



# Hidden Space

Thesis 2

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This thesis project is about algorithms and the dynamics inside an **algorithm-controlled system**. It is about visualizing the **algorithm's intention** to take data, monetize content, analyze and sculpt users' activities in the case of video-sharing platforms.

It is a critical design piece that both **exists online** and **exhibits** in a **gallery** space that guides the audience to build the **connections** between different algorithmic components behind an interface that we have daily interactions with.

Domain: Digital media, Computer algorithm, Algorithmic society

**1.35 billion**

YouTube is the biggest online video platform featuring a wide variety of user-generated contents. In 2016, the number of YouTube users has reached **1.35 billion**. This number will climb to **1.86 billion** in 2021.

**400 hours**

As of July 2015, more than **400 hours** of video were uploaded to YouTube every minute. As of September 2018, the number of subscribers of the most popular YouTube channels has reached over **65 million**.

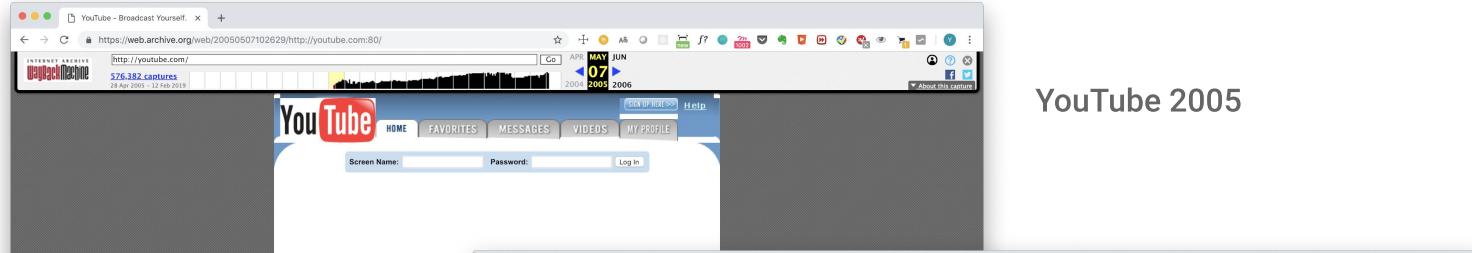
**31%**

**81 percent** of global Internet users have visited YouTube in the recent month, and **31 percent** of YouTube users access it more than once per day.

**38.6%**

In 2017, Google's share of total U.S. digital advertising revenues amounted to **38.6 percent**, as compared with **19.9 percent** share to Facebook.

## YouTube 2005



## YouTube 2018

A screenshot of the YouTube homepage from April 2018. The layout has changed significantly, featuring a sidebar on the left with links like Home, Trending, History, and Best of YouTube categories (Music, Sports, Gaming, Movies, TV Shows, News, Live, Spotlight, 360° Video). The main content area includes a large advertisement box with the word "Advertisement" in bold. Below it, there are sections for "Trending" and "Basketball - Topic Recommended channel". The "Trending" section shows thumbnails for videos like "Inside Zedler's \$15 Million Mansion That Has a Skittles Architectural Digest" (9:13), "Will Smith Tries Online Dating" (4:07), and "The House with a Clock in Its Walls Trailer #1 (2018)" (2:59). The "Basketball - Topic Recommended channel" section shows thumbnails for "MOST SAVAGE HIGHLIGHTS ON YOUTUBE" (3:05), "Celebrating Too Early" (10:14), and "Inside The NBA | Streetball" (3:24). A sign-in button is visible on the left side of the main content area.



▶ ▶ 🔍 0:01 / 1:19:36

ard.com

CC ⚙️ 🎞️ 🔍

## Learn TensorFlow.js - Deep Learning and Neural Networks with JavaScript

24,926 views

772

10

SHARE

SAVE

...

