Data Pipeline Implementation for YouTube Data

Andrew Wong

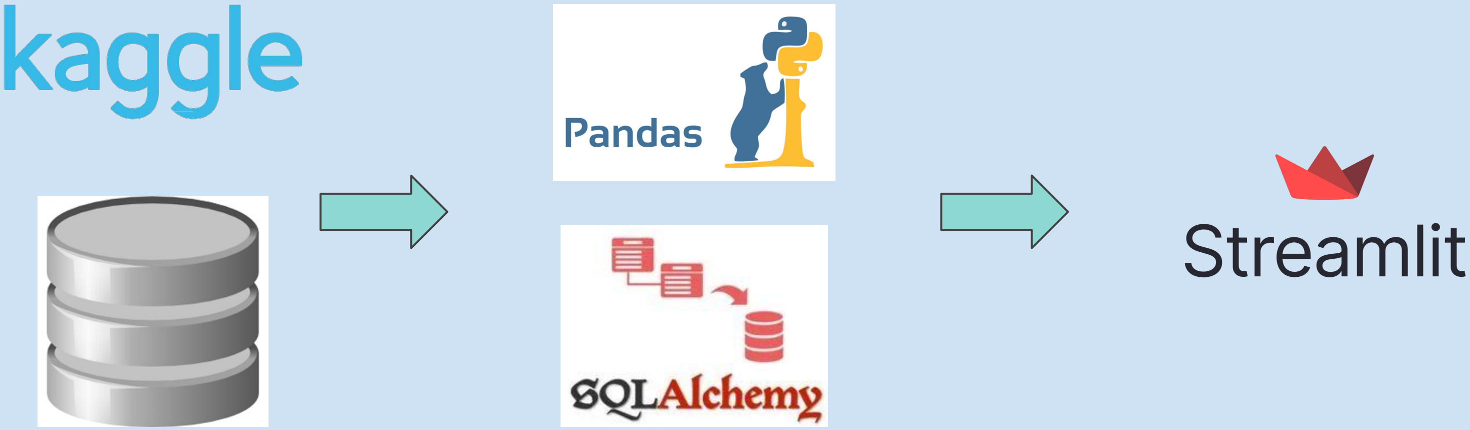
Goals:

- Ingest YouTube Trending Video Data into Database
- Build clean processing Pipeline
- Perform EDA to examine geographical trends in media consumption
- Deploy interactive web application

What is a Trending Video?

- Explore Page: Top 200 Trending Videos
- Not just view count
    - Comments, Likes, Dislikes
    - YouTube does not disclose it’s algorithm

Workflow:



kaggle

Pandas

SQLAlchemy

Streamlit

Data:

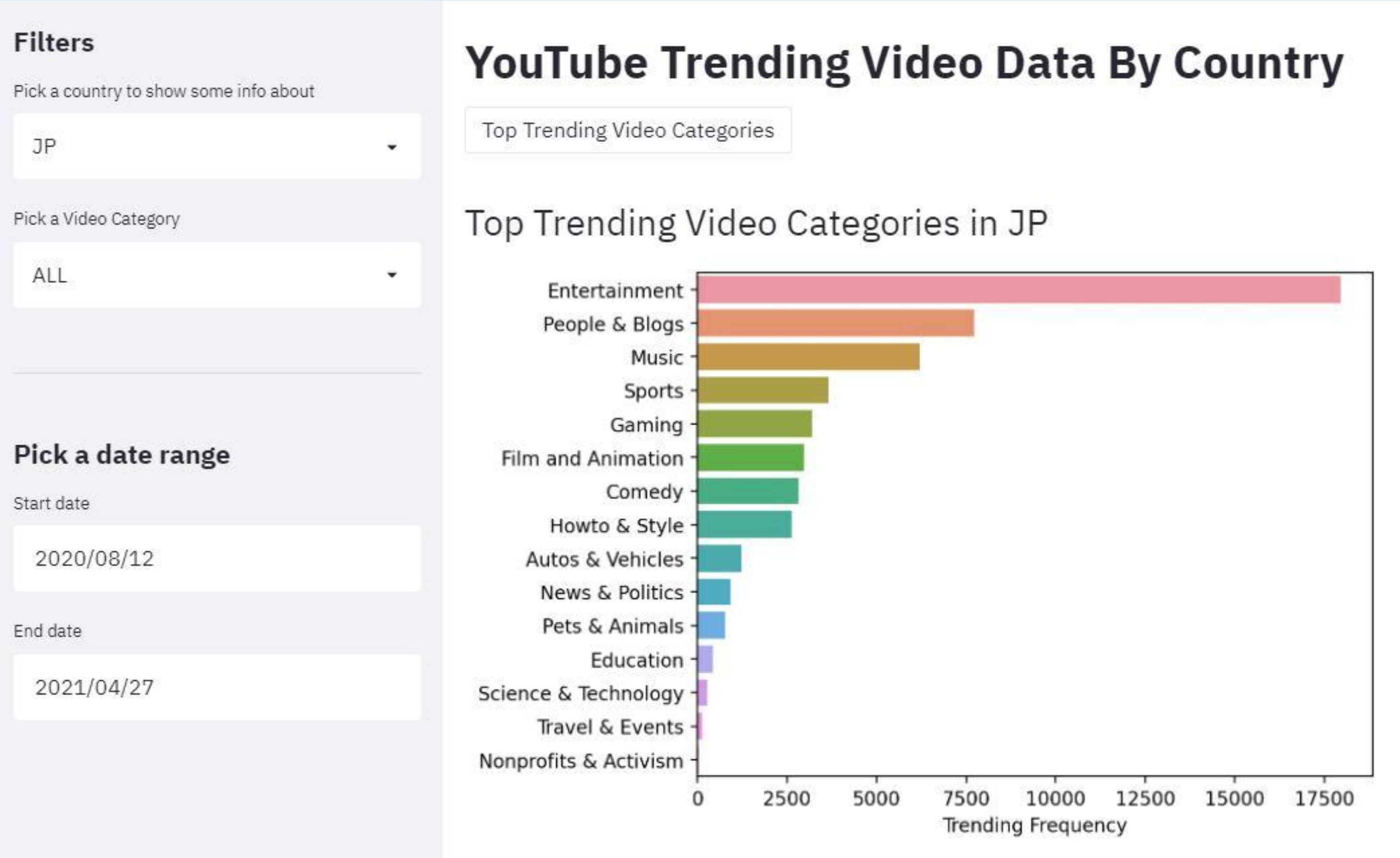
- 500,000+ (and counting) trending YouTube Videos from the past 9 months
- 11 Countries (India, USA, Great Britain, Germany, Canada, France, Russia, Brazil, Mexico, South Korea, and, Japan) in separate tables
- 50,000+ Rows per country
- Updated daily
- 16 feature columns (Channel Title, Views, Category, Trending Date, Likes and Dislikes)

Data Cleaning:

- Datetime transformation
- Description column
  - YouTube allows up to 5,000 characters (1-2 pages!)
  - Information not very useful, no common format/convention
  - Removing Description = 70% file size reduction!

Design: Web Application

- Built user-friendly, interactive web application via Streamlit
- Algorithms and filtered aggregation with a few clicks!
- User input/selection (Country, Category, Date)
  - Returns visualizations
  - Can benefit marketing/advertising teams



