On Presentation at International Conferences

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Presentations

- Many kinds of presentations
  - Business meetings
  - Teaching
  - Interview
  - Election
  - Elevator pitch
  - Conference: **Oral**, Poster, Demo presentations
- A fundamental skill for a researcher
- A Daily job for us

How can I give a successful oral presentation at an international conference?

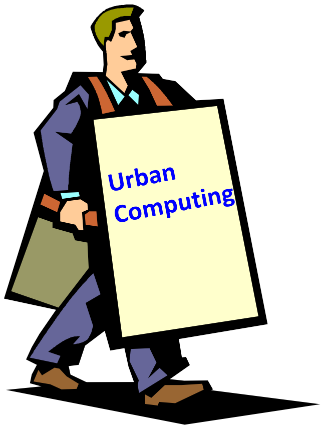
Why me

- Non-overseas studying experience ☺
- Gave presentations at many top-tier conferences
- Gave tutorials at WWW, ACM SIGSPATIAL, etc.
- Gave guest lectures in MIT, CMU, Cornel, and UIUC
- Interviewed by many international presses, MIT TR, BBC,…

Why give a presentation at a conference?

- An **opportunity** √
- Advertising research √
- Getting feedback √
- Connect to community √

- A burden X
- Detailed methods X
- Defense presentation X
- Argue with audiences X



Advertising

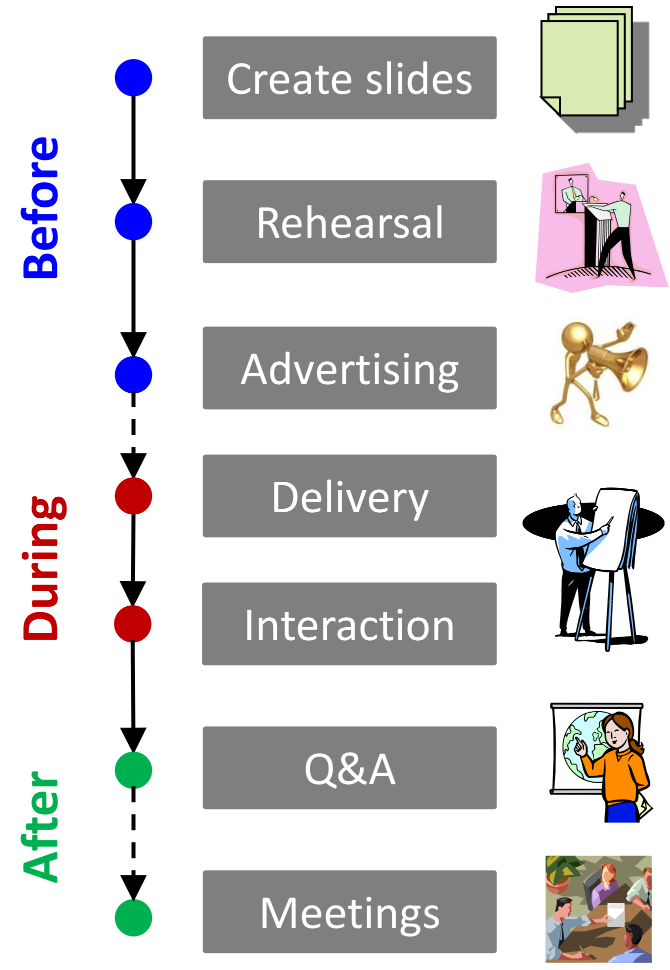
feedback

Connection

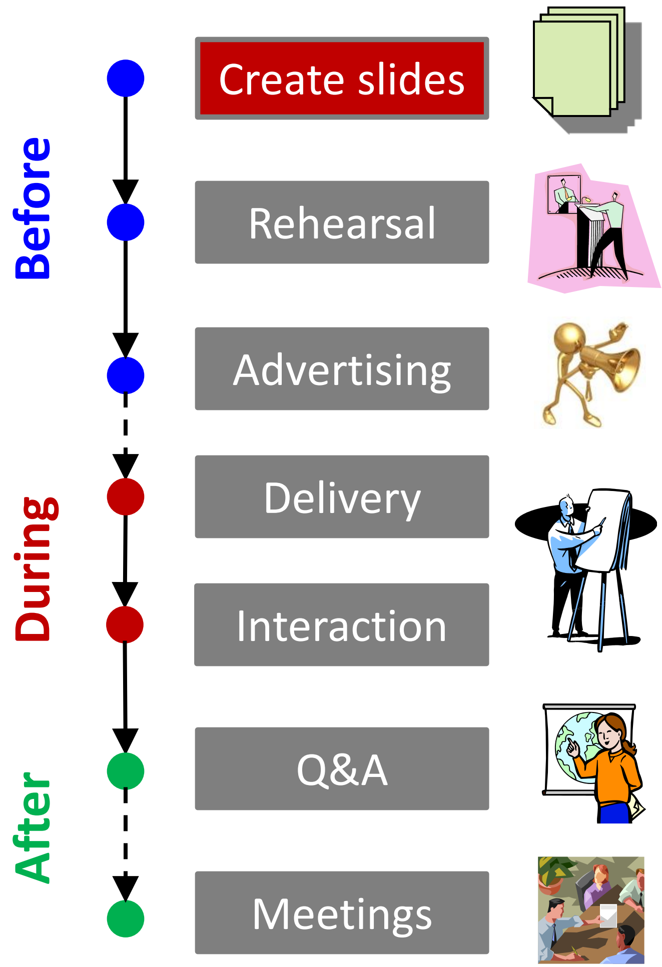
Now, imaging you are a movie director who is trying to encourage people to watch your movie with a tailor or preview

Overview

- Before a presentation
- During a presentation
- After a presentation



Before a Presentation



Before a Presentation – Slides

- Why use slides **deliver a lively story**
  - Provides notes and release speakers
  - Offer highlights to audiences
  - Better demonstrate complex ideas

- The difference between slides and a paper
  - Animations, videos, figures
  - You can control the focus of your audiences

Before a Presentation – Slides

- Structure
- Language
- Insight
- Results

- Using two examples
  - Driving directions based on taxi trajectories, ACM GIS 2010
  - Discover regions of different functions using human mobility and POIs, KDD 2012

Before Presentation – Slides

Structure of slides

- Positive (√)
  - Goal and results first
  - Keep the outline in mind
  - Focus on your own work
  - Tell me why
  - Less is more (1min/slide)

- Inappropriate (X)
  - Long introduction
  - An explicit outline slide
  - Many related works
  - Many technical details
  - Many slides, goes quickly