Up next

AUTOPLAY

JavaScript: Understanding the  
Weird Parts - The First 3.5...Tony Alicea  
1.3M viewsfreeCodeCamp.org  
Published on Nov 13, 2018

SUBSCRIBE 788K

What is shown on the interface  
(YouTube)



COURSE  
Get discovered

LESSON 1

Search and discovery on YouTube

Learn  
Try it  
Quiz

LESSON 2

Make effective thumbnails and titles

LESSON 3

Write smart descriptions

LESSON 4

Let cards and end screens do the work

LESSON 5

Keep your channel fresh with uploads and playlists

LESSON 6

Collaboration

COURSE EXAM

## Lesson: Search and discovery on YouTube

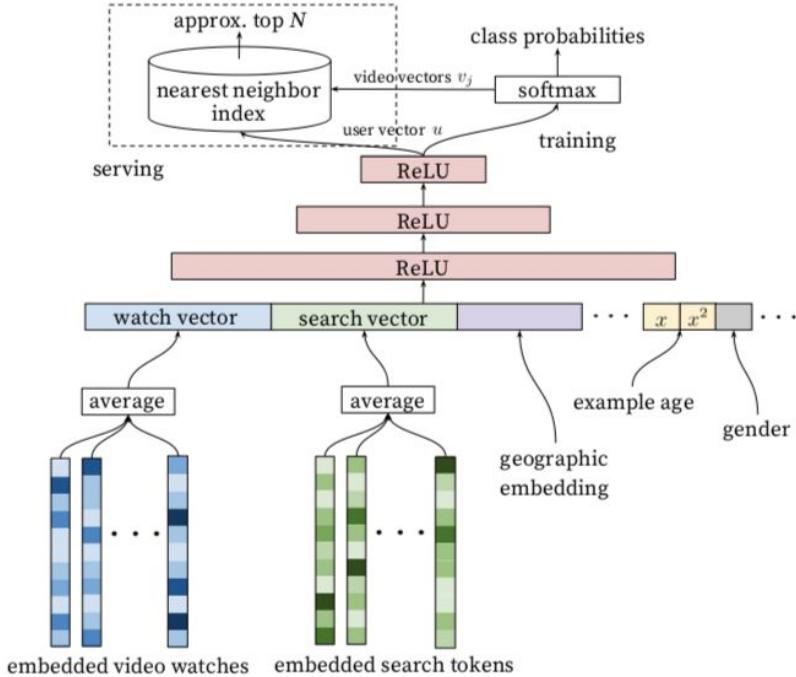
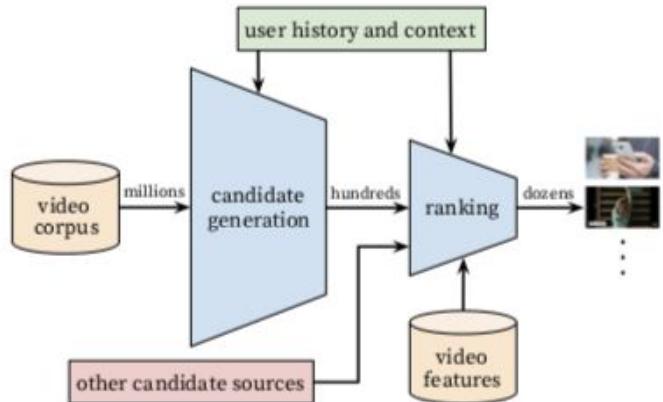


We know you put a ton of time and energy into making videos and it's important for you to understand how they get discovered. The goals of YouTube's search and discovery system are twofold: help viewers find the videos that they want to watch, and maximise long-term viewer engagement and satisfaction. Gain a better understanding of how the system works, where your content is displayed and what you can do to give your videos the best chance of success.

- The algorithm follows the audience



What is hidden behind  
(YouTube Creators Course)



## What is hidden behind

Gielen, Matt. "Reverse Engineering The YouTube Algorithm." Tubefilter. February 16, 2017. Accessed November 10, 2018.  
<https://www.tubefilter.com/2017/02/16/youtube-algorithm-reverse-engineering-part-ii/>.

