Understand Instant Video Clip Sharing on Mobile Platforms: Twitter's Vine as a Case Study

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March, 2014

Outline

- Introduction
- Twitter's Vine: Architecture and Features
- Datasets and Analysis
- Discussions and Conclusions

Introduction

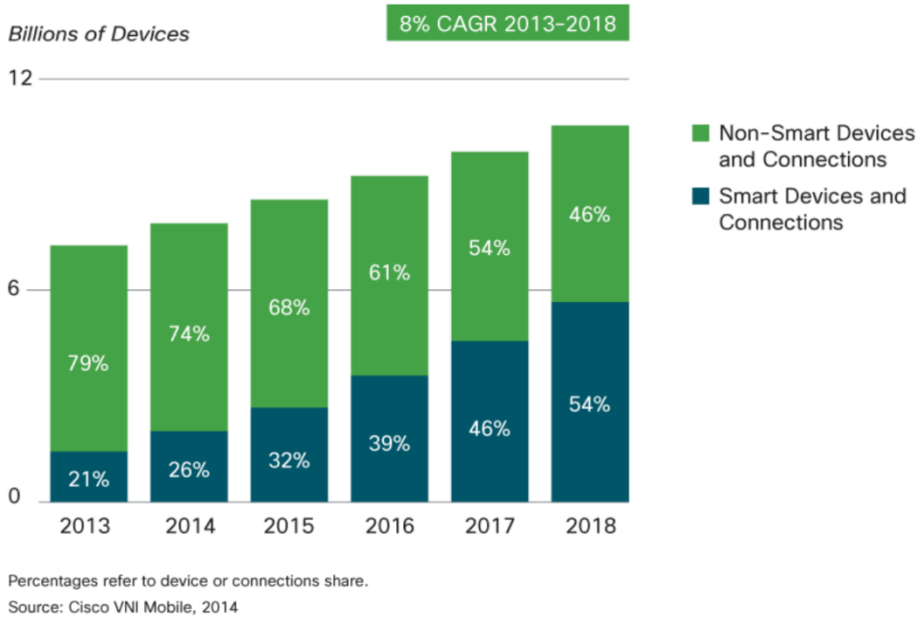
- The 3-stage evolution for video sharing service
  - 1st generation: video sharing sites

  - 2nd generation: online social networks

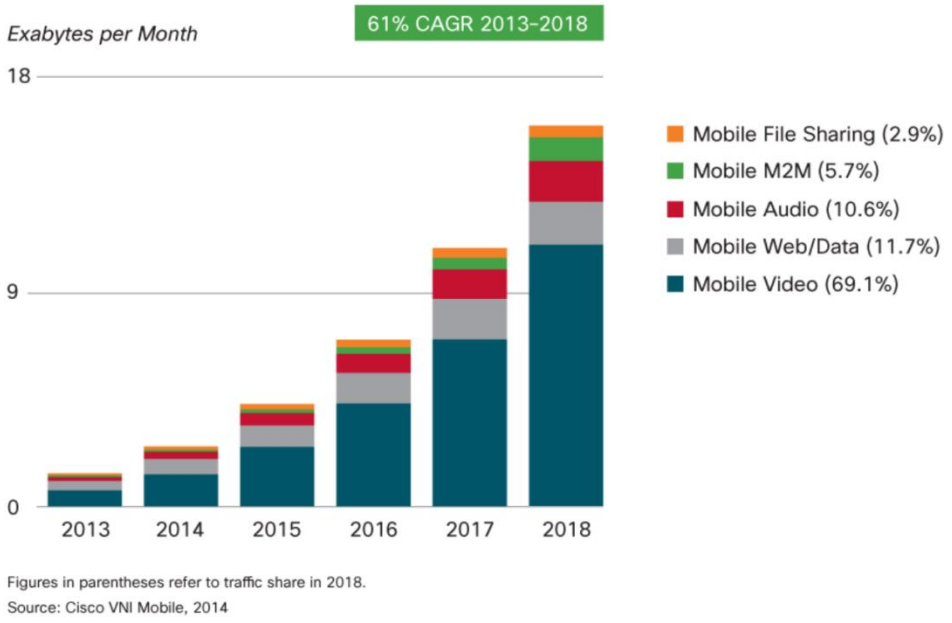
  - 3rd generation: mobile platforms (instant video clips)

