CULTURE ET INTERNET

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Streaming applications over the Internet. Example: **Youtube**. Tools for analyzing popularity.

Social networks: **twitter**, **facebook**, **linkedin**. Analysis tools for twitter and facebook.

Specialized social networks: **vodcaster** (cinema and micro-critics).

Blogs and their analysis tools.

How to create a social network.
Business models and popularity
Virality and buzzes in the internet
Access to knowledge and culture in the Internet: Hadopi, the general license approach
BOLD BUSINESS MODELS AND POPULARITY

- Targeted advertisement based on users’ profile.
- Selling contents (e.g. tweets)
- Selling services for social network users. E.g.: direct access to a large number of users.

Both the content creator and the content provider are interested in increasing popularity of content. Also used as a source of revenue.
EXAMPLE: YOUTUBE

- **Adriana Luna**
  - *Astor Piazzolla*

- **Jeff Martin**
  - *Cours de Piano Jazz*

- **Direct Star**
  - *Morning Star* by lappoupequipipe
  - *35,901 views*

- **Top Tracks for Astor Piazzolla**
  - *Astor Piazzolla - Romance Del Diablo* by anect1901
  - *54,961 views*
  - *Piazzolla: La Grand Tango (Yo-Yo Ma)* by ocelopera
  - *9,966 views*
  - *Milonga para tres - Astor piazzolla* by externavetura038
  - *11,686 views*
EXAMPLE: YOUTUBE

AD 1

AD 2

AD 3

Recom graph
Various definitions of popularity of content:

- Total number of views
- Number of views in a given period
- Number of “likes” or the rank
- Degree of virality: how much did the network contribute to the increase in the number of viewers.
- Other considerations: potential number of interested users
According to whether there is a fixed bounded target population or not.

- Example: announcing an exhibition.
- Examples of unbounded targets: news bulletin. The same person may be interested again in contacting a source of information.

- Timelines
- Time scale: even a bounded target population may behave as an unbounded if the infection rate is small enough
CLASSIFICATION

- According to degree of virality
LINEAR GROWTH: IMMIGRATION.

- There is only an external source of demand for content. The network itself is not used to infect other users.
- Unbounded target population.
- One does not get contaminated due to an epidemic process, but due to intentional search of a content.
MODELS OF EXPONENTIAL GROWTH: BRANCHING PROCESSES

- Branching processes are used to describe the growth of populations.
- The key parameter is **virality**: the average number of direct offsprings of an individual.
- If it is larger than 1 then we get exponential convex growth of the instantaneous population size.
- If it is smaller than 1 then a finite population will be contaminated. The total population grows like a concave exponential function.
In branching, one assumes that the distribution of the number of offspring does not depend on the population size.

In practice, the population may be limited. Thus the more there are infected, the smaller is the probability for new infected.
Fraction of infected: \[ \frac{dx}{dt} = kx(1 - x) \]
EXAMPLES WITH $X(0) = 0.0001, 0.01, 0.3$

- $k=1$
- $k=3$
PROPAGATION MODELS WITHOUT VIRALITY, WITH MAX POPULATION SIZE

- Growth rate decreases

\[ \frac{dx}{dt} = M(1 - x) \]

M is the size of the population that will be attained. There is an apriory limit.

Branching process with low virality: no a prioro limit. A finite population is attained simply because of a low interest in the content.
CURVES WITH DIFFERENT X(0)

- Converge to 1
WHAT CAN WE LEARN FROM YOUTUBE

- As a general user
A List Containing Other AD Events: Sharing and Embedding
# Significant discovery events

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Views</th>
</tr>
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<tbody>
<tr>
<td>02/22/12</td>
<td>First view from a mobile device</td>
<td>107,108</td>
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<td>02/22/12</td>
<td>First embedded on – facebook.com</td>
<td>75,452</td>
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<td>02/22/12</td>
<td>First referral from YouTube search – obama singing</td>
<td>31,008</td>
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<td>02/22/12</td>
<td>First embedded on – whitehouse.gov</td>
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<td>02/22/12</td>
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<td>02/22/12</td>
<td>First embedded on – plus.google.com</td>
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<td>02/22/12</td>
<td>First referral from YouTube search – barack obama singing</td>
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<td>First referral from YouTube search – obama sings</td>
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<tr>
<td>02/22/12</td>
<td>First embedded on – failblog.org</td>
<td>5,824</td>
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</table>
"Ave Maria" (Biebl) - 2006-07 Tualatin HS Concert Choir

Total views: 32,894

Ave Maria Mater Dei (2006) by composer Daniel J. Knaggs

Total views: 914
Modern Classical Music

Linear growth

Period: 1 year
EXAMPLE OF MODERN CLASSICAL MUSIC
LINEAR GROWTH OVER 5 YEARS 2007-2012
Contemporary Classical music

Linear growth

5 years period 2007 - 2012
CONVEX PROCESS

- Branching, or early epidemic phase
POPULAR CLASSICAL MUSIC
EPIDEMIC ROUTING ONE YEAR PERIOD.
MOZART: POPULAR CLASSICAL MUSIC,

A year and a half of a Convex growth
Popular classical music
EPIDEMIC BEHAVIOR
2 years period
Epidemic routing
Popular classical music
President Obama and the Fight for LGBT Rights

President Obama on Creating an Economy Built to Last
THE SOCIAL NETWORK SONG
BY VALENTINA MONETTA
VIDEO CONTEST 2012
CLIP BY EITAN ALTMAN

This video is public.