Before Presentation – Slides

- Outline
  - Background
  - contribution
  - Related work
  - Methodology
  - Experiments
  - Conclusion
  - Future work

Negative example

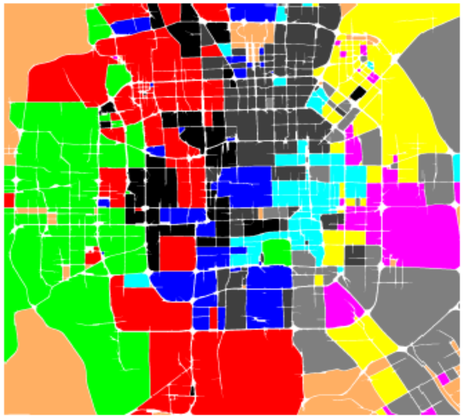
Before Presentation – Slides

- What we do
- Result highlight
- Motivation of your goal
- Method summary
- Insight of your method (why this method)
- Results with stories and discussion
- Take away messages

Just keep it in mind

Not necessary to have an explicit slide

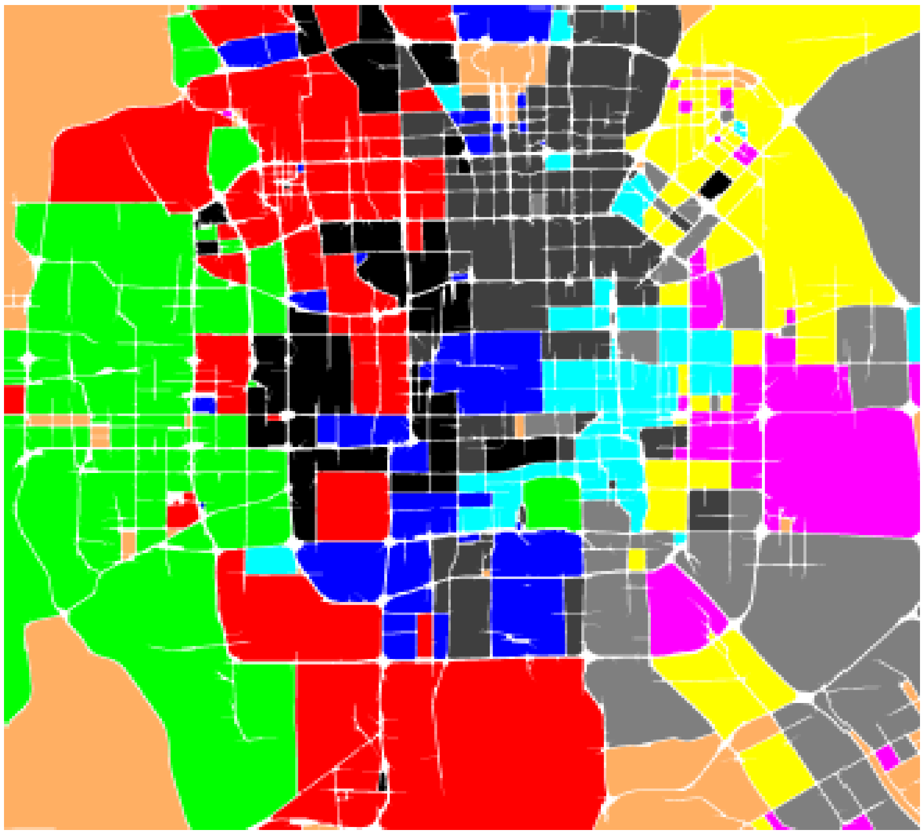
Discover Regions of Different Functions using Human Mobility and POIs



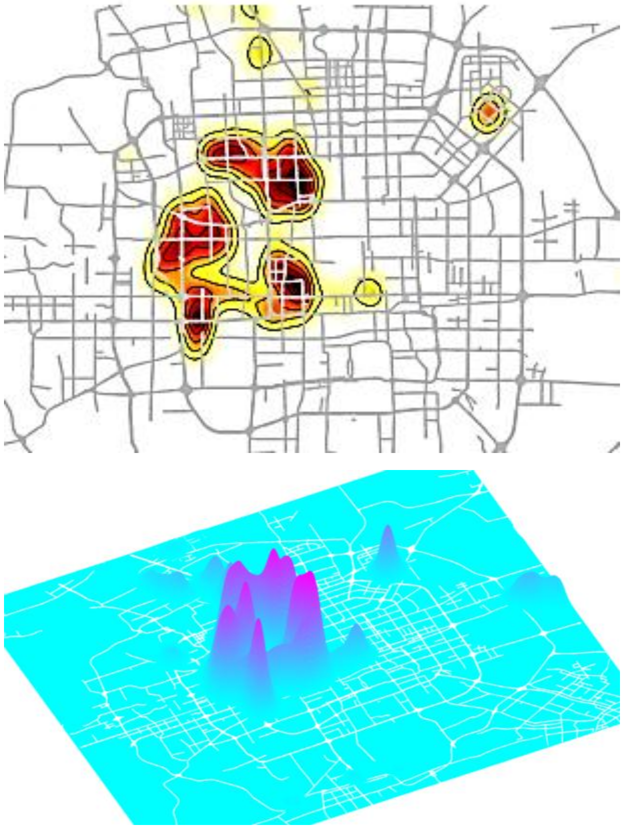
In KDD 2012

Goals

- Discover regions of different functions in urban areas
- Identify the kernel density of a functionality



Functional Regions



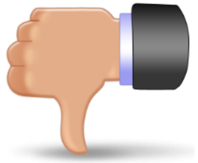
Functionality Density

Before Presentation – Slides

Language of slides

- Positive (√)
  - Short terms
  - A few terms per slide
  - A figure is worth of thousands of words
  - Illustrate a process with animations and videos

- Inappropriate (X)
  - Long sentences
  - Many texts and equations
  - Pasting static algorithms



Examples

What we do

Many texts

- The advances in location-acquisition technologies have led to a myriad of spatial trajectories. These trajectories are usually generated at a low or an irregular frequency due to applications' characteristics or energy saving.
- In this paper, we present a Route Inference framework based on Collective Knowledge (abbreviated as RICK) to construct the popular routes from uncertain trajectories.
- Our work can benefit trip planning, traffic management, and animal movement studies. The RICK comprises two components: *routable graph construction* and *route inference*.
- We explore the spatial and temporal characteristics of uncertain trajectories and construct a routable graph by collaborative learning among the uncertain trajectories. Second, in light of the routable graph, we propose a routing algorithm to construct the top-*k* routes according to a user-specified query.
- We have conducted extensive experiments on two real datasets, consisting of Foursquare check-in datasets and taxi trajectories. The results show tha both effective and efficient.

