Practical 3

DATA & QUESTIONS

This dataset involves both rich basic attributes and some linguistic features of 2475 TED talks published from 1972 to 2017. Original data source applied in this practical is available from data.world. [1] Key attributes and number of data points about our dataset are provided in table 1.

Key Attribute	Attribute Type
Published Year (year_filmed)	ordinal
tags	Categorical
Views up to Jun. 6th, 2017 (views_as_of_06162017)	Quantitative
Playlist URL	Categorical

Table 1: Original dataset analysis

After careful analyse the data attributes and their relationship, there are two questions I want to explore.
Opening questions:

- Question 1: The trend of top viewed topics in TED.
- Question 2: The relationship between top topics and sub topics.

DESCRIPTION OF VISUALIZATION

The visualization could be accessed through the link:
https://hs99.host.cs.st-andrews.ac.uk/CS5044_P3/ .

1.Visual variables.

According to the opening questions, we need to process data and create new attributes including popular main topics and three sub topics based on the number of views. After data cleaning and processing, Published Year, Main Topics, Views, Playlist URL and sub topics (relative topic 1, 2 & 3) are the attributes need to be included and analysed. Table 2 shows the visual variables we chose based on expressive and effective analysis.

Attribute	Attribute Type	Visual Variable
Published Year (year_filmed)	ordinal	x-position
MainTopics (tags)	Categorical	shape
Views up to Jun. 6th, 2017 (views_as_of_06162017)	Quantitative	Colour (Brightness) & size
Playlist URL	Categorical	Y-position
Sub topics(relative topic 1, 2 & 3)	Categorical	Position&Colour(border corlour)

Table 2: Attributes analysis

2.A manual of the visualization

Audience: This visualization was created for those people who are interested in top popular topics and would like to explore video lists based on the topic popularity.

1.How to read

On the right is the main view of whole visualization, which described top popular topics in TED from 1972 to 2017. The centre circle is top 10 viewed main topics, three circles on the round is top popular 3 related topics. The brightness and size of circle based on the number of views, more popular topics with more larger size circle and deeper colour. Years could be filtered by sliding the time slider below.

The left side provide more details about the topic. The lollipop view show number of talks included in the topic and ranked according number of talks from left to right. Video playlists below show top viewed video playlist rank with URL link.

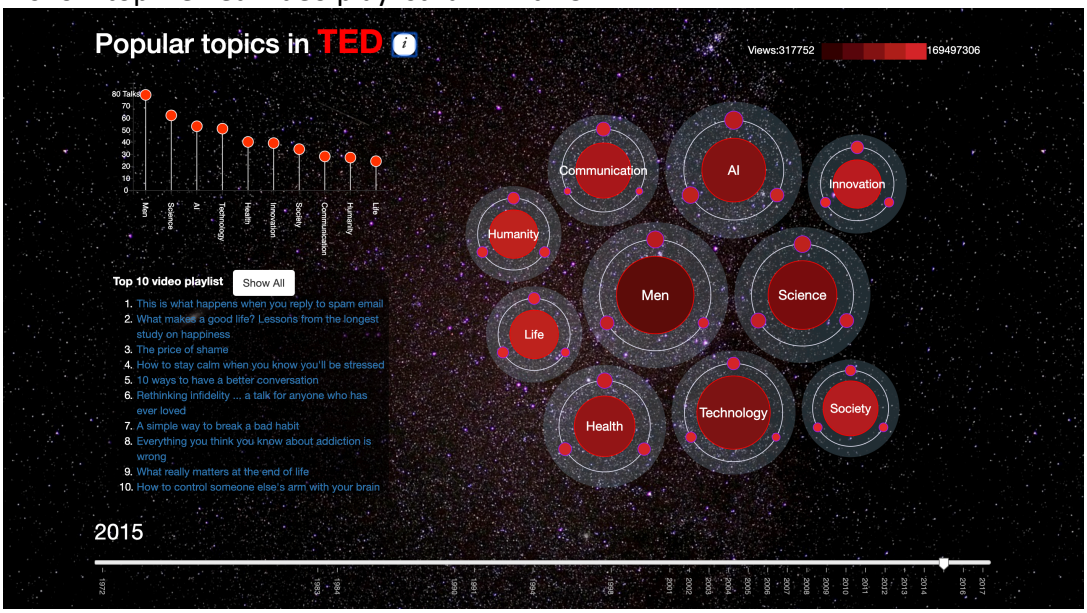

Figure 1: Overview.

The "***i***" icon could be clickable and linked with a guideline to this visualization.

