Big Data Applications in Programmatic Marketing Ecosystem

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Big Data Applications
Deep Dive to Programmatic Marketing Ecosystem

- **Why** this is interesting
- **Summary**
- **How this relates to Big Data**
- **Summary and Conclusion**
Big Data Applications

Big data have many applications in different areas

- science and research
- public health
- customer relation management
- machine and device performance analysis
- optimizing cities and countries
- finance and banking
- Advertising and data driven marketing
Programmatic Marketing Ecosystem examples

- Programmatic = Automating simple tasks
- Marketing = telling stories to existing and new potential customers
- Ecosystem = distributing of data between systems

- Hotels.com example (retargeting, email reminder)
- Zalando example
Advertising
Programmatic marketing ecosystem

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Example: My Location data
Example:

Geospatial data combined with location data is one form of data in programmatic marketing ecosystem.
Why this is interesting?

- Geospatial big data and location data can give benefit to
  - Save fuel
  - Save time
  - Increase revenues
  - Plan urban areas
  - Improve health care
  - Better marketing
Applications

- Forum example (from mobile screenshot)
Case Netflix

- Netflix generated the data on the top-50 rentals in 2009 in each zip code
  - Such patterns are very useful for recommending movies to their users
Marketers & brands want to talk to you personally and big data can help them to make you feel

”Oh how nice from you to think of me!"
Applying Big Data

1) Collecting data
Amount of data is increasing

- McKinsey Global Institute says that the pool of personal location data was in the level of 1 PB in 2009 and is growing at a rate of 20% per year.
- New data from internet of things data stored to internal archives.
- In Google, about 25 PB of data is being generated per day, and a significant portion of the data falls into the realm of spatio-temporal data.
Rise of mobile

In India, Mobile Internet Traffic Surpassed Desktop Internet Usage in May, 2012 - Other Countries to Follow…

India Internet Traffic by Type, Desktop vs. Mobile, 12/08 – 11/12

Fig. 1. Mobile internet traffic in India [3].

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Not only hype anymore

Fig. 2. Gartner’s hype cycle (source: Gartner) [10].
Big Data is important for marketing

Example Location data, subset of Big Data:

“Location targeting is holy grail for marketers.”

- Sir Martin Sorrell, the CEO of WPP Group
Applications

Fig. 6. Foursquare Android app with recommendations.
How to Apply big data for marketing

2) Analysing
Prediction

- The future location of a human can be predicted by analyzing his/her records of previous traces.
- Analysis of human mobility can boost many applications ranging from epidemic modeling to traffic prediction and urban planning.

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Case Walmart and Hurricane

- The executives at Walmart decided to adopt one of big data technologies—predictive analytics.
- Linda M. Dillman, Walmart’s chief information officer, asked her staff to predict what would happen soon based on what had happened when Hurricane Charley landed several weeks ago.
- By analyzing the transaction records stored in Walmart’s data warehouse, the company could predict which items were bought just before or after an event (i.e., a hurricane) at a specific region.

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Case Walmart and Hurricane

- People who had lived in Florida’s Atlantic coast did not increasingly buy some products directly related to hurricanes, e.g., water and flashlights.

- Surprisingly, strawberry PopTarts increased in sales, by seven times compared with their usual sale rate, just before a hurricane. In addition, the top-selling item immediately before the hurricane was instead …
Top selling product before Hurricane was beer
How Target Figured Out A Teen Girl Was Pregnant Before Her Father Did

Every time you go shopping, you share intimate details about your consumption patterns with retailers. And many of those retailers are studying those details to figure out what you like, what you need, and which coupons are most likely to make you happy. Target, for example, has figured out how to data-mine its way into your womb, to figure out whether you have a baby on the way long before you need to start buying diapers.
How we predict relevancy: example nearbyness

- Direct marketing.
  - This field is supported by Tobler’s first law of geography
    
    “Everything is related to everything else,
    but near things are more related than distant things.”

- suggesting the services or stores close to the current location of a user should be more effective than suggesting those far-away

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How data is collected?
How data is collected?

We all leave traces all the time from our laptops and mobiles. Spooky or good service?
How geospatial data is saved?

- 3 forms
  - Raster data
  - Vector data
  - Graph data

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Data types 1/3: Raster data

- Include geoimages typically obtained by unmanned aerial vehicles, security cameras, and satellites. Recently, the military is collecting huge amounts of raster data by utilizing drones, and the satellites keep providing us with the remote sensing data of the Earth.

- The raster data is being provided by digital map services, e.g., Google Earth. Data analysts extract the tracks of moving objects or useful features from these raster data.

- Representative use cases include life pattern mining and change detection.

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Data types 2/3: Vector data

- Vector data
  - consists of points, lines, and polygons.
  - For example, points can be collected through checkin’s on
    - Foursquare/
    - Facebook/
    - Google Maps, and
  - lines and polygons correspond to roads in OpenStreetMap

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Data types 3/3: Graph Data

- graph data
  - mainly appears in the form of road networks.
  - Here, an edge represents a road segment, and a node represents an intersection or a landmark.
  - The trajectories of vehicles on the road network are represented by sequences of road segments (edges)
How we leave traces (=data)

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Amount of data sources and real time data is increasing

- With the advancements of sensor and communication technologies, new sources of geospatial big data are emerging.
  - sensors (or sensor networks) become more prevalent in these days.
    - loop detectors for detecting traffic in roads,
    - electrical grids,
    - environmental sensors for measuring air quality.
- Mobile
Collecting data is not key issue anymore

The most important issue is how we use & exploit these geospatial big data

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Applications

Fig. 6. Foursquare Android app with recommendations.

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Advertisement Automation with Big Data

- Data can be used to provide better advertising

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Advertising
Programmatic marketing ecosystem
Data Management Platforms
Approach to collecting, organizing and activating customer data

Internal Data Sources
- Display (Ad Server)
- Web Analytics
- Email Database
- CRM

External Data Sources
Market & Customer Data

Data Management Platform

Example Use Cases
- Ad Execution
- Targeted Display Advertising
- Mktg Automation
- Email/Inbound Campaigns
- Advanced Customer Analytics

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Customer path
The future of advertising will be data driven

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Open problems

- General Data Protection Regulation:
  REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC
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Summary & Conclusion

- Big Data consist of collection, analysis and usage
- Collection is not anymore an issue
- Analysis needs a lot of work
- Right use gives more value to brand, customer, user and ecosystem
  - Better advertising
  - Less intrusive ads
  - More relevancy in ads
  - What before was spooky, will be new standard and we expect to be served according to data traces we leave: “How nice that you think of me”

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Sources


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