Driving Direction Based on Taxi Trajectories

- A *time-dependent*, user-specific, and self-adaptive driving directions service using
  - GPS trajectories of a large number of taxicabs
  - GPS log of an end user

Physical Routes

Traffic flows

Drive behavior

ACM SIGSPATIAL GIS 2010 best paper runner-up award and a publication on KDD 2011

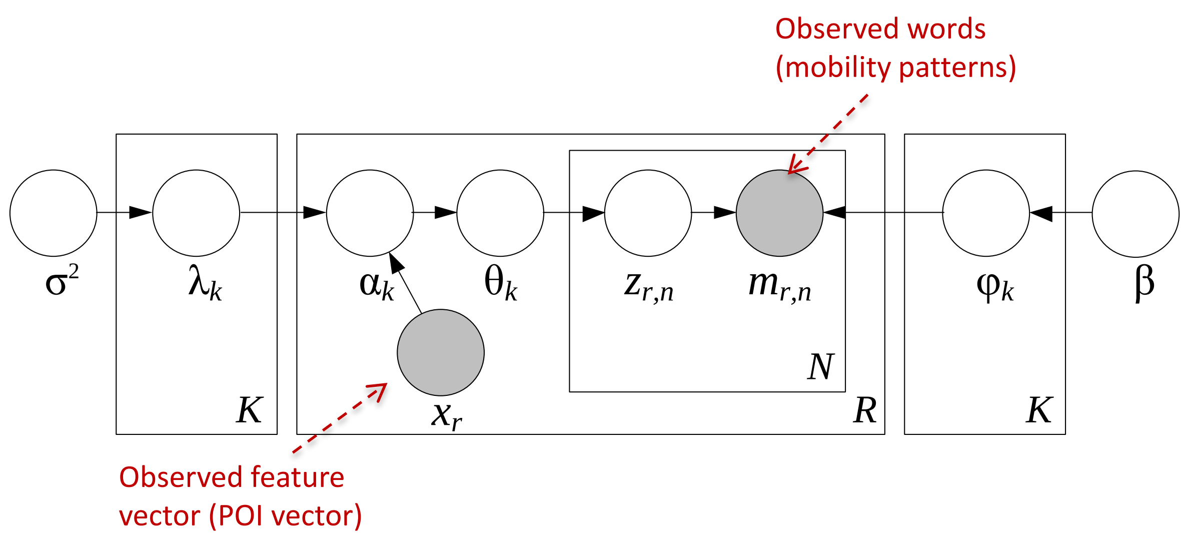
Many equations

1. For each region topic k,
   (a) draw $\lambda_k \sim \mathcal{N}(0, \sigma^2 I)$;
   (b) draw $\beta_k \sim Dir(\eta)$.
2. Given the rth region,
   (a) for each region topic k, let $\alpha_{r,k} = \exp(x_r^T \lambda_k)$;
   (b) draw $\theta_r \sim Dir(\alpha_r)$;
   (c) for the nth mobility pattern in the rth region $m_{r,n}$,
      i. draw $z_{r,n} \sim Mult(\theta_r)$;
      ii. draw $m_{r,n} \sim Mult(\beta_{z_{r,n}})$.

Here, $\mathcal{N}$ is the Gaussian distribution with σ as a hyper parameter, and λ_k is a vector with the same length as the POI feature vector.

Methodology Overview

- **Mapping from regions to documents**
  - Regions → Documents (*R*)
  - Functions → Topics (*K*)
  - Mobility patterns → Words (*N*)
  - POIs → meta data like Key words and authors



Infer the topic distribution using a LDA(Latent Dirichlet allocation)-variant topic model

Pasting a static algorithm

Algorithm 2: Variance-Entropy-Based Clustering

Input: a set of points $S = \{(x_i, y_i)_{i=1}^{n}\} \subseteq \mathbf{R} \times \mathbf{R}$

Output: a sequence of distributions $D_1, D_2, \ldots, D_k$

$S^y \leftarrow$ sorted sequence $\{y_i\}_{i=1}^{n}$ order by y_i asending;

$y\_split \leftarrow \varnothing$;

$y\_split \leftarrow$ `V-Clustering(`S^y,δ_v,y_split`);`

$C = \{c_1, c_2, \ldots, c_m\} \leftarrow$ `Convert(`S^y, y_split`);`

`/* Convert` S^y `into clusters according to` y_split `*/`

$S^{xc} \leftarrow$ sort $\{(x_i, c(y_i))_{i=1}^{n}\}$ order by x_i asending;

`/*` $c(y_i) \in C$ `is the cluster of` y_i `*/`

$x\_split \leftarrow \varnothing$;

$x\_split \leftarrow$ `E-Clustering(`S^{xc},δ_e,x_split`);`

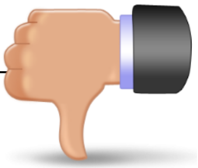
`/* Divide x-axis into several slots */`

for $i \leftarrow 1$ **to** $|x\_split|$ **do**

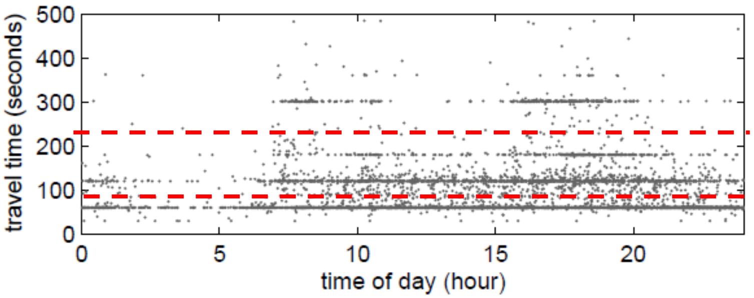
  $D_i \leftarrow$ `ComputeDistribution(`S^{xc},i,x_split`);`

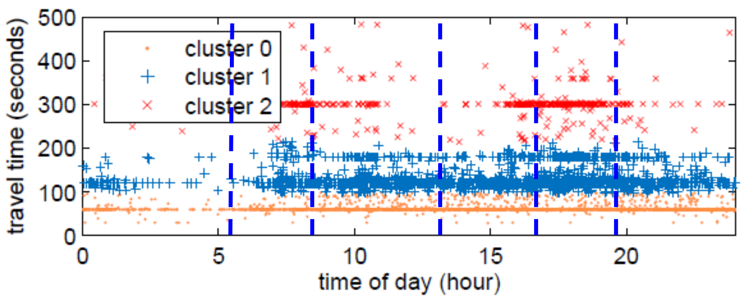
  `/* Compute the distribution of slot` i `*/`