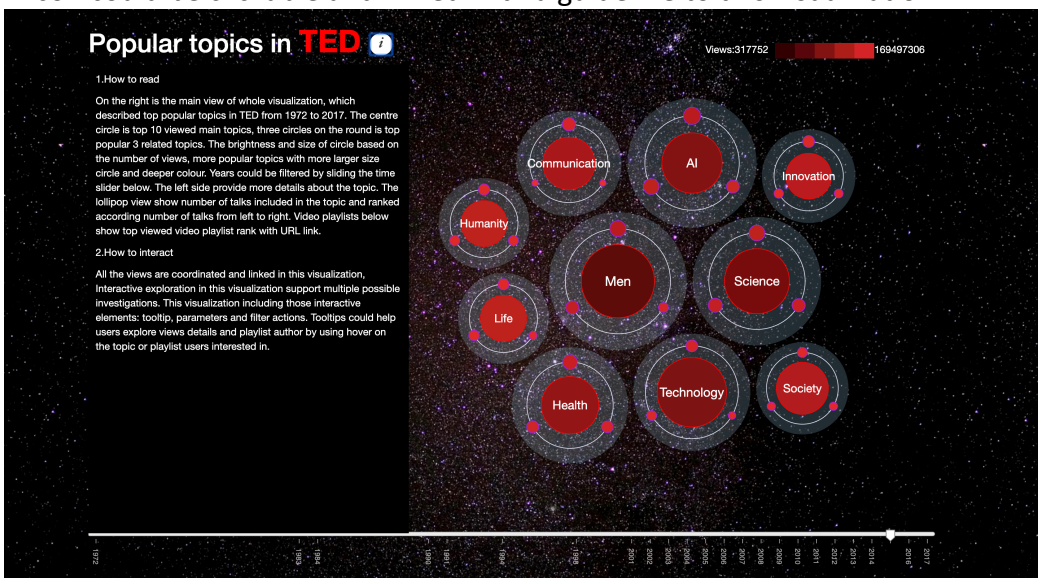

Figure 2: Guideline.

2.Interactive features

This visualization provides various interactive elements including tooltip, filter actions, brush and parameter, which enable user to explore multiple possible investigations with different views as all the views are coordinated and linked with this visualization.

Tooltips could help users explore views details and playlist author by using hover on the topic or playlist users interested in.

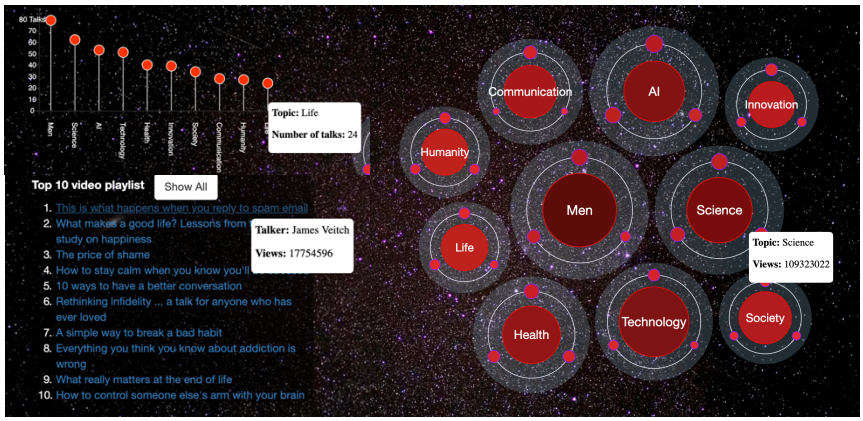

Figure 3: Tooltip.

Filters:

- Year filter: Filter about the year placed as a slider at the bottom could be interact with all other views. Users could use year filter have a look at the popular topic information in the year they choose.
- Main topic filter: Users could click the topic circle then video playlist on the left would show all the video playlist about the topic and ranked based on the number of views.
- Sub relative topic filter: When users click a topic circle, the circle could become larger and enable users drag sub topics around to filter video playlist about main topic and sub topics users chosen.