Introduction

- Mobile is the trend:
  - 526 million mobile devices and connections were added in 2013 globally (smartphones account for 77%)
  - Global mobile data traffic will increase nearly 11-fold between 2013 and 2018



Percentages refer to device or connections share.
Source: Cisco VNI Mobile, 2014



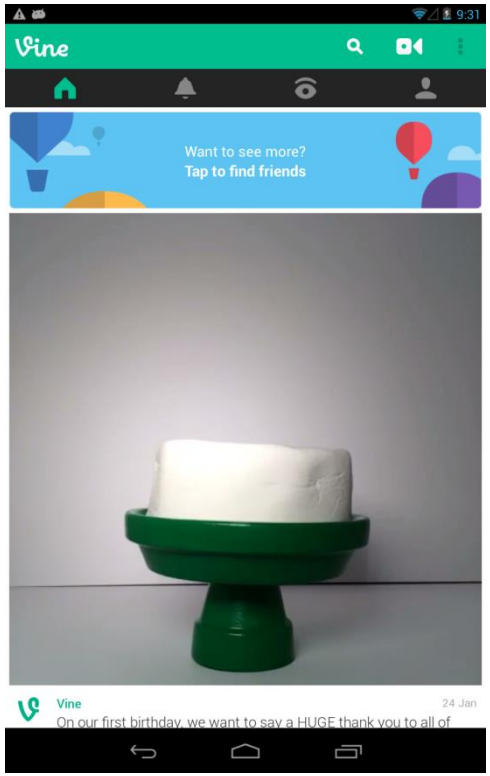
Figures in parentheses refer to traffic share in 2018.
Source: Cisco VNI Mobile, 2014

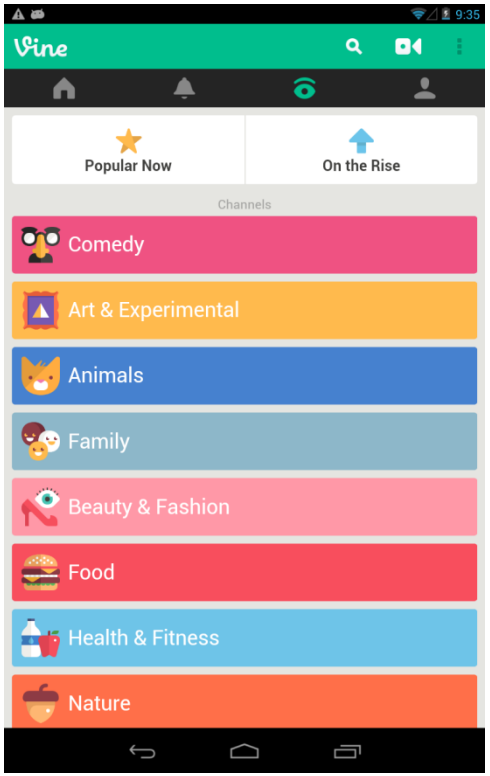
Twitter's Vine

- Vine : A representative
  - Exclusive for mobile platforms
  - Maximum video length: six seconds
  - Recently released:
    - iOS, January 2013
    - Android & Windows Phone, June 2013
  - Popular: over 40 million registered users

Twitter's Vine

- The interface:
  - Home
    - Posts from followings
  - Explore
    - Promotion channels
      - Popular posts
    - User channels
      - Different topics