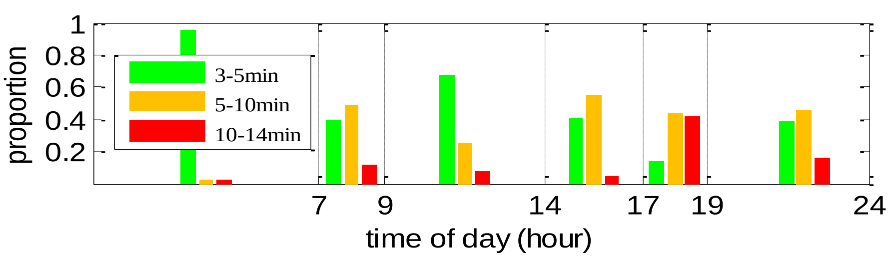
return $D = \{D_1, D_2, \ldots, D_k\}$;



Mining Taxi Drivers' Knowledge







C) Distributions of travel time

- Learning travel time distributions for each landmark edge
  - Traffic patterns vary in time on an edge
  - Different edges have different distributions

Many equations

Using these notations, we have the initial states $f_s(1)$ and $f_e(1)$ as follows:

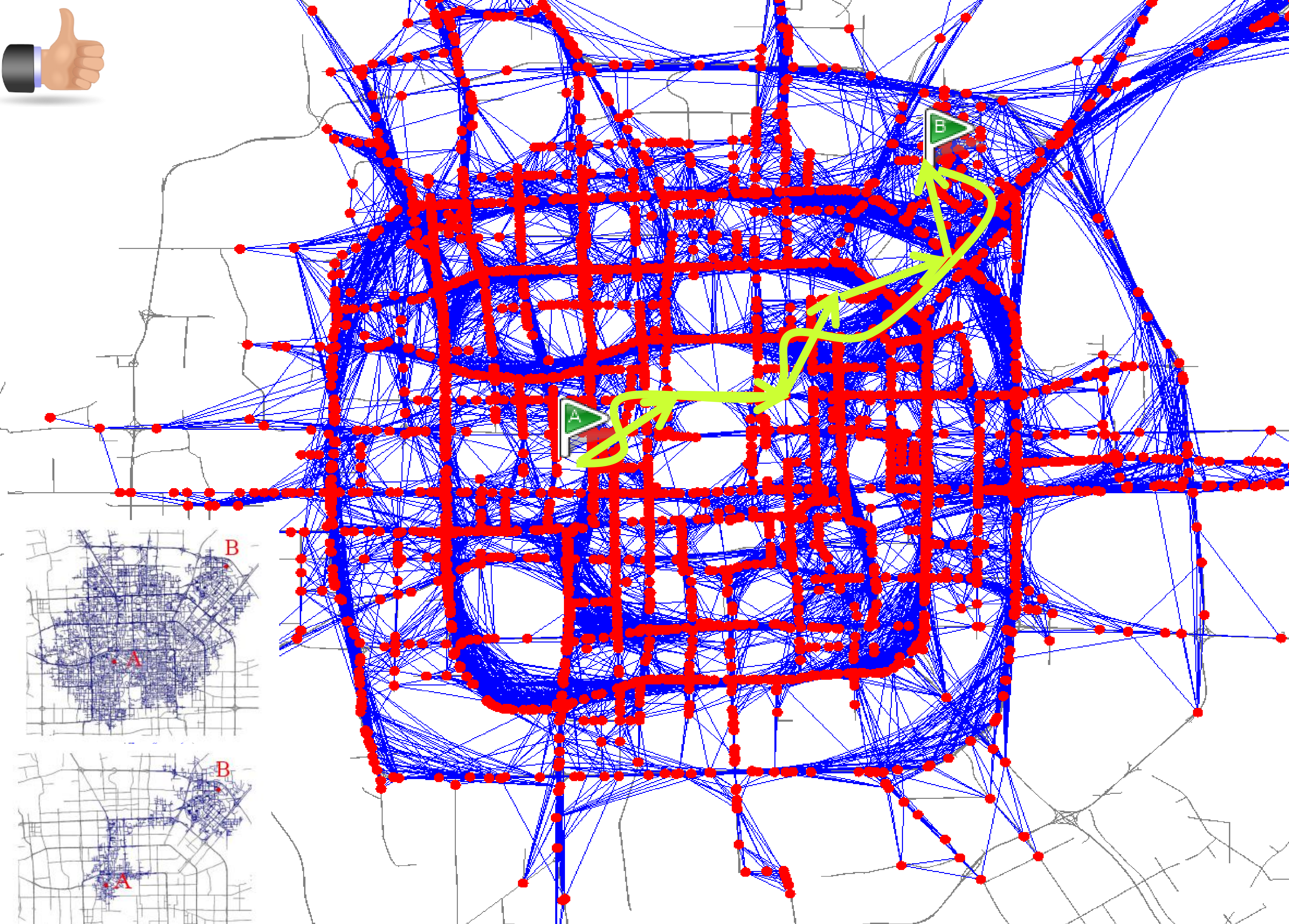
$$\begin{aligned} f_s(1) &= T(q_s, r_1.e, r_1.s) + t_{es}(1) \\ f_e(1) &= T(q_s, r_1.s, r_1.e) + t_{se}(1) \end{aligned} \quad (4)$$

As shown in Figure 11 (B), let $T^i_{se} = T(r_i.s, r_{i+1}.e, r_{i+1}.s)$ denote the time of the fastest route (using speed constraint in real road network) which starts from point $r_i.s$ and ends at point $r_{i+1}.e$ without crossing $r_{i+1}.s$ in road network G_r. Then T^i_{ee}, T^i_{ss}, T^i_{es} can be similarly defined. Now we have the state transition equations:

$$\begin{aligned} f_s(i+1) &= \min\{f_s(i) + T^i_{se}, f_e(i) + T^i_{ee}\} + t_{es}(i+1) \\ f_e(i+1) &= \min\{f_s(i) + T^i_{ss}, f_e(i) + T^i_{es}\} + t_{se}(i+1) \end{aligned} \quad (5)$$

After $f_s(n)$ and $f_e(n)$ are computed, the total travel time for the optimal route in the real road network is:

$$\min\{f_s(n) + T(r_n.s, q_d, r_n.e), f_e(n) + T(r_n.e, q_d, r_n.s)\}$$



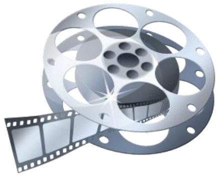
Reported by MIT Technology Review Twice, featured once

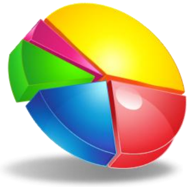
If a figure is worth of thousands of words,
what does an animate deserve?