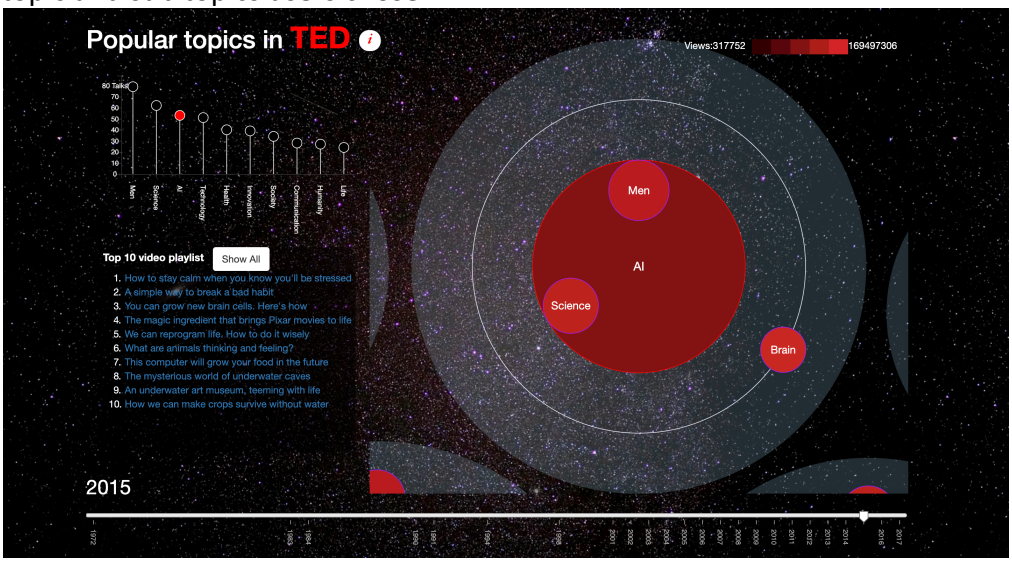

Figure 4: Sub relative topic filter.

Brush and highlight: when click one of the topics, the relative part on other view could be highlighted.

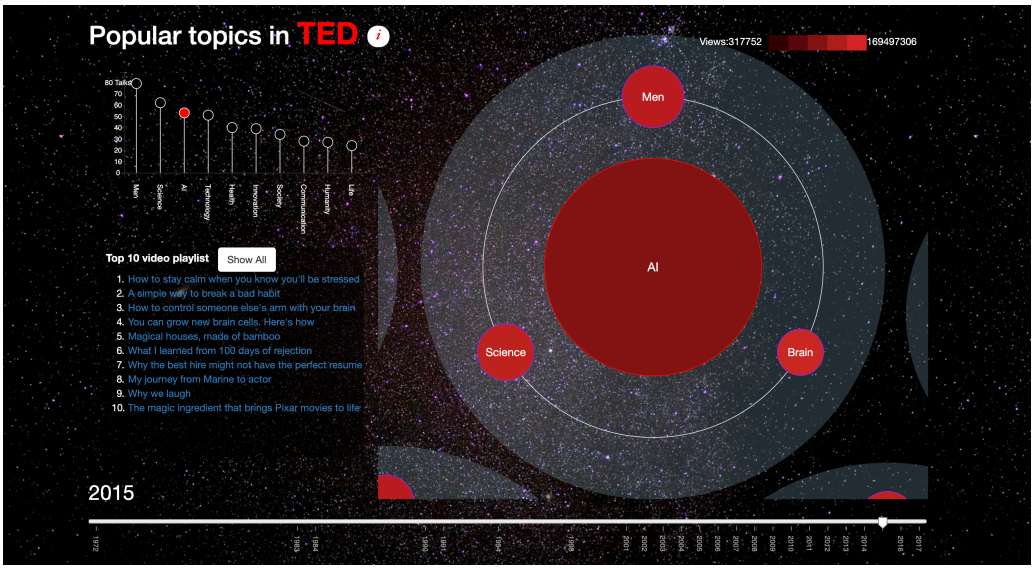

Figure 5: Brush and highlight

Parameter: “show all” button and “show top 10 button” enable user to choose if have a look at all the video playlist or just focus on top lists.

IMPLEMENTATION

This visualization was mainly implemented by using d3.js library. We first referenced some tutorials about packing chart, slider, and lollipop to implement our basic plots and then create links and interaction features between different views to make sure all our views are coordinated and linked well. Finally, we adjusted some feature style so that improve user experience. All resources we used are as follows:

1. Simple animation at lollipop plot loading [1].
2. D3 official API document [2].
3. Zoomable packing chart [3].
4. Creating time sliders. [4]
5. Background picture of whole visualization. [5]

INSIGHTS AND CRITICAL DISCUSSION

1.Insights

After exploration of the visualization, some insights could be gathered as follows:

Insights gathered according question 1

- Culture, technology and human are popular topics in TED recent years while in 1972, ted topic was about war and peace.