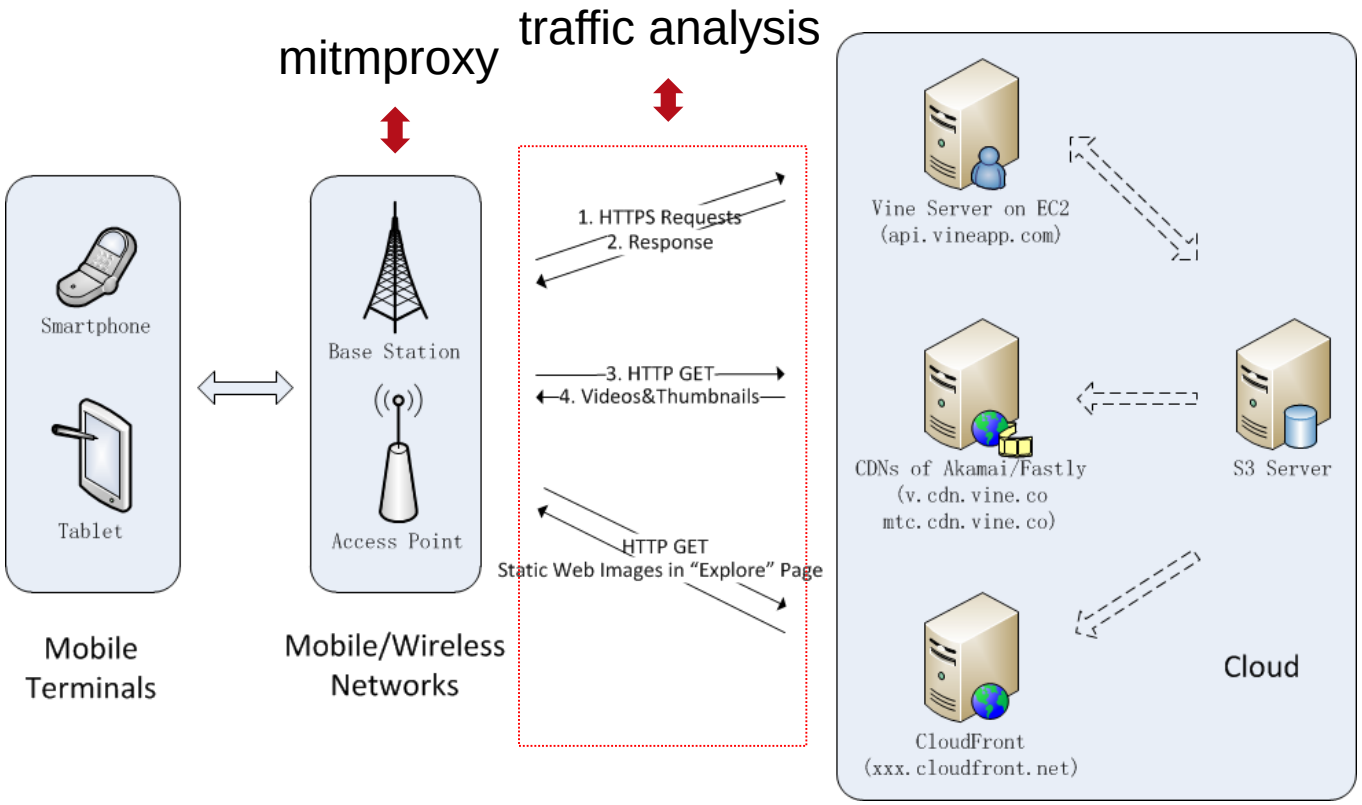




- Key behaviors (screen scrolling):
  - Batch view
  - Passive view

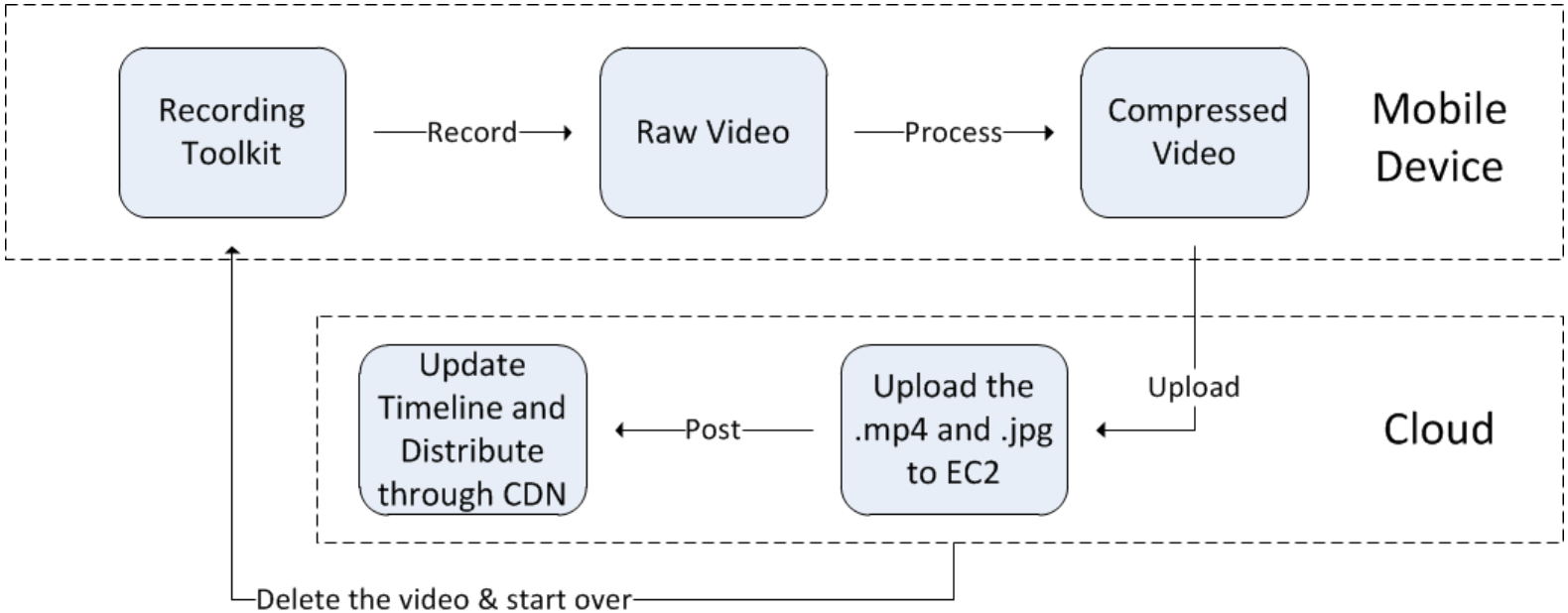
A Closer Look at Vine

- Unveil Vine's architecture (reverse engineering):
  - Packet sniffing & SSL interception