Before Presentation – Slides

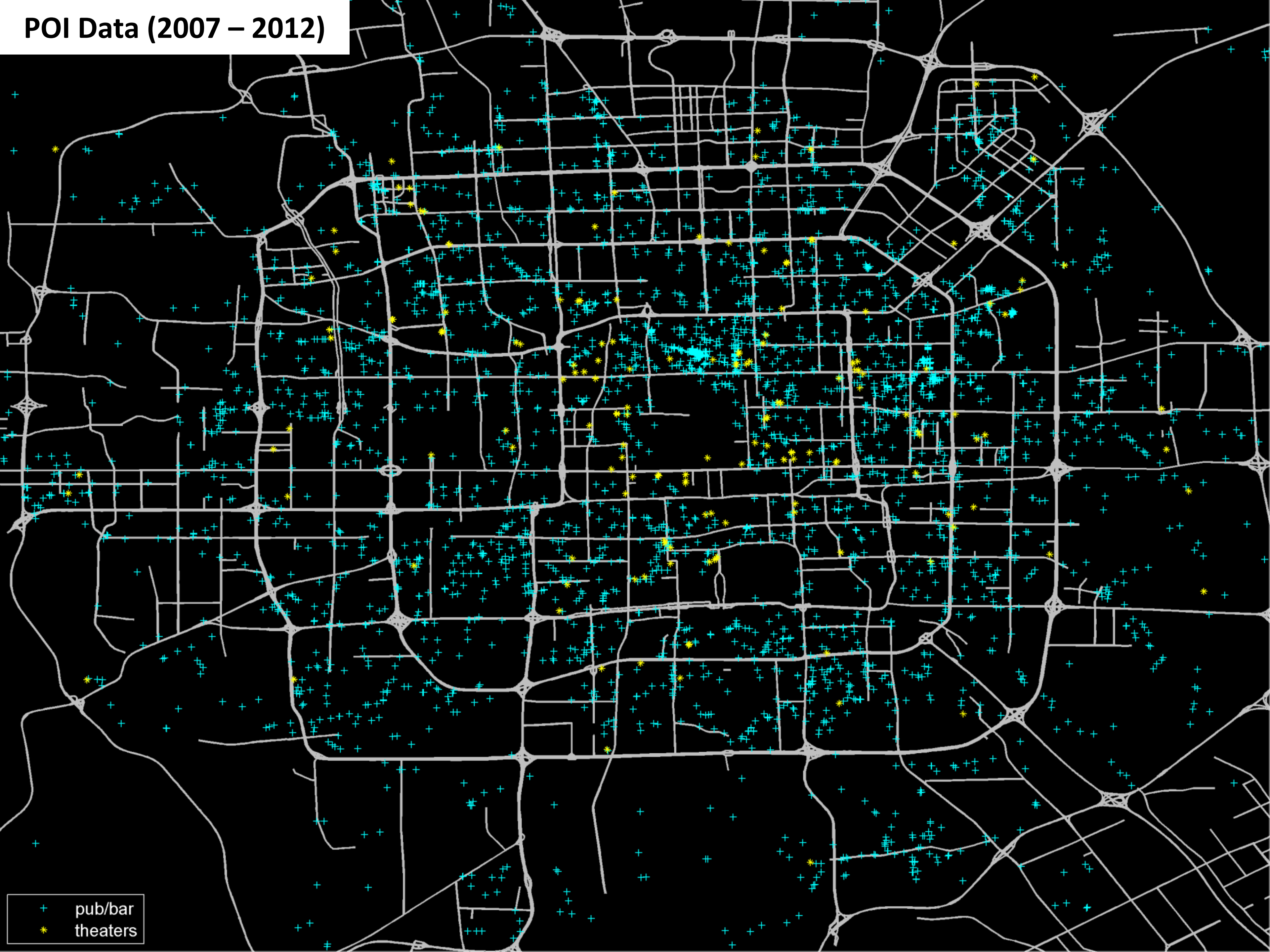
- **Insight**
  - ‘Why’ is more important than ‘how’
  - Insight is the soul of research inspiring people

- The majority of audiences did not do what you did
- Make your slides interesting and informative
  - Using images, animations, videos
  - Endow colors with semantic meanings