Video statistics
Because this video has been claimed by a copyright owner, statistics cannot be made public.

Views and discovery

498 Views

06/13/12 08/22/12 12/02/12
HYBRID CONCAVE BEHAVIOR: EXPONENTIAL AND LINEAR
President Obama and the Fight for LGBT Rights

President Obama on Creating an Economy Built to Last
President Barack Obama 2009 Inauguration and Address 3 years. Concave? Epidemic?
COMBINATION: LINEAR GROWTH + CONCAVE GROWTH, 2 MONTHS

\[ Y(t) = 300000(1 - \exp(-2t)) + 12000t \]
“NON POPULAR VIDEOS”
UNPOPULAR VIDEO WITH MANY VIEWS AND MANY DISLIKES
Engagement

Comments: 29
Likes: 6

Audience

Top locations
- Mexico
- Peru
- Spain

Top demographics
- Male, 35-44 years
- Male, 13-17 years
- Male, 45-54 years
FAMOUS EXAMPLE

- Why linear growth?
JUMP IN VIEWS DUE TO EXTERNAL EVENT (2ND HOSPITALIZATION)
JUMP IN THE SLOPE OF THE LINEAR INCREASE
Video statistics

Views and discovery

666 Views

Key discovery events

A First referral from related video: 'I've got Peace in My Fingers' (Susan Salidor)
Jul 7, 2012 - 388 views

B First referral from related video: "Peace in My Fingers" Music Video - Susan Salidor
Jul 8, 2012 - 7 views

C First view from a mobile device
Jul 8, 2012 - 23 views

D First referral from YouTube search: peace in my fingers
Jul 9, 2012 - 6 views

E First referral from related video: Create Your Own Video Using Susan Salidor's "Peace in My Fingers" Win $100!
Jul 29, 2012 - 8 views

F First referral from related video: 'I've got Peace in my fingers
Aug 4, 2012 - 21 views

G First referral from related video: Einat chante "Pour que tu m'aimes encore" (Celine Dion)
Aug 12, 2012 - 5 views

H First referral from YouTube search: 'I've got peace in my fingers
Aug 13, 2012 - 5 views

I First referral from related video: "Israel loves Iran" based on the children song "Peace in my Fingers" (Susan Salidor)
INFLUENCE OF OTHER VIDEOS IN THE CHANNEL
INFLUENCE OF PUBLICITY

Attribution des Prix de l'Académie des Sciences, 16 octobre 2012

Video statistics

Views and discovery

Key discovery events

First referral from related video: France Telecom Grand Prix award of the French Academy of Science 2012
Attribution des Prix de l'Académie des Sciences, 16 octobre 2012
VIDEO COMMENTS: EMBEDDING A VIDEO AS COMMENTS

El Torreador de la Opera Carmen de Bizet
Views and discovery

165 Views

08/18/12 10/10/12 12/03/12

Key discovery events

A. First view from a mobile device
   Sep 1, 2012 - 10 views

B. First referral from related video: Carmen (Bizet) The Royal Opera
   Sep 3, 2012 - 2 views

C. First referral from related video: Grace BUMBRY - Carmen - Habanera
   Sep 8, 2012 - 4 views

D. First referral from related video: Avinu Malkeinu. We are not proud of IDF.
   Sep 8, 2012 - 14 views

E. First referral from YouTube search: carmen bizet
   Sep 8, 2012 - 18 views

F. First referral from YouTube search: toreadore
   Sep 12, 2012 - 4 views

G. First referral from: facebook.com
   Sep 18, 2012 - 14 views

H. First embedded on: facebook.com
   Sep 18, 2012 - 20 views
WHAT DO WE LEARN FROM YOUTUBE DATA

AS A CREATOR OF CONTENT:

- How many views according to the profile (age, sex, location)
- What brought the views: another social network? Another WEB site? The recommendation of Youtube? A search in Youtube etc.? Is it a mobile source?
- Audience Retention
TRAFFIC SOURCE

- 2103 views during 70 days
- 850 from recommendation(s) of youtube
- 172 from other sites
TRAFFIC SOURCE

Social Networks:

- Linkedin (71)
- Facebook (38)

(From INRIA: 5)
PROFILE: LOCATION

- France: 820
- USA: 540
- Unknown: 200
- Next come locations where I gave talks:
  - India (87)
  - Germany (37)
  - Israel (27)
  - Italy (24)
PROFILE: GENDER AND AGE

- 9.8% Fem views
- 4.4% Fem views in France
- 7.2% Fem views in US
AUDIENCE RETENTION (ALLOWS DIMENSIONNING)
SNOWBALL EPIDEMIC EFFECTS

Other acceleration Factors:

• Other publishers
• Embed content
• Comments and Responses increase visibility
PROPOSED TASKS

- Create a video clip or a video slide show (diaporama) on youtube,
- Create a facebook page, embed the video.
- Attain 30 “likes” for facebook
- Compare statistics on the views of the video over facebook using (1) youtube data, (2) facebook data
- Study: what type of content brought views/likes both through questioners as well as stat.
EXAMPLES:

- “Cause”: Laicity, Peace, etc.
- Page on a particular tourist attraction
- Videos on testimonies of events such as resistance during 2nd world war, Algeria war, Immigration, Civil war in Spain.
- Cultural events (e.g. Marseille – cultural capital).
- Artistic creation
ACTIONS TO INCREASE VIDEO’S POPULARITY

- Choice of title
- Choice of tags
- Choice of category
- Videos: create sequences of videos
- Embed as video comments
- Create discussions
- Embed in facebook pages