Filters

Pick a country to show some info about

JP ▾

Pick a Video Category

ALL ▾

Pick a date range

Start date

2020/08/12

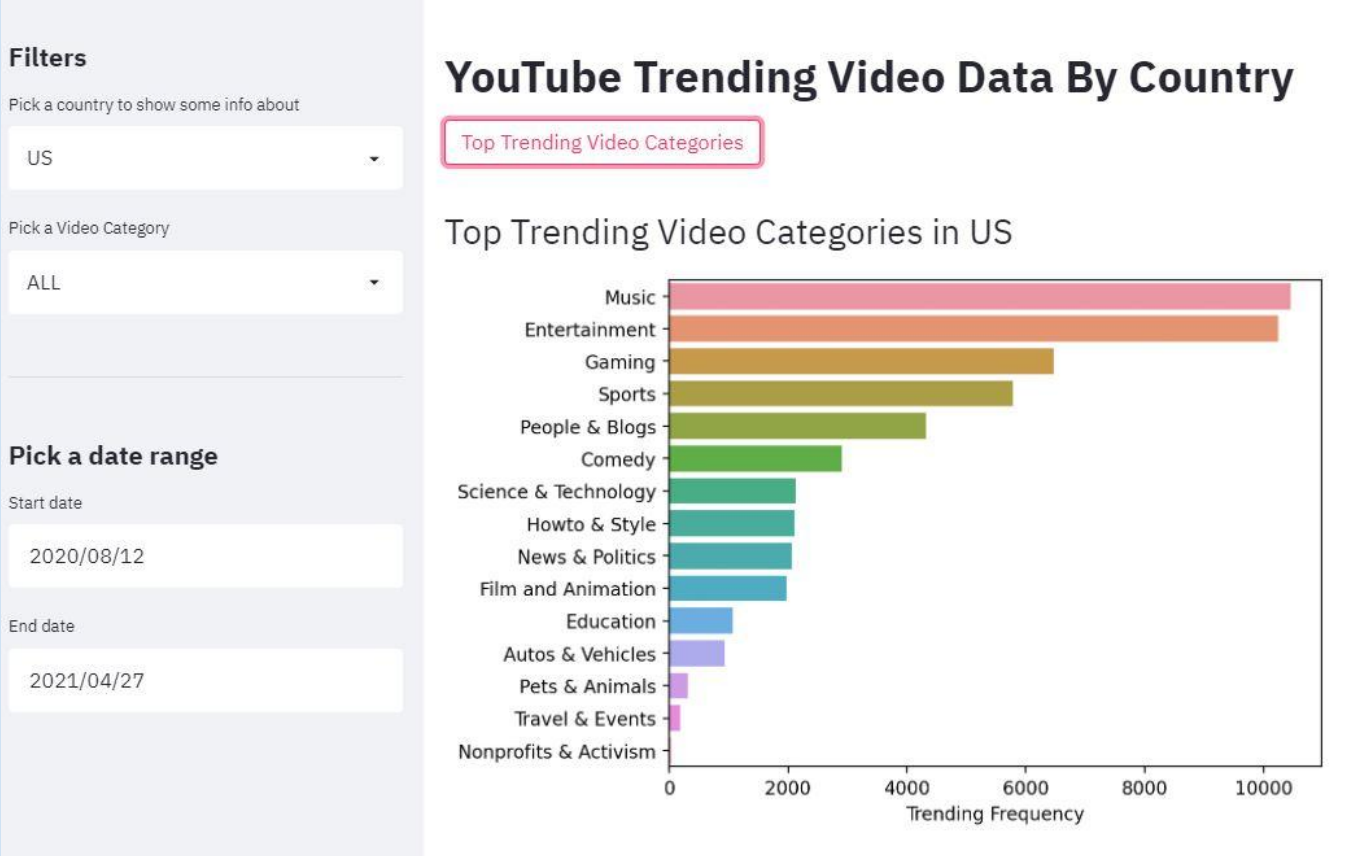
End date

2021/04/27

YouTube Trending Video Data By Country

Top Trending Video Categories

Top Trending Video Categories in JP



Filters

Pick a country to show some info about

US

Pick a Video Category

ALL

Pick a date range

Start date

2020/08/12

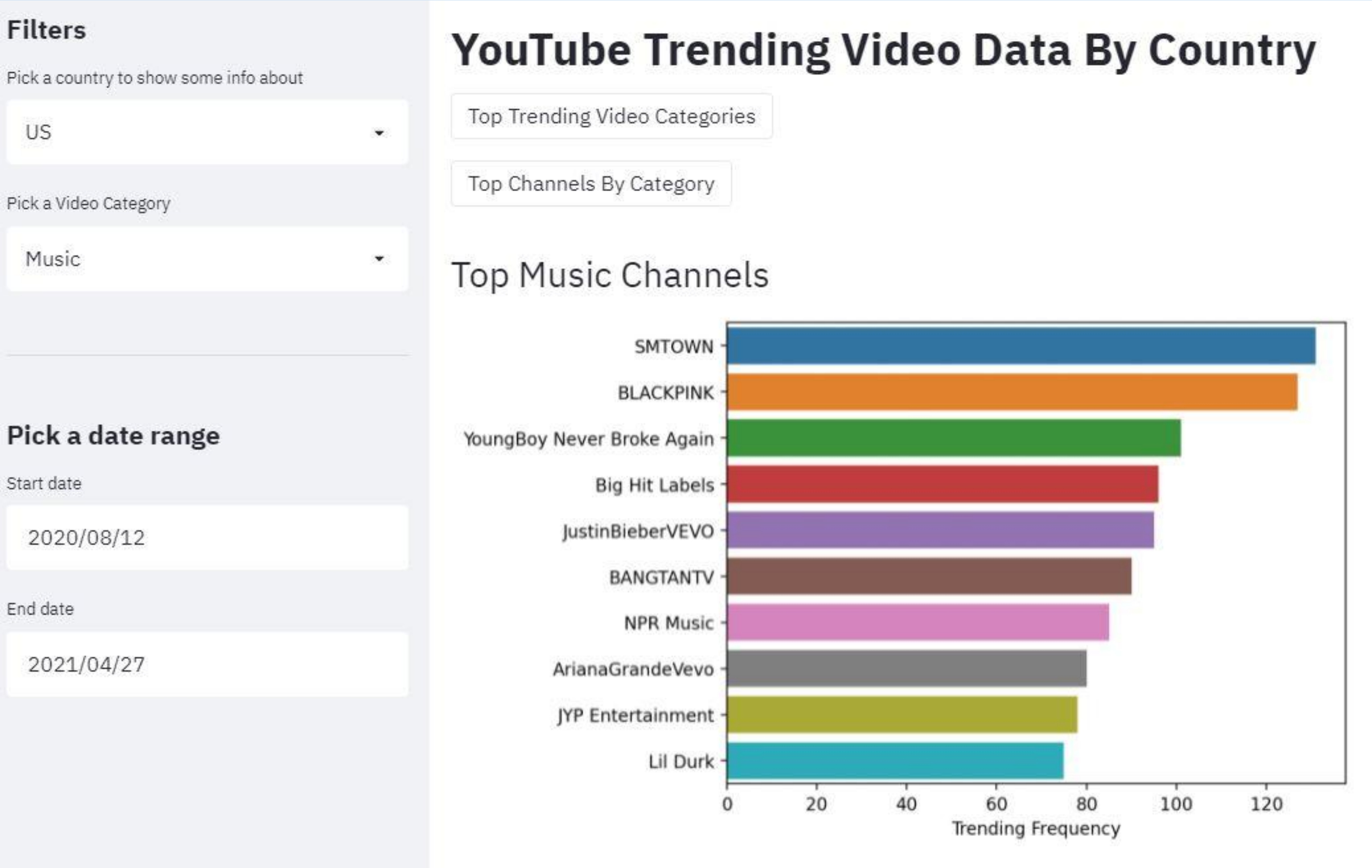
End date

2021/04/27

YouTube Trending Video Data By Country

Top Trending Video Categories

Top Trending Video Categories in US



YouTube Trending Video Data By Country

Filters

Pick a country to show some info about

US

Pick a Video Category

Music

Pick a date range

Start date

2020/08/12

End date

2021/04/27

Data Insights:

- Differences in media consumption between countries
  - Most popular YouTube channels
- Case Study: KPOP
  - Every country has a KPOP channel in Top 10 Music Channels, except for India

Future Work:

- Heroku to deploy Web App and DB
- Utilize YouTube API to request more specific data
- Automation to download updated dataset daily