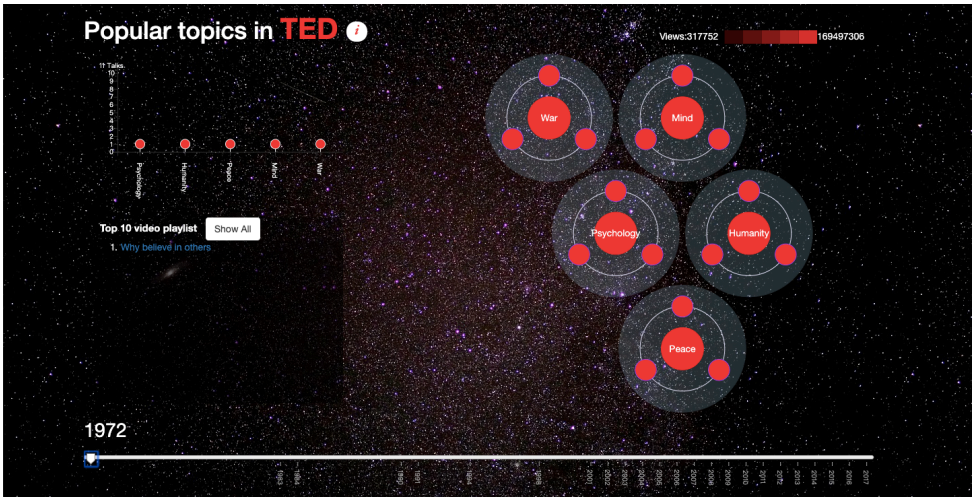

Figure 6: Topics in 1972

- AI started to become popular in 2002 and then always show on popular topic lists.
- Health become a hot topic since 2010.
- Culture is a popular topic since 2001 to 2014.

Insights gathered according question 2

- AI is always associated with entertainment or happiness.

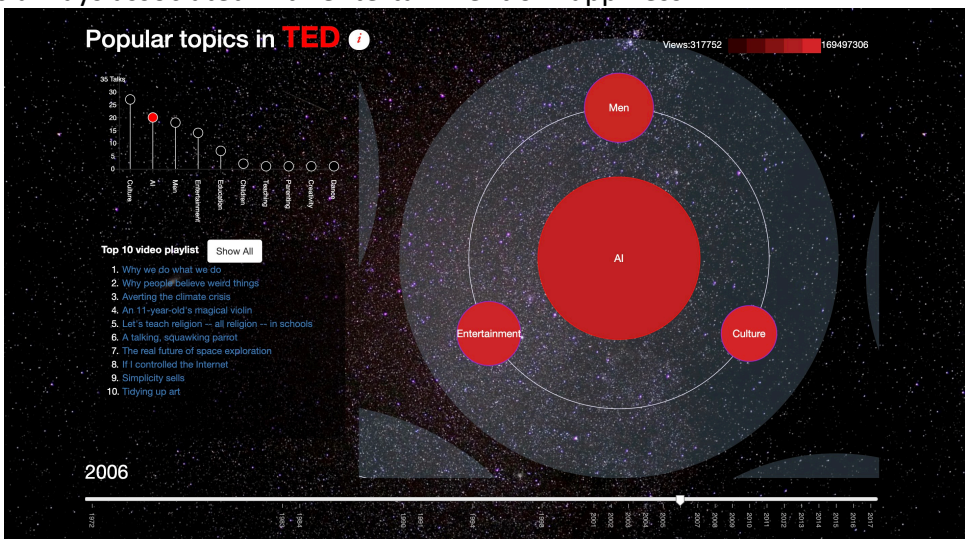

Figure 7: Topic about AI

- Even main topics are the same, the change of subtopics could be also meaningful.
- Culture started associated with AI and business since 2003.
- After 2007, topics about technology associated with design become popular.

2. Critical Discussion:

Because of the time and skill limitation, this visualization limited to explore popular topics with only three top related topics, and users could not search topics they come up in their mind. A search box may be a virtue solution for this problem.

Reference

[1]. Holtz, Yan. 2019. "Lollipop: Start With Simple Animation". D3-Graph-Gallery.Com. https://www.d3-graph-gallery.com/graph/lollipop_animationStart.html.

[2]. d3/d3 [Internet]. GitHub. 2019 [cited 22 April 2019]. Available from: https://github.com/d3/d3/blob/master/API.md

[3]. Zoomable Circle Packing [Internet]. Observablehq.com. 2019 [cited 22 April 2019]. Available from: https://observablehq.com/@d3/zoomable-circle-packing

[4]. D3.js Slider Examples [Internet]. Thematicmapping.org. 2019 [cited 22 April 2019]. Available from: http://thematicmapping.org/playground/d3/d3.slider/

[5]. Sheffield U. Identity of dark matter remains a mystery - News and events - Physics and Astronomy - The University of Sheffield [Internet]. Sheffield.ac.uk. 2019 [cited 22 April 2019]. Available from: https://www.sheffield.ac.uk/physics/news/dark-matter-cosine-dama-1.820082