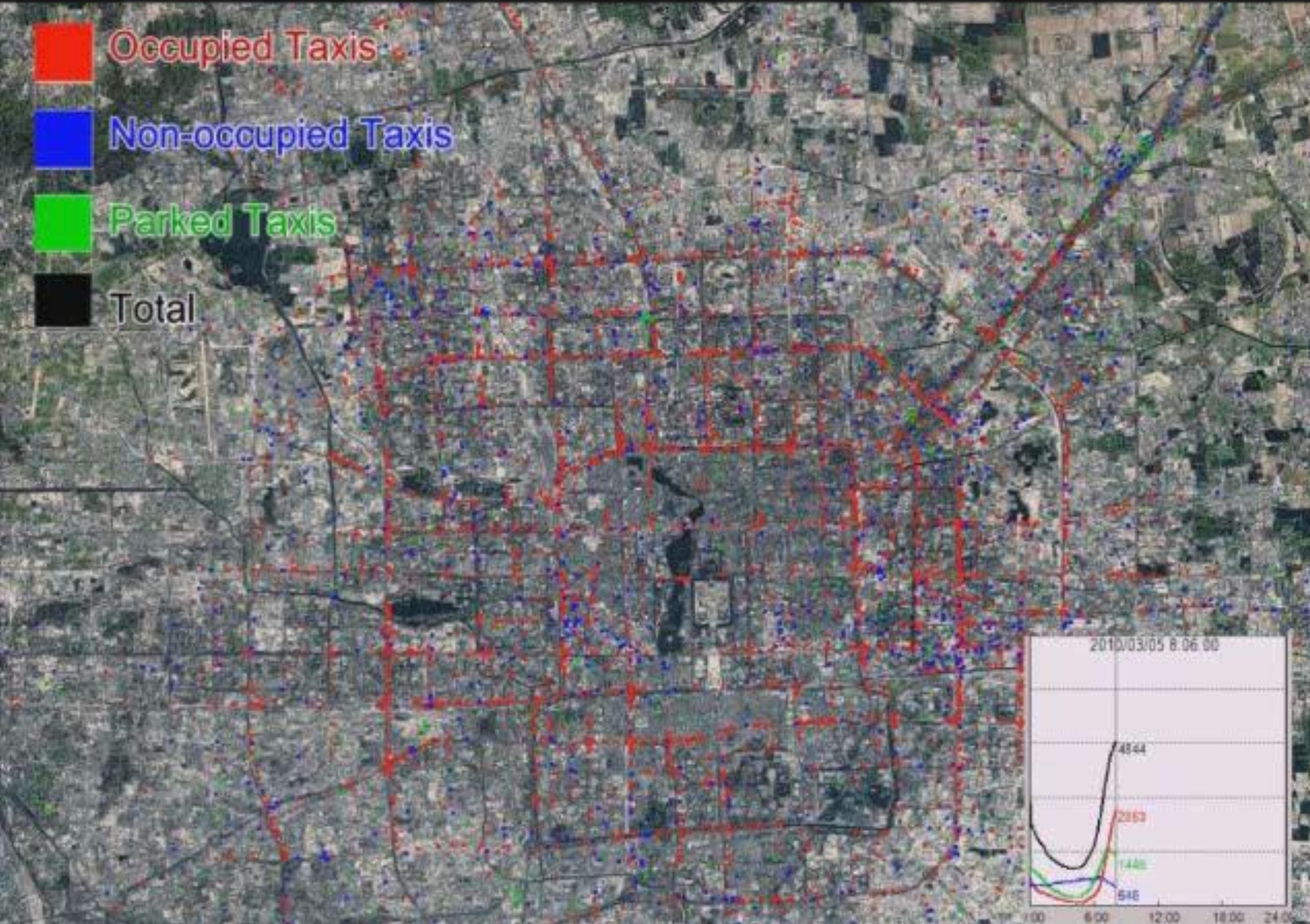


POI Data (2007 – 2012)

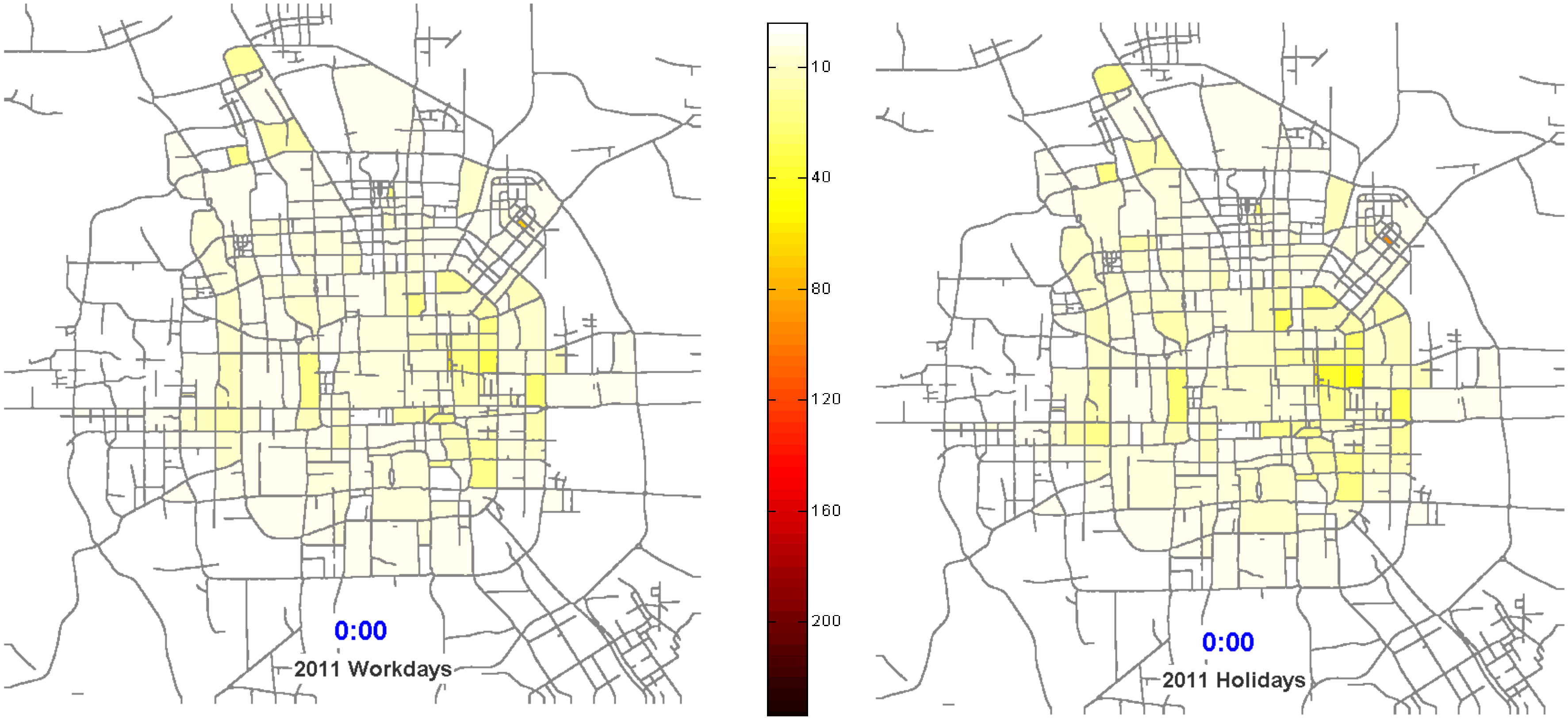



260
240
220
200
180
160
140
120
2007
2007.5
2008
2008.5
2009
2009.5
2010
2010.5
2011
2011.5
2012
theater

GPS trajectories of 33,000 taxis in 2009, 2010, and 2011


Occupied Taxis
Non-occupied Taxis
Parked Taxis
Total
2010/03/05 8:06:00
4844
646
6:00
12:00
18:00

Heat Maps of Beijing (2011)

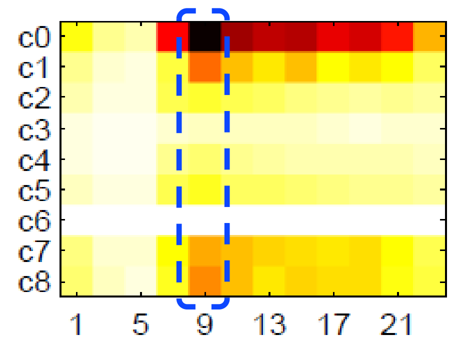


Motivation and Challenges

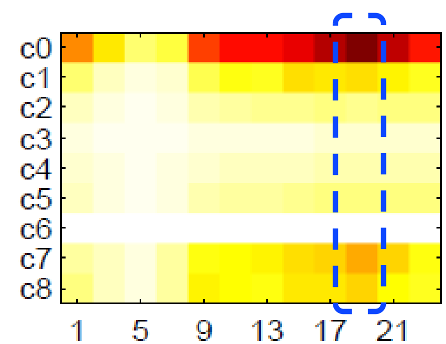
- POIs indicate the function

- But not enough
  - Compound
  - Quality

- Human mobility
  - Differentiate between POIs of the same category
  - Indicate the function of a region