videoid	title	genre	paid	isFamilyFriendly	duration	views	dislikeCount	likeCount	commentCount
LthmNJzkER	Drawing with Procreate on iPhone	People & Blogs	FALSE	FALSE	249	15087	6	961	94
JFqiSr9A-Go	DIY Home Office and Desk Tour — A Designer's Workspace	Howto & Style	FALSE	FALSE	506	790113	389	40558	2518
JdJCbunWhI	ULTIMATE Desk Setup 2019 Tour! - Minimal x Productive	Science & Technology	FALSE	TRUE	693	217097	445	4753	395
G2VxwFEA8	No, THIS is the CLEANEST Setup.	Science & Technology	FALSE	TRUE	947	3642232	3189	97682	11058
hUBSxCJeU	iPad Pro Bend Test! - Be gentle with Apples new iPad...	Howto & Style	FALSE	TRUE	471	8980932	32280	169277	43256
TCrAqs-WRq	iPhone Xs Max Teardown - Is there any Thermal Cooling?	Howto & Style	FALSE	TRUE	601	4876837	5516	89383	12308
WKayUI0spp	New iPhone Xs DROP Test!! - I was wrong...	Howto & Style	FALSE	TRUE	670	3289963	3524	69335	12747
wIL3VwU-B4	Fresh Tutorial of iPhone 7 Plus Cracked Screen Refurbishing	Science & Technology	FALSE	TRUE	866	2805036	456	3529	380
q14cVrEAIZU	How to Replace the Xiaomi Mi Max Screen	Science & Technology	FALSE	TRUE	1200	2708142	320	1666	224
XPjvQ7sH8g	Galaxy J7 Glass Only Replacement (FULL GUIDE) - J7 2016	Science & Technology	FALSE	TRUE	554	1455029	1011	5285	317
S6q4yrHbXTv	Galaxy J7 2017 Glass Only Replacement - Complete guide 60FPS	Science & Technology	FALSE	TRUE	626	1849346	1222	7378	333
syC-HJLjokl	Arduous Demo - iPhone X OLED Screen Glass Only Repair	Science & Technology	FALSE	TRUE	862	286354	136	2299	172
nuZz_D1uR1	How To Fix iPhone X Won't Turn On With Logic Board Repair	Science & Technology	FALSE	TRUE	564	238069	80	2409	209
bJCuMFeUiG	How To Fix iPhone X Face ID Not Working After Repairing	Science & Technology	FALSE	TRUE	704	173294	67	1590	121
ffJJpVGP-a4	How To Replace iPhone X Broken Front Glass With Q5 Laminator	Howto & Style	FALSE	TRUE	1027	155496	93	896	70
ynyaseuL3RE	iPhone XS/XS Max Broken Screen Glass Only Repair - Step By Step	Science & Technology	FALSE	TRUE	732	28331	16	708	61
w0s9OTZKOI	\$99 Fake iPhone XR - How Bad Is It?	Science & Technology	FALSE	TRUE	1020	3879950	7040	35831	4646
cpE02hQWIJ	\$95 Fake Samsung Galaxy Note 9 - How Bad Is It?	Science & Technology	FALSE	TRUE	1168	1377532	1896	9386	2253
DIEjLDrgzP0	\$150 Fake iPhone X vs \$1150 iPhone X! How Bad Can It Be?	Entertainment	FALSE	TRUE	914	2291140	1779	32889	4134
5ZnKhBsTdh	Best Waterproof iPhone 6S Cases - Homemade Edition	Entertainment	FALSE	TRUE	532	3479979	1943	32553	5057