A Closer Look at Vine

- What's the internal process when a user vines?
  - Application runtime monitoring
  - Trace-driven analysis



Datasets

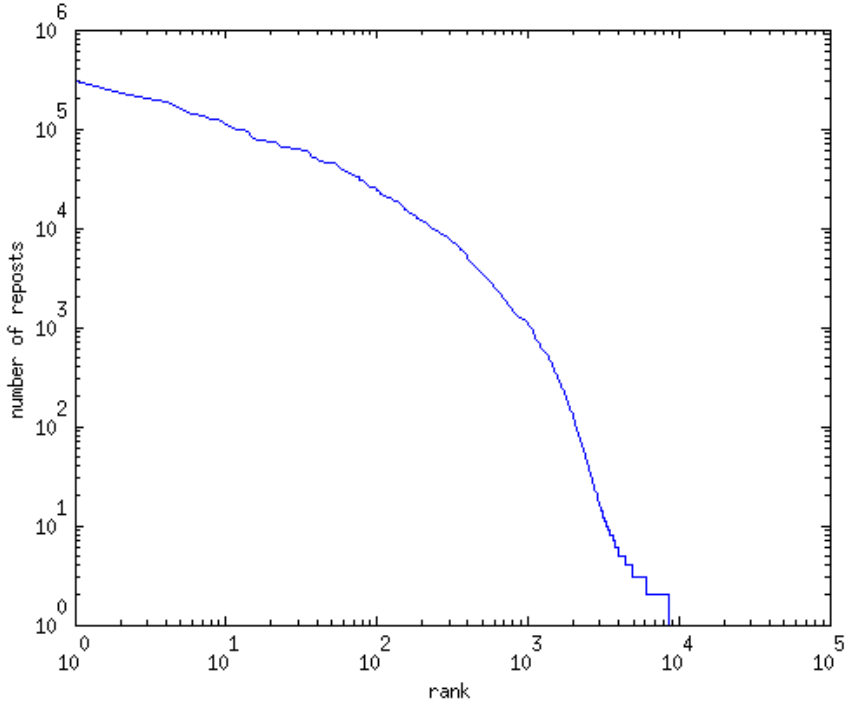
- Develop customized crawlers, and collect data from November 16 to December 14, 2013