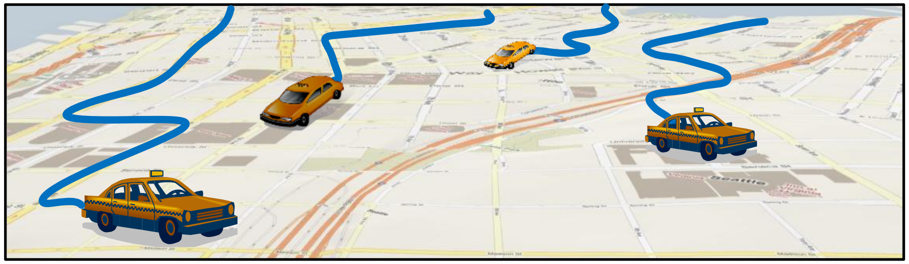
Leaving



Arrival

Motivation

- Taxi drivers are **experienced** drivers
- GPS-equipped taxis are **mobile sensors**
- GPS logs imply the **drive behavior** of a user



Human Intelligence + Traffic patterns

Drive behavior

Before Presentation – Slides

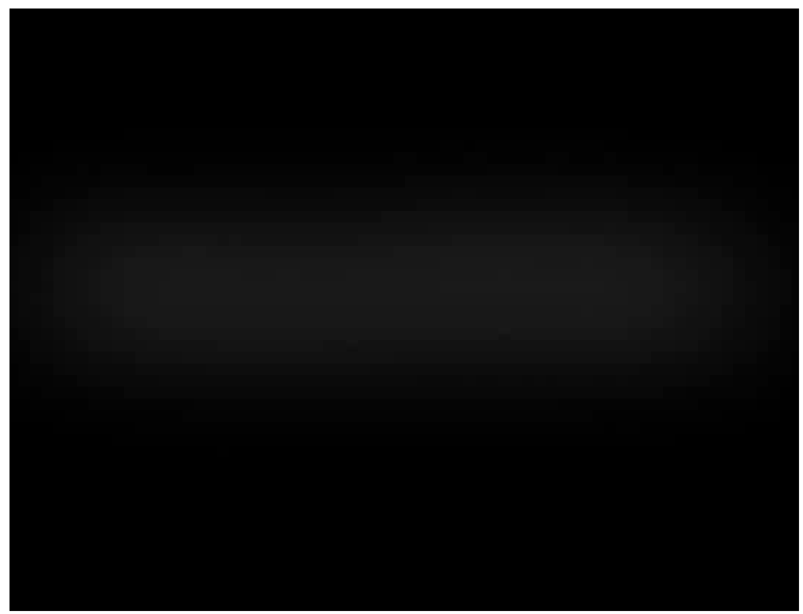
Results

- Positive (√)
  - Selected quantitative results
  - Highlights
  - Find out interesting stories
  - Explain why

- Inappropriate (X)
  - No quantitative results
  - Many charts and tables
  - Just curves

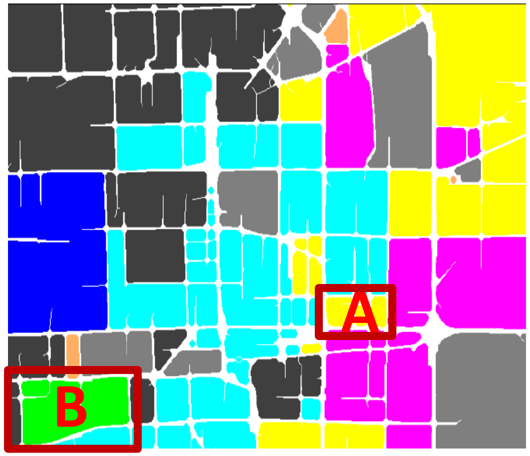
Results

- **More effective**
  - **60-70%** of the routes suggested by our method are faster than Bing and Google Maps.
  - Over **50%** of the routes are **20+%** faster than Bing and Google.
  - On average, we save **5** minutes per 30 minutes driving trip.
- More efficient

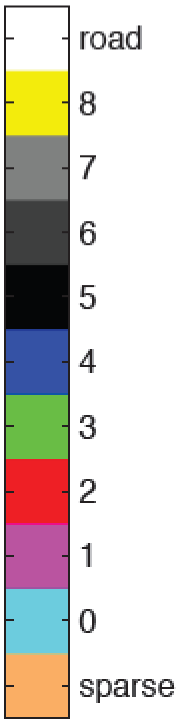


Results

2010



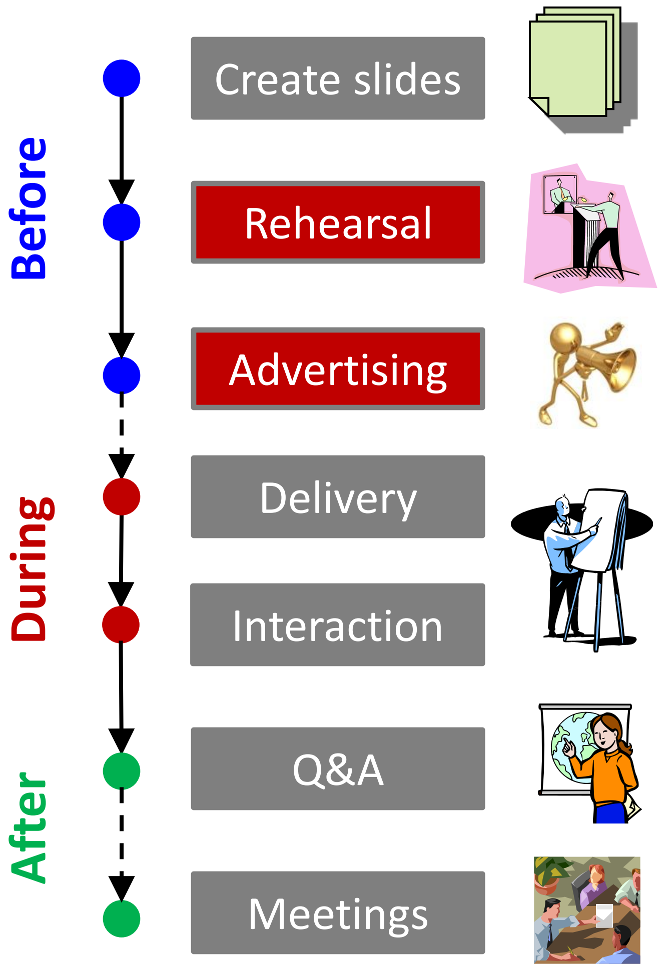
2011



Land use planning (2002-2010)