What is hidden behind

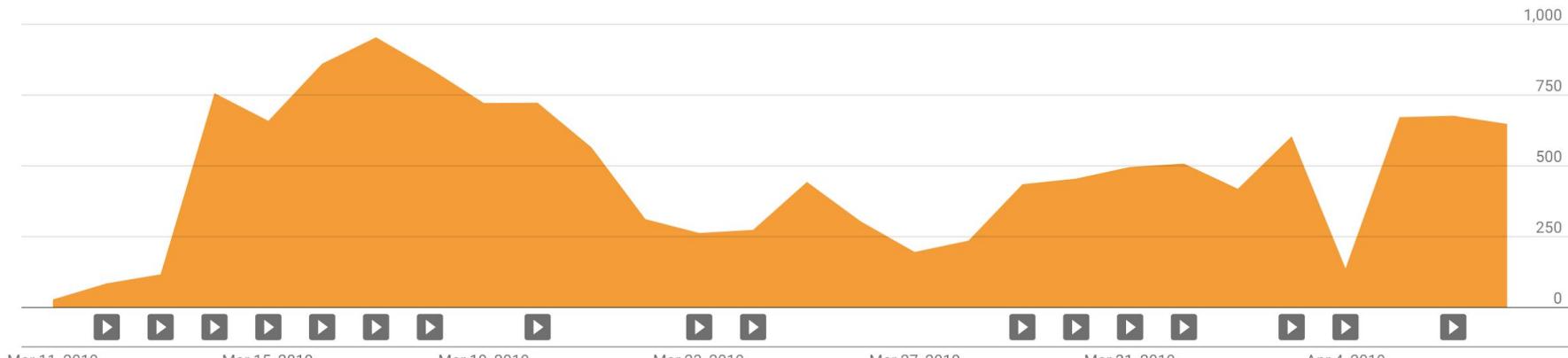
Impressions  
**13.4K**

Impressions click-through rate  
**11.2%**

Views  
**2.0K**  
↑ 439%

Unique viewers

Updated Apr 7, 2019, 3:00 AM



[SEE MORE](#)

What is hidden behind  
(YouTube Studio)

**PewDiePie**UPLOADS  
**3,766**SUBSCRIBERS  
**88,000,338**VIDEO VIEWS  
**20,626,417,729**COUNTRY  
**US**CHANNEL TYPE  
**Comedy**USER CREATED  
**Apr 29th, 2010****APPLY FOR YOUTUBE PARTNERSHIP**[User Summary](#)[Future Projections](#)[Detailed Statistics](#)[Featured Box](#)[Similar Channels](#)[User Videos](#)[Live Subscriber Count](#)**A**  
TOTAL GRADE**2nd**