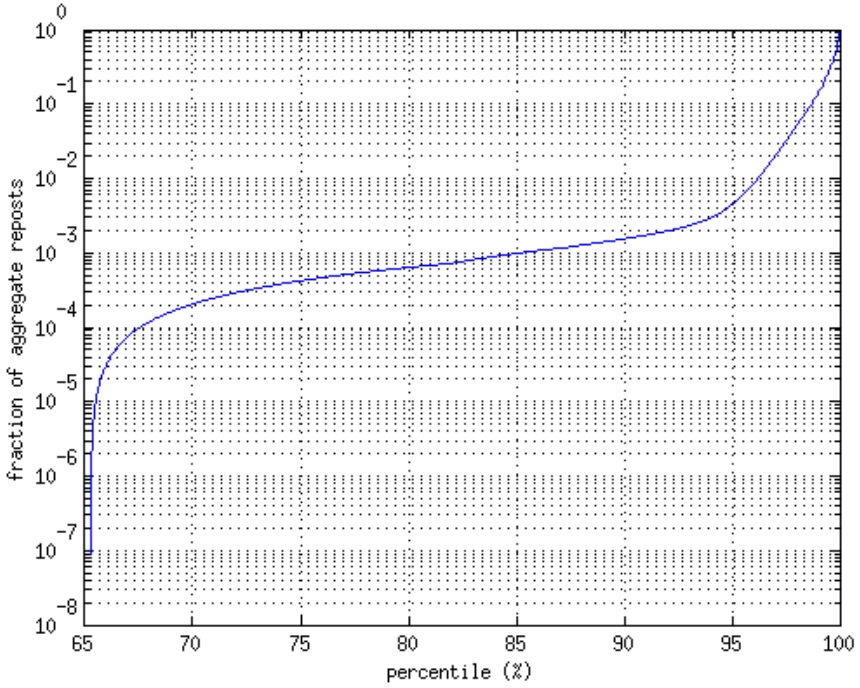
- Repost traces of over 50,000 video clips
  - 2 promotion channels: 8,891 posts
  - 16 user channels: 47,794 posts

- Over 1,000,000 user profiles (follower, following, posts)

Video Popularity

- Extremely skewed
  - User channels: the top 5% video clips accounts for more than 99% reposts!

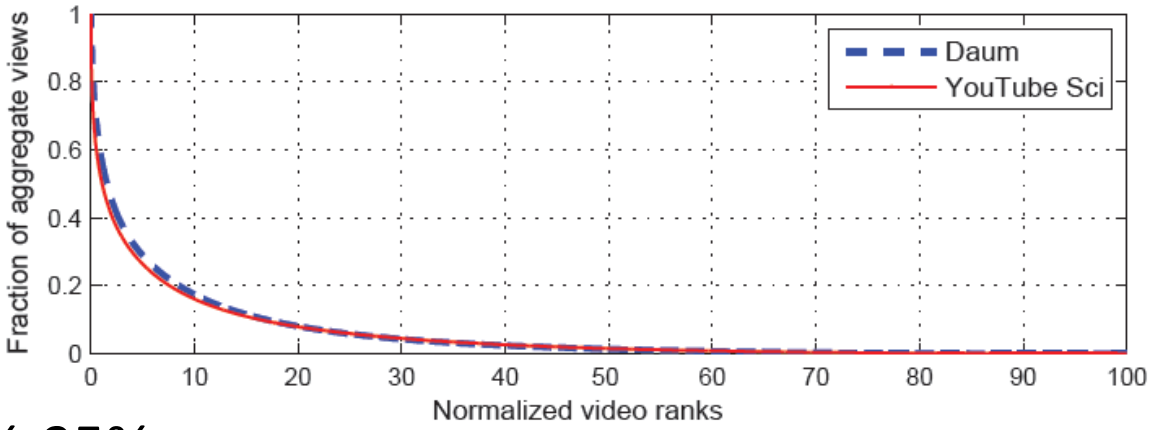




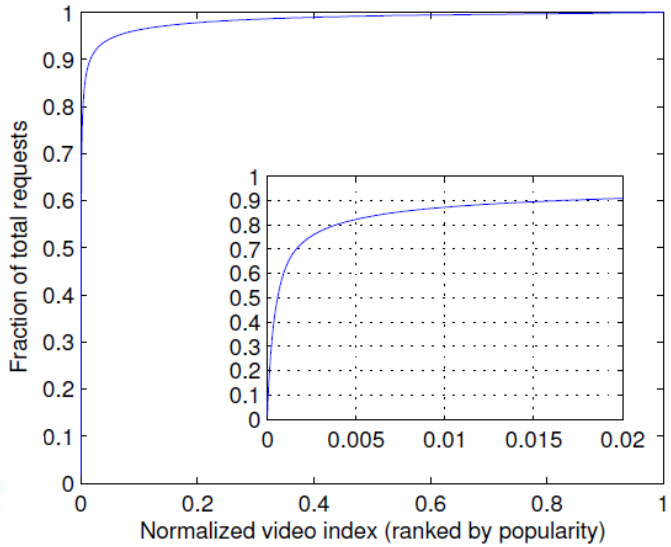
Comparison

- 1st generation
  - YouTube: 10%-80% [Cha, IMC'07]
- 2nd generation
  - Renren: 2%-90%, 5%-95% [Li, NOSSDAV'12]
- 3rd generation
  - Vine: 2%-95%, 5%-99%

