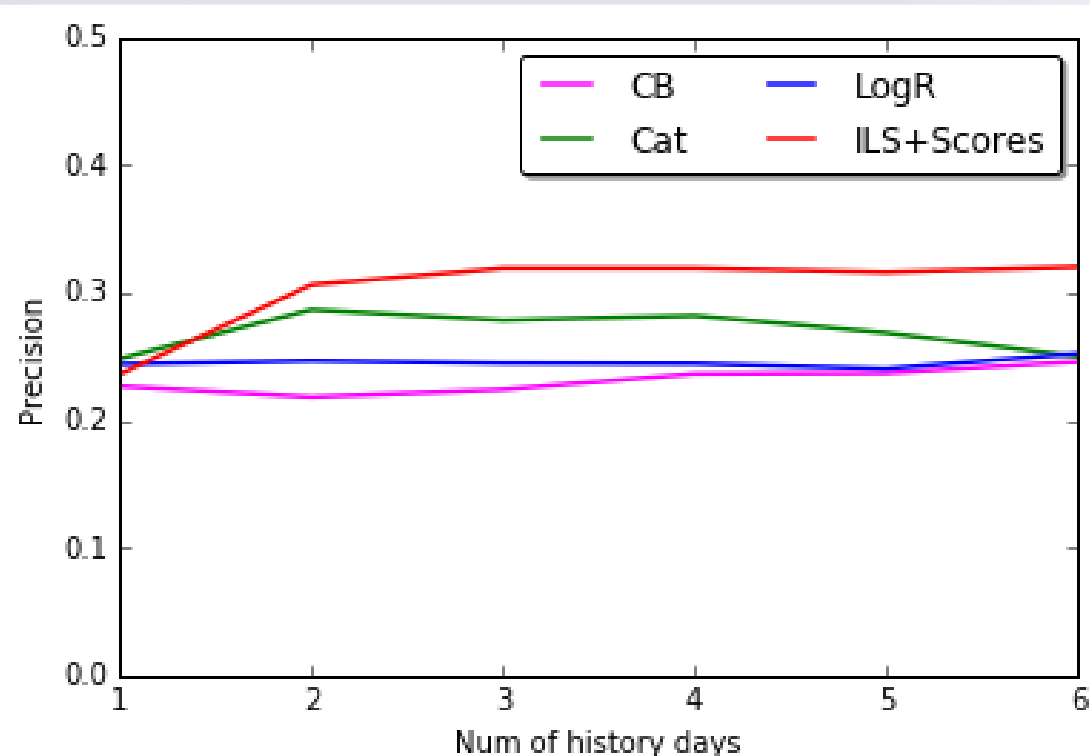
Interest vs. Attendance



List vs. Itinerary

Top- k vs. Itinerary construction

- **Content-based (CB)**: TF-IDF representation of activity (title + description) and user's past activities
- **Category-based (Cat)**: weighted frequency of categories (Nurbakova et al., 2017)
- **Logistic Regression (LogR)**: CB + Cat
- **ILS + Scores**: hybrid scores + transition probabilities between activities + ILS algorithm (Nurbakova et al., 2017)



What We've Learnt?

- ➡ The shorter questionnaire – the more respondents
- ➡ The most desirable characteristics of a dataset for the itinerary recommendation: time windows of an item, coordinates, service time, categories and users historical data
- ➡ There's a gap between users' interest in an activity and their engagement to it
- ➡ In the context of a distributed event (e.g. a cruise), a personalised itinerary fits better users' behaviour than a list of top- k activities



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