SUBSCRIBER RANK

**10th**

VIDEO VIEW RANK

**92nd**

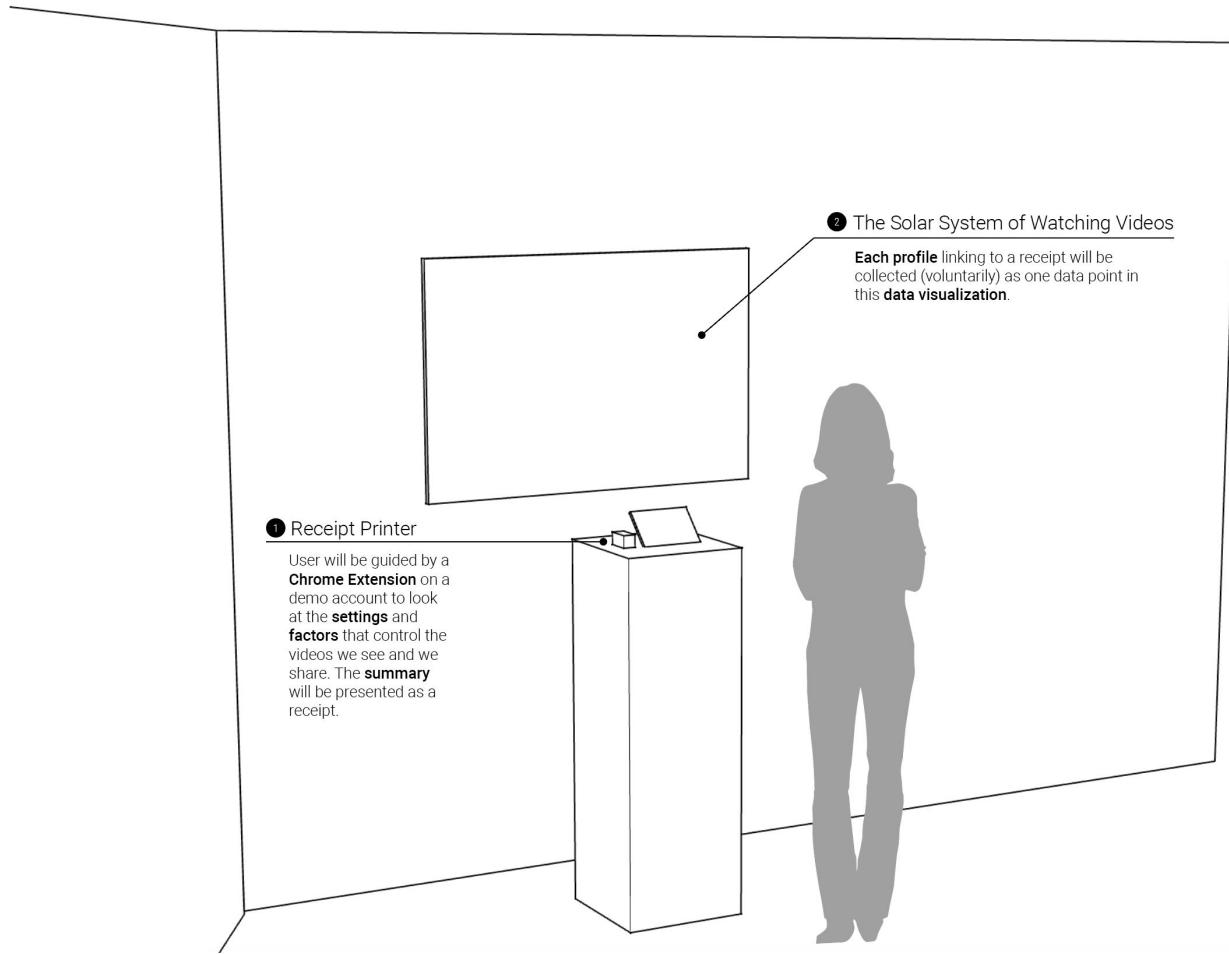
SOCIAL BLADE RANK

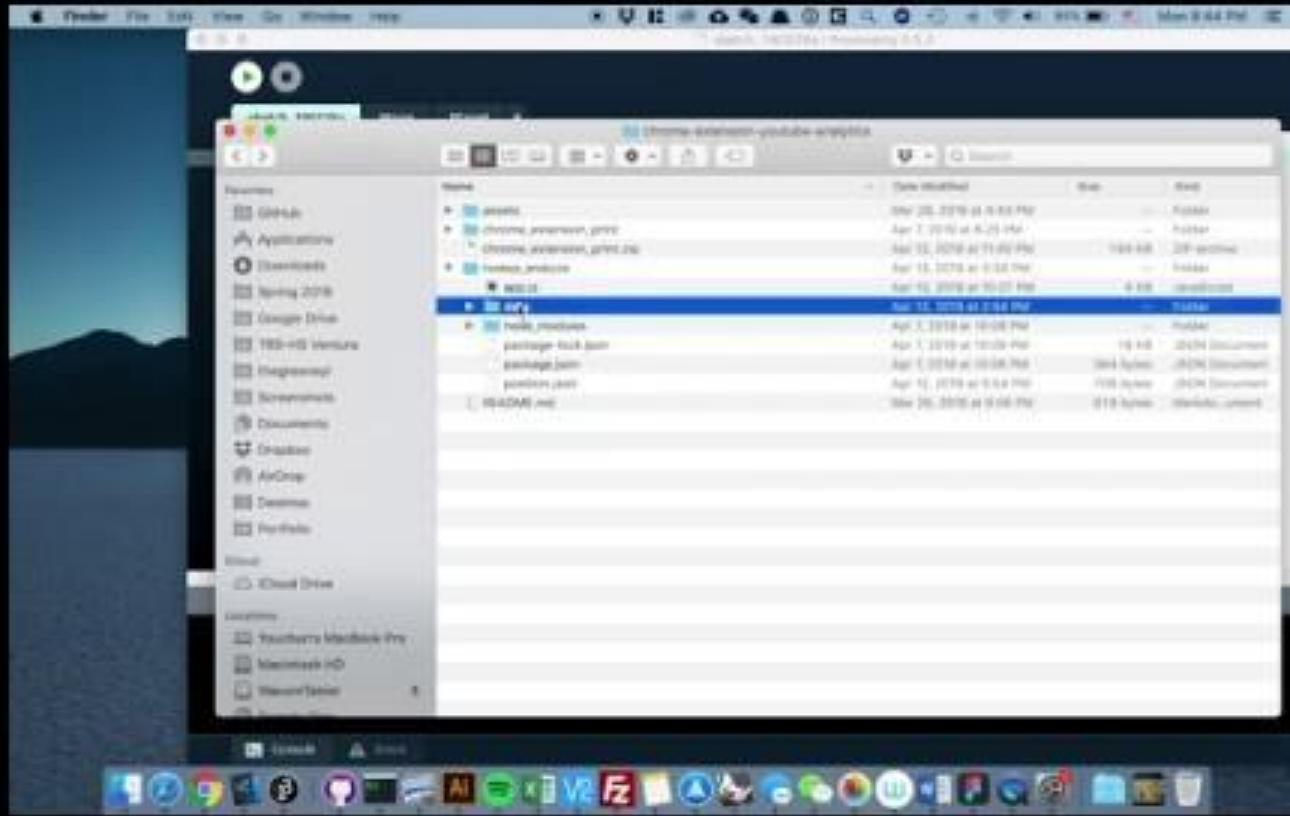
**334,368,000** -3.5%  
VIEWS FOR THE LAST 30 DAYS**4,426,097** +13.7%  
SUBSCRIBERS FOR THE LAST 30 DAYS**\$83.6K - \$1.3M**  
ESTIMATED MONTHLY EARNINGS**\$1M - \$16M**  
ESTIMATED YEARLY EARNINGS