YouTube

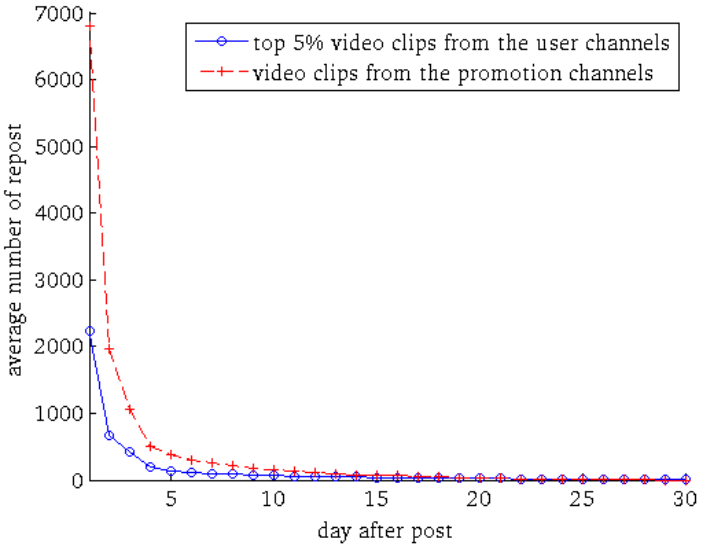


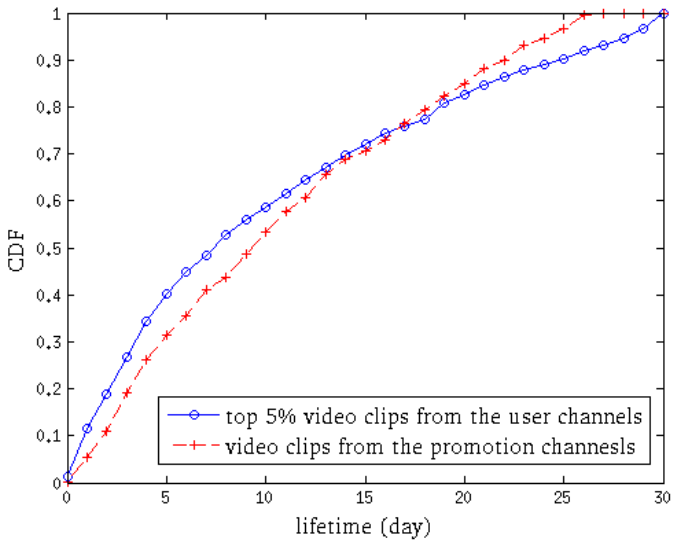
Renren

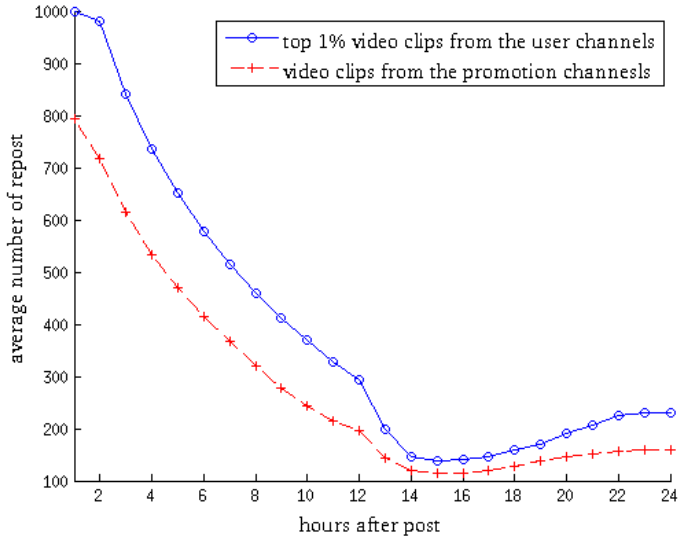


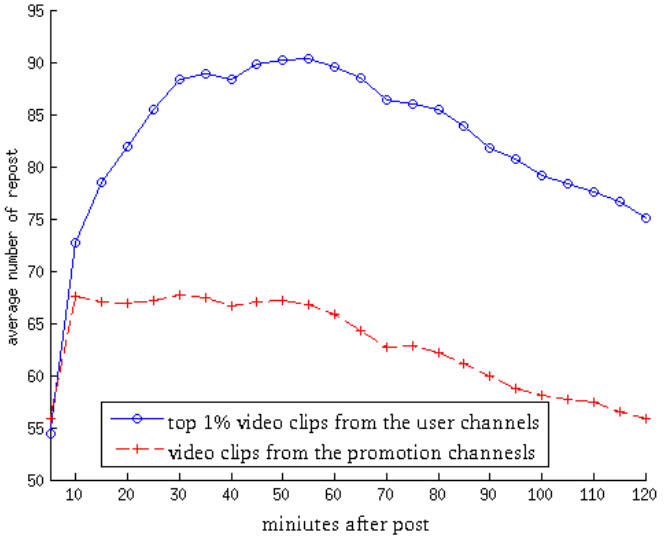
YouTube social renren mobile Vine

Video Propagation





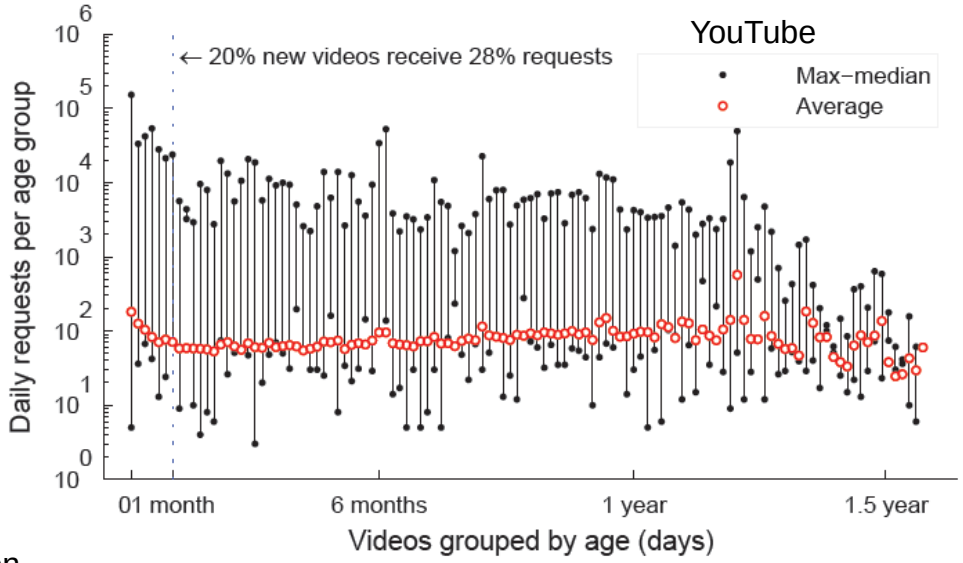




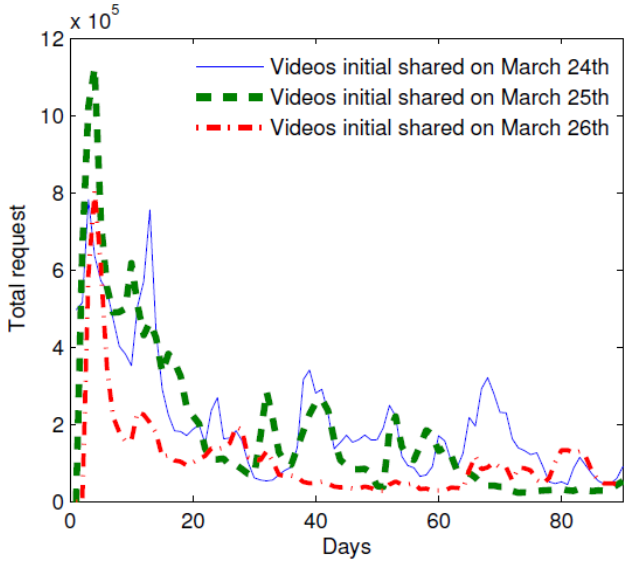
Comparison

- Vine decays faster
- Mobile nature:
  - Ubiquitous

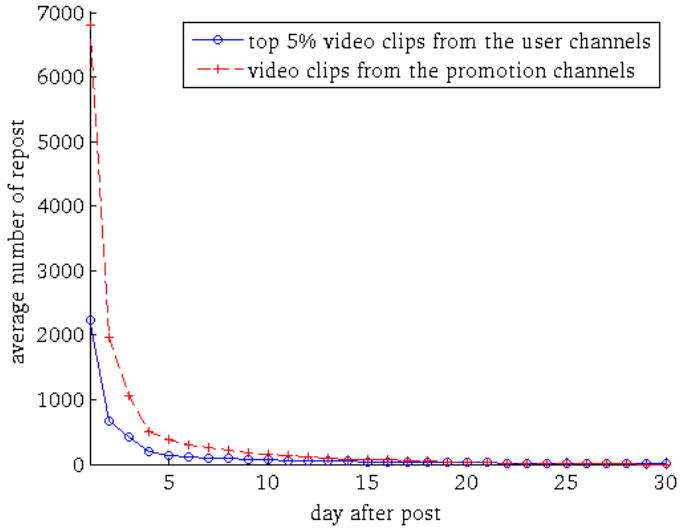
YouTube



Renren



Vine



Social Network

- Degrees of nodes:
  - 244.4 followers and 102.4 followings in average

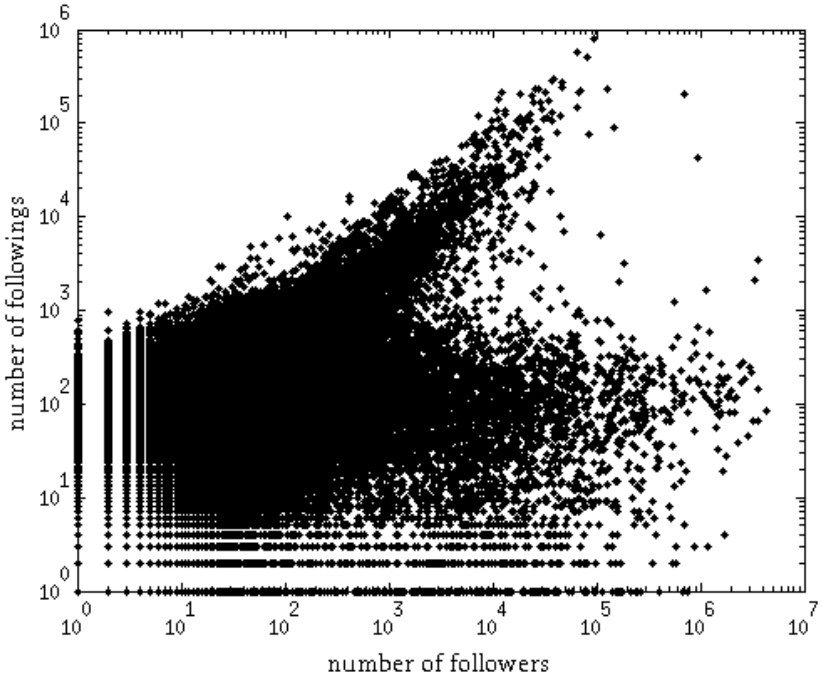
- Still evolving:

username	number of followers
KingBach	4,327,113
JEROME JARRE	3,603,981
Marcus Johns	3,565,338
Josh Peck	3,547,111
Nicholas Megalis	3,398,624
DEM_WHITE_BOYZ	3,186,003
Curtis Lepore	3,067,646
Kc James	2,978,526
Alx James	2,859,786
Rudy Mancuso	2,686,820

Table 1: Top 10 of the most followed users

Social Network

- Follower *vs.* Following
  - No strong correlation
    - Correlation coefficient is only 0.0254
  - Small probability for mutual friends



Discussions and Conclusions

- Taking Vine as a case:
  - The first work on instant video clip sharing service
    - unique behaviors, architecture, video properties, social network
  - Our findings about instant video clips
    - high skewness, fast decay

- Potential topics:
  - Distribute effectively and effectively
    - Popularity prediction
  - Energy saving for mobile systems
    - Batch transmission
    - Smart scheduling

SFU

Thank you!