Results of 2011

Before a Presentation



Before a Presentation- Rehearsal

- Go through it yourself many times
  - In your mind (before getting up)
  - When taking a shower (about 15min) ☺
  - Recording your presentation with a phone (15 min)

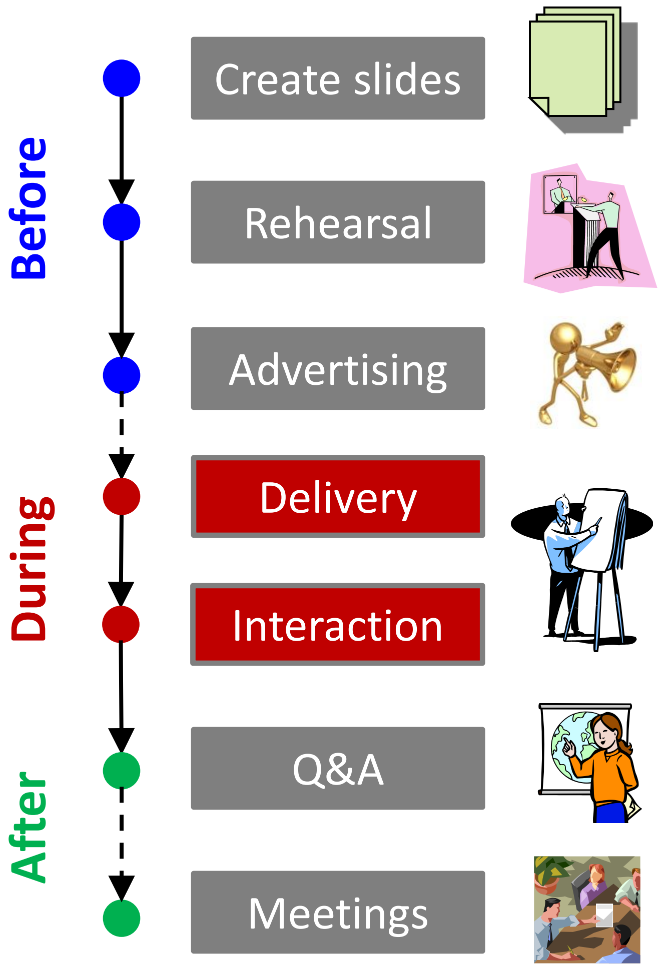
- Introduce it to your friends informally
- Present the slide in your team
- Try to deliver it in a large group of people
- Collect feedback and revise your slides

Before Presentation

- Advertising
  - I will give a talk about ‘urban computing’ at 3pm in room….

- Repeat your name and affiliation

During a Presentation



During a Presentation

- Voice

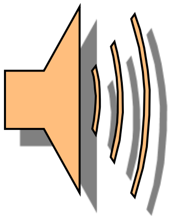
- Postures/Gesture

- Eye contact

- Interaction

During a Presentation

- Voice is even more important than the content
  - Loud
  - Confident
  - Slow



- Grammar is not a big deal
- People hope you can success

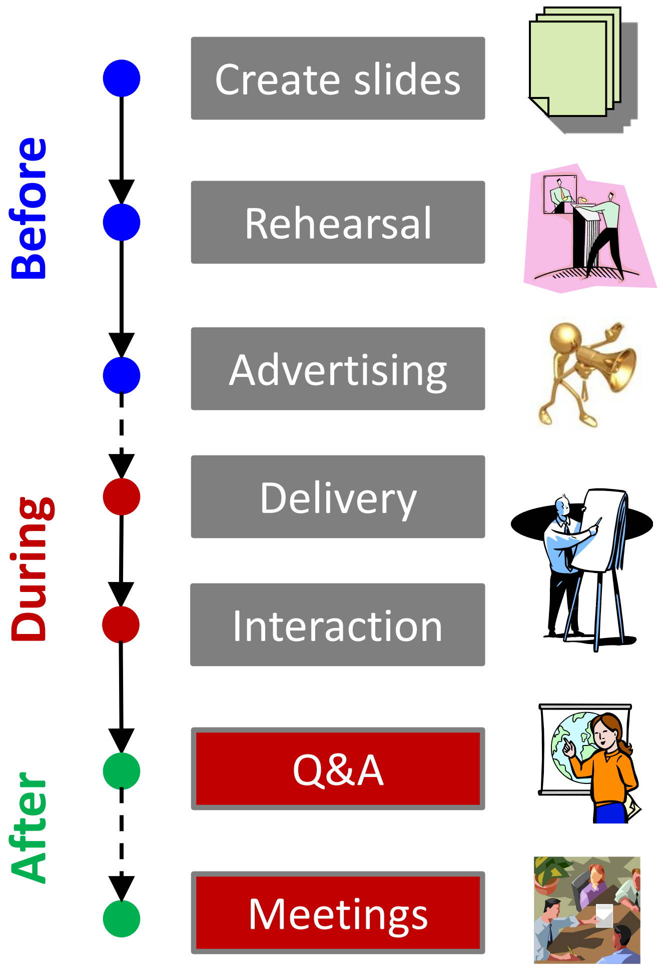
During a Presentation

- Gestures
  - Facing audiences rather than screens or your laptop
  - Never read your slides or notes
  - A certain movement

During a Presentation

- Eye contact
  - Overview audiences (but not stare at)
  - Look at the top of people’s head if nervous (only for junior students)
- Interactions
  - Propose some questions to audiences
  - Sometimes make a joke

After a Presentation



After a Presentation

- Q&A
  - Repeat questions
  - Thanks for proposing the questions
  - Be polite, not too defensive
  - We can talk it offline
- **Having questions is not bad**

After a Presentation

- Communicate with people
  - Collecting feedback
  - Identify collaboration opportunities
  - Leave your contact information, e.g., business cards

Take Away Messages

- Presentation is an opportunity
  - to promote your research
  - Connect to community
- Deliver stories and insights with lively slides
- Voice is more important than content
- Keep eye contact with audiences always

Thanks!

Yu Zheng, Web Search & Mining Group

http://research.microsoft.com/en-us/people/yuzheng/