What is hidden behind  
(socialblade.com)

# Final Format

## Exhibition setup







# Final Format

## Receipt Printer

SERVICE	PRICE
YouTube	Free
YouTube Premium	\$5.99/month

SUBSCRIPTION	CHANNEL	MONTHLY INCOME
3Blue1Brown	\$878	-\$14K
Adafruit Industries	\$141	-\$2.3K
AndrewSchrock	\$13.1K	-\$209K
Circle Line Art School	\$503	-\$8.1K
Firebase	\$107	-\$1.7K
Gal Shir	\$393	-\$6.3K
Guggenheim Museum	\$7	-\$120
Lo-Fi House	\$328	-\$5.3K
Loem	\$0.74	-\$12
MixarThe	\$11	-\$168
Pixel & Bracket	\$92	-\$1.5K
The Wrench	\$1.3K	-\$21.2K
UES Chefs	\$0.59	-\$9
Unity	\$569	-\$9.1K
愛莉莎莎 Alisasa	\$1K	-\$16.5K

Number of  
subscriptions is  
higher than 0%

PRIVACY USAGE	
Web & App Activity	On
Location History	On
Voice & Audio Activity	Paused
Device Information	Paused
YouTube Search History	On
YouTube Watch History	On
Ad personalization	On
	Off

Enabled privacy  
setting is higher  
than 17%

AD PERSONALIZATION	
25-34 years old	
Female	
Microsoft	

README.md

# Chrome Extension YouTube Setting Analytics

Work in progress

Is your Google setting and YouTube history data and provide analytics about your activities

- ✓ Get Google data and personalization setting
- ✓ Get Google Ad personalization setting
- ✓ Check YouTube purchase
- ✓ Check YouTube subscription
- Upload YouTube search history
- Upload YouTube watch history

GENERATE RECEIPT DOWNLOAD START OVER

Add the extension to Chrome

Select the extension directory.

Privacy Check

- Spring 2019
- Google Drive
- TBS-HS Ventura
- thegreeneyl
- Screenshots
- Documents
- Dropbox
- Desktop
- Portfolio
- Creative Cloud...

	Date Modified	Size
113_15.mov	Yesterday at 7:59 PM	7.3 M
113_15_02.mov	Yesterday at 7:57 PM	24 M
113_15_01.mov	Yesterday at 7:43 PM	21.9 M
cmuconvert-mb2-113-128	Yesterday at 6:20 PM	
cmuconvert-mb2-113-128.zip	Yesterday at 6:14 PM	98.6 M
cmuconvert-mb2-10-14	Yesterday at 6:13 PM	
cmuconvert-mb2-10-14.zip	Yesterday at 6:13 PM	66.7 M
cmuconvert-daz-10-14	Yesterday at 6:09 PM	
cmuconvert-daz-10-14.zip	Yesterday at 6:09 PM	93.4 M
75_17.mpg	Yesterday at 5:50 PM	1.3 M
75_19.mpg	Yesterday at 5:50 PM	1.7 M
111_09.avi	Yesterday at 5:49 PM	1.7 M
114_16.avi	Yesterday at 5:45 PM	3.3 M
86_10.avi	Yesterday at 5:44 PM	5.5 M

