#mytweet via Instagram: Exploring User Behaviour Across Multiple Social Networks

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Background

• 74% of Internet users use Online Social Networks (OSN)
• Average user has 5.54 Social Media accounts
• Uses 2.82 sites actively

Motivation

- Most research done on single OSN
- Holistic modelling of users
- Multi OSN research:
  - Forecasting evolution of trending topics across different OSNs (Althoff et al. 2013)
  - Internetwork interactions (Chen et al. 2014)
  - How users behave across Image-based and Text-based networks (Ottoni et al. 2014)
Scope

- 6 OSNs: Flickr, Google+, Instagram, Tumblr, Twitter and Youtube
- Multi-network analysis of user behaviour
- Cross network interactions
- Publicly available data
- No image / video analysis
3 ways to cross-share

1. Native feature
   Instagram

2. Third party app
   Hootsuite

3. Copy and paste
   Twitter to Facebook
Outline

• Introduction
• Dataset
• User Profile
• Posts
  - Cross-sharing
  - Temporal Analysis
  - Topic Analysis
• Conclusion
Making the American Dream a Reality

Today's market is steadily increasing which is good news for home owners! However, buyers aren't out of the picture since interest rates on loans are still low, making it a great time to buy or invest in real estate.

I am a Realtor from California's Central Valley who specializes in first time home buyers, buyers on a tight budget and listings. Technology is my friend and can be contacted any time of day or night. I work around your schedule and take the hassle out of buying by teaming up with the best local lenders in the business. Call me today and let's get you into the home you deserve!

Profile Description

OSN accounts

Dataset - https://about.me
• 6 OSNs
• 2011 - 2014
• 32 K Users
• 4 accounts / user

Dataset

<table>
<thead>
<tr>
<th>Platform</th>
<th>Users</th>
<th>Posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flickr</td>
<td>14.5K</td>
<td>14.8M</td>
</tr>
<tr>
<td>Google+</td>
<td>19.6K</td>
<td>2.6M</td>
</tr>
<tr>
<td>Instagram</td>
<td>20.4K</td>
<td>2.8M</td>
</tr>
<tr>
<td>Tumblr</td>
<td>16.7K</td>
<td>9M</td>
</tr>
<tr>
<td>Twitter</td>
<td>27.8K</td>
<td>88.4M</td>
</tr>
<tr>
<td>Youtube</td>
<td>11.9K</td>
<td>1.3M</td>
</tr>
</tbody>
</table>
## User Statistics

<table>
<thead>
<tr>
<th>also use:</th>
<th>Twitter</th>
<th>Google</th>
<th>Instagram</th>
<th>Tumblr</th>
<th>Flickr</th>
<th>YouTube</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Twitter</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Google</strong></td>
<td>79.4</td>
<td></td>
<td>76.4</td>
<td>65.2</td>
<td>64.4</td>
<td>56.2</td>
</tr>
<tr>
<td><strong>Instag</strong></td>
<td>96.4</td>
<td>73.5</td>
<td></td>
<td>61.7</td>
<td>61.0</td>
<td>65.0</td>
</tr>
<tr>
<td><strong>Tumblr</strong></td>
<td>96.7</td>
<td>76.8</td>
<td>68.5</td>
<td></td>
<td>60.4</td>
<td>51.0</td>
</tr>
<tr>
<td><strong>Flickr</strong></td>
<td>96.0</td>
<td>74.9</td>
<td>78.8</td>
<td>59.4</td>
<td></td>
<td>49.2</td>
</tr>
<tr>
<td><strong>YouTub</strong></td>
<td>96.0</td>
<td>74.8</td>
<td>71.0</td>
<td>60.1</td>
<td>53.3</td>
<td></td>
</tr>
</tbody>
</table>

% of users who use:
Activity Statistics

- 40% of users are active on any given day.
- More networks utilised on days with higher activity.

**Average number of networks used, daily**

- More networks utilised on days with higher activity.
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I’m a Digital **Media Specialist** passionate about self **education**, lifelong learning...

Explore **Dream** Create.

**Knowledge** is **freedom**. I run a **website** called DIY Genius that helps young **people** self **education**.

All my **photographs** are posted under the creative **commons** non commercial **attribution**...

I’m interested in digital **media**, **adventure sports**, and **mountains**.

**A collection** of **videos** I’ve filmed on my **iPhone** while **hiking, skiing** and **biking** in the **mountains**.
Self-description Similarity

- Pairwise Jaccard Coefficient
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Cross-sharing

• Multicasting user activity over multiple social networks.
• Source-sink relationship between OSNs
Source - Sink Graph
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Time of Day

- Different peaks for activity levels on weekend and on weekdays
» Different uses for OSNs - personal vs work
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The “Average user”
Meso-Level Groups: Profession

- User description keywords
- 3 professions: Developer, Producer, Marketing expert
- How do different professions use different OSNs?
  - OSN for work, OSN for personal use
Topic Modeling

Collection of Documents (posts)

LDA

Top words that belong to a cluster

Inferred topics

1. Family
2. Technology
3. Music
4. <Unknown>
   •
   •
   •
50. Food

• Latent Dirichlet Allocation (LDA) (Blei et al., 2003)
• Match topics to professions manually
Many People are Workaholics!

Workaholic: Top 2 frequently topics are work related
OSN for Work Related Posts

- Twitter
- Google+
- Youtube
- Tumblr
- Instagram
- Flickr

Producer
Marketing Expert
Developer

User Percentage

- Twitter
- Google+
- Youtube
- Tumblr
- Instagram
- Flickr
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Conclusion

• 6 OSNs: Flickr, Google+, Instagram, Tumblr, Twitter and Youtube
• Most users describe themselves differently.
• OSN cross-sharing directionality - sink and source
  • YouTube and Instagram are popular content originators
  • Twitter is a content aggregator
• OSNs for work and personal use

• Dataset will be available at: http://wing.comp.nus.edu.sg/downloads/aboutme
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Thank you!