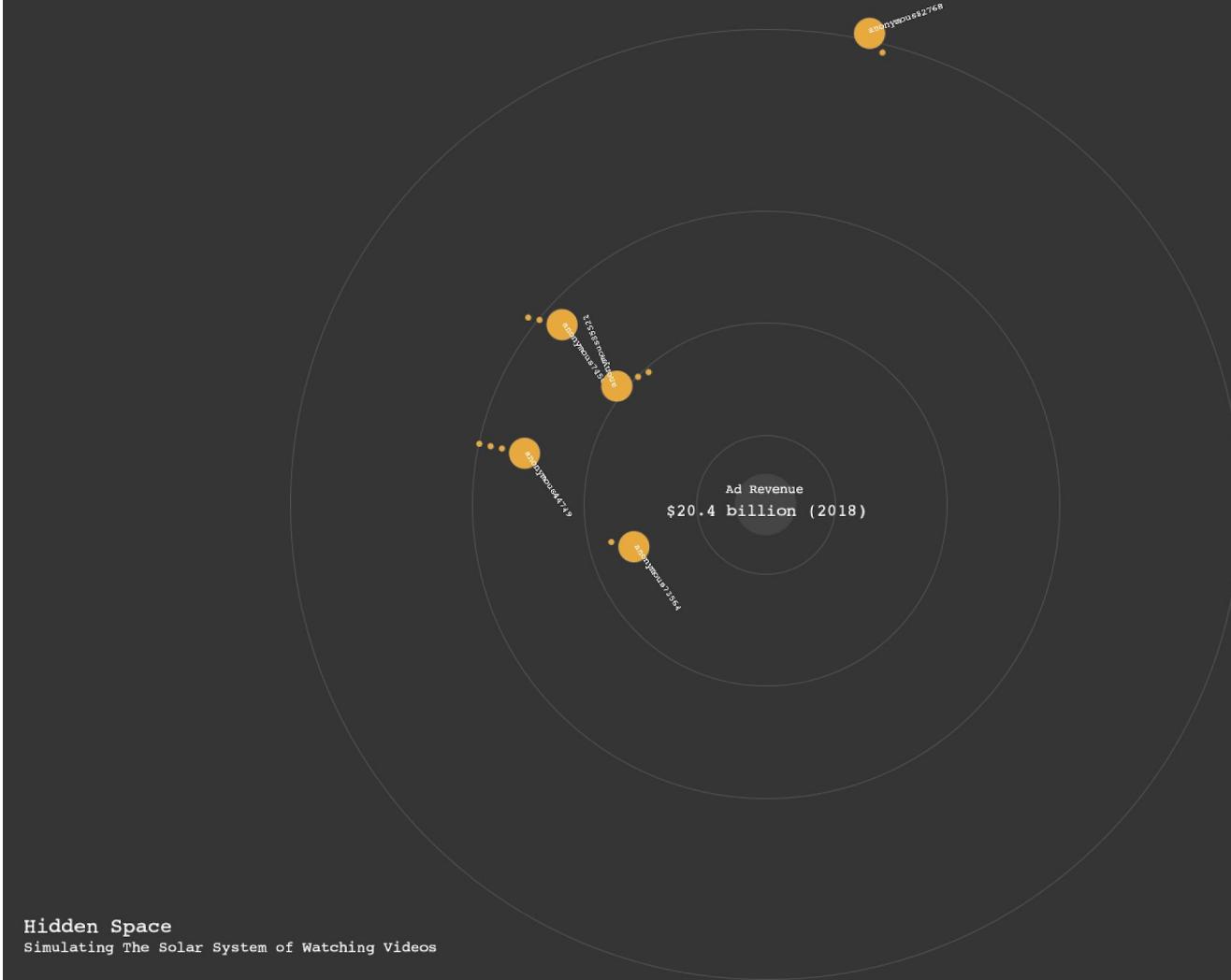
Cancel Select

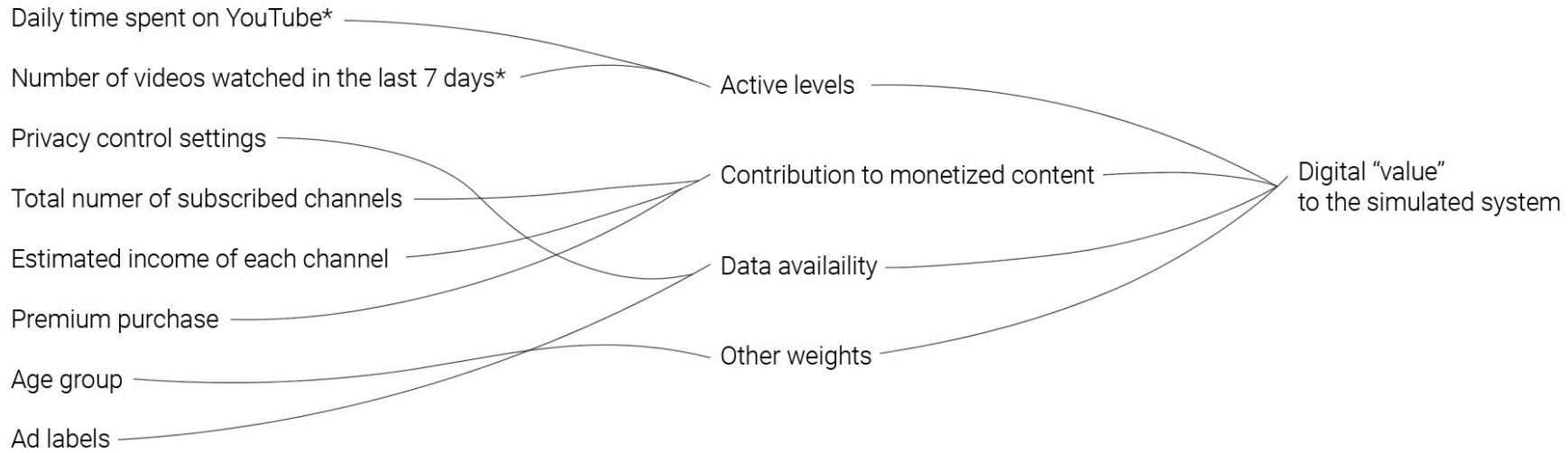
Final Format  
Chrome Extension

# Final Format

## Data Visualization

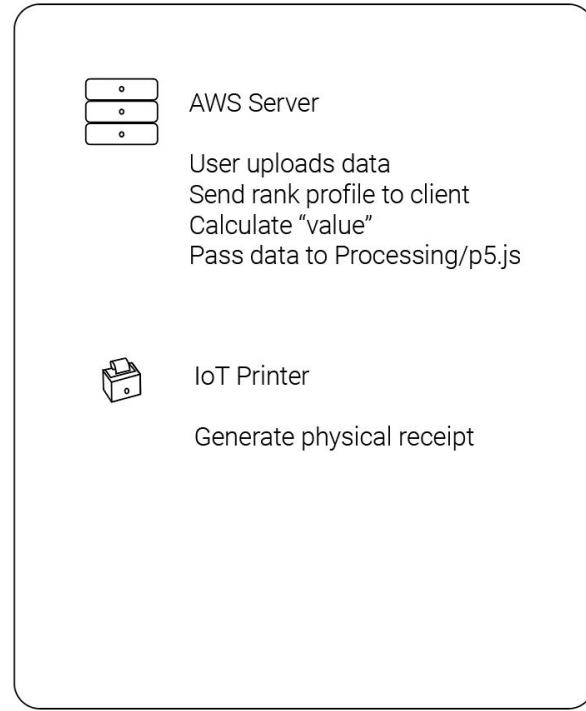
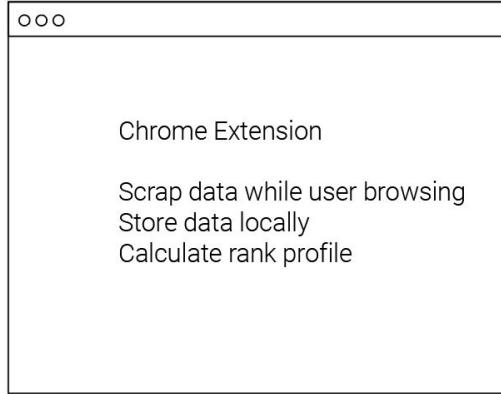
**Hidden Space**  
Simulating The Solar System of Watching Videos





## Final Format

### Metrics



## Final Format

### System Diagram

# Final Format

## User Testing



"We will create and connect and the entrepreneurs will keep the cash."

Taylor, Astra. *The Peoples Platform: Taking Back Power and Culture in the Digital Age*. Toronto: CNIB, 2015.