



# MakeSense

UC Berkeley MIDS Capstone - Summer 2022

# THE TWITCH CHAT PIONEERS



**Alexandre Baude**  
Project Manager



**Anders Simmeth**  
Product Manager &  
Back End Engineer



**Gauri Ganjoo**  
Machine Learning  
Engineer & User  
Reach Out



**Vaibhav Beohar**  
Full Stack Engineer &  
Data Scientist

# TWITCH LANDSCAPE - THE KING OF STREAMING PLATFORMS

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**“Twitch is a live streaming service and global community for content spanning gaming, entertainment, music, sports, and more.”**



**9.2 Million  
Monthly  
Streamers**

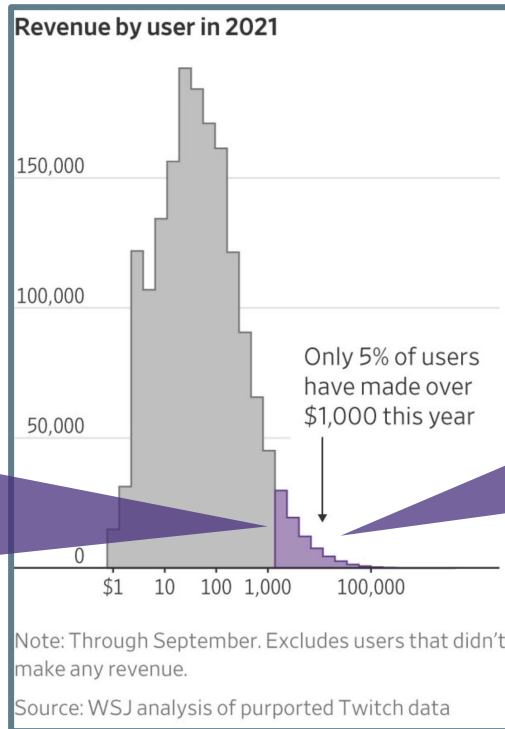
**140 Million  
Active  
Monthly Users**

**Top Streamers  
Earn Over  
\$30,000 a  
Month**

# WHY DO NEW STREAMERS STRUGGLE TO MAKE A DENT?

Twitch prioritizes top content creators for revenue generation.

- Top streams generate the most recurring viewership.
- Twitch generates revenue from all subscriptions.

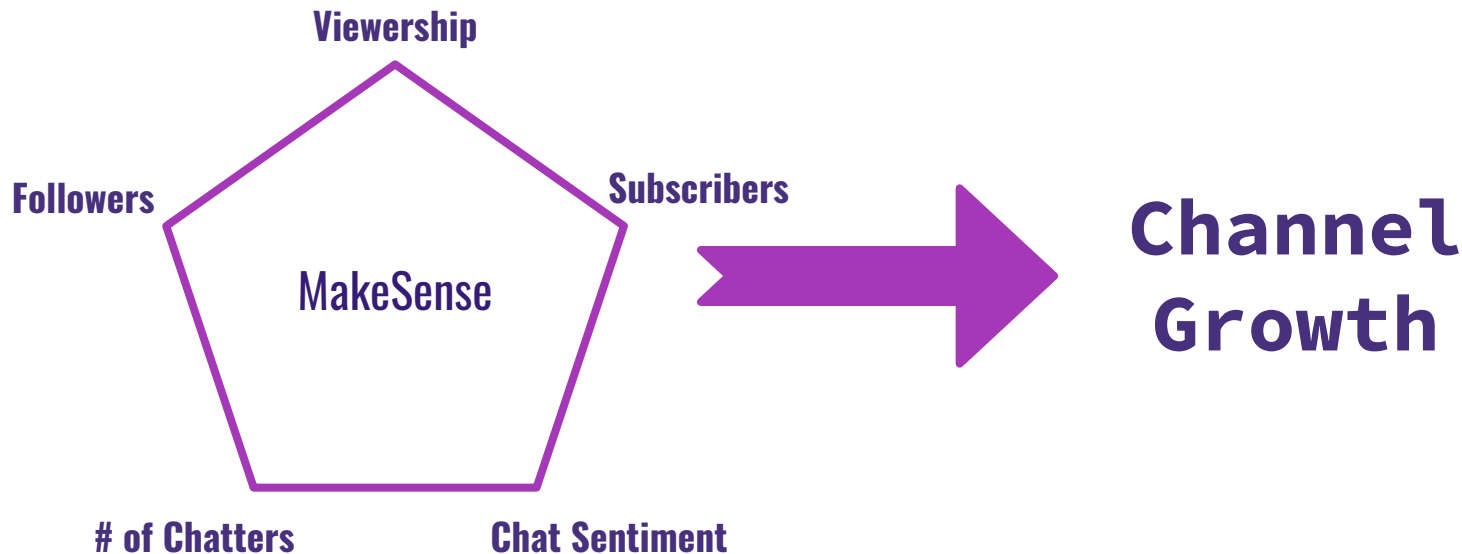


Top streamers have management teams that help them.

“All the top streamers on the platform have teams of individuals helping them strategize their content.” - Former Director of Analytics at Twitch

# HOW DOES AN EMERGING STREAMER MAKE A NAME FOR THEMSELVES?

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Translating their performance metrics into a scoring system, allowing flexibility to customize content creation to maximize growth in a single, or multiple areas.

# DIGESTIBLE INFORMATION: CONCISE GROWTH METRICS

## Stream Summary

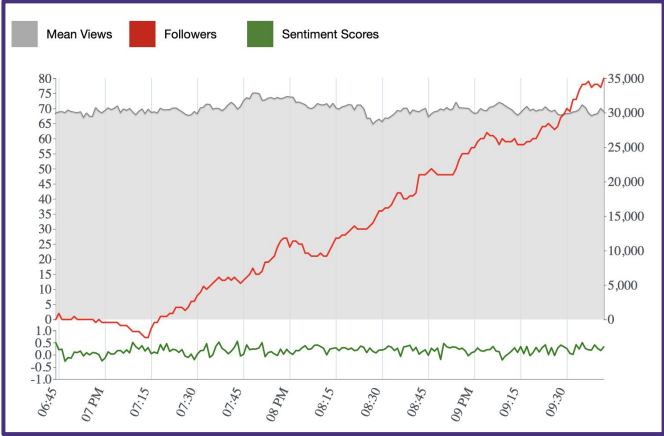
<div>Average Sentiment</div> <div>0.17</div> <div>Positive Chats: 37% Negative Chats: 19% Neutral Chats: 44%</div>	<div>Total Messages</div> <div>39,002</div>
<div>Average Viewers</div> <div>30,711</div>	<div>Change in Followers</div> <div>+81</div> <div>0% Change</div>
<div>Average Chatters</div> <div>20,987</div>	<div>Change in Subscribers</div> <div>+46</div> <div>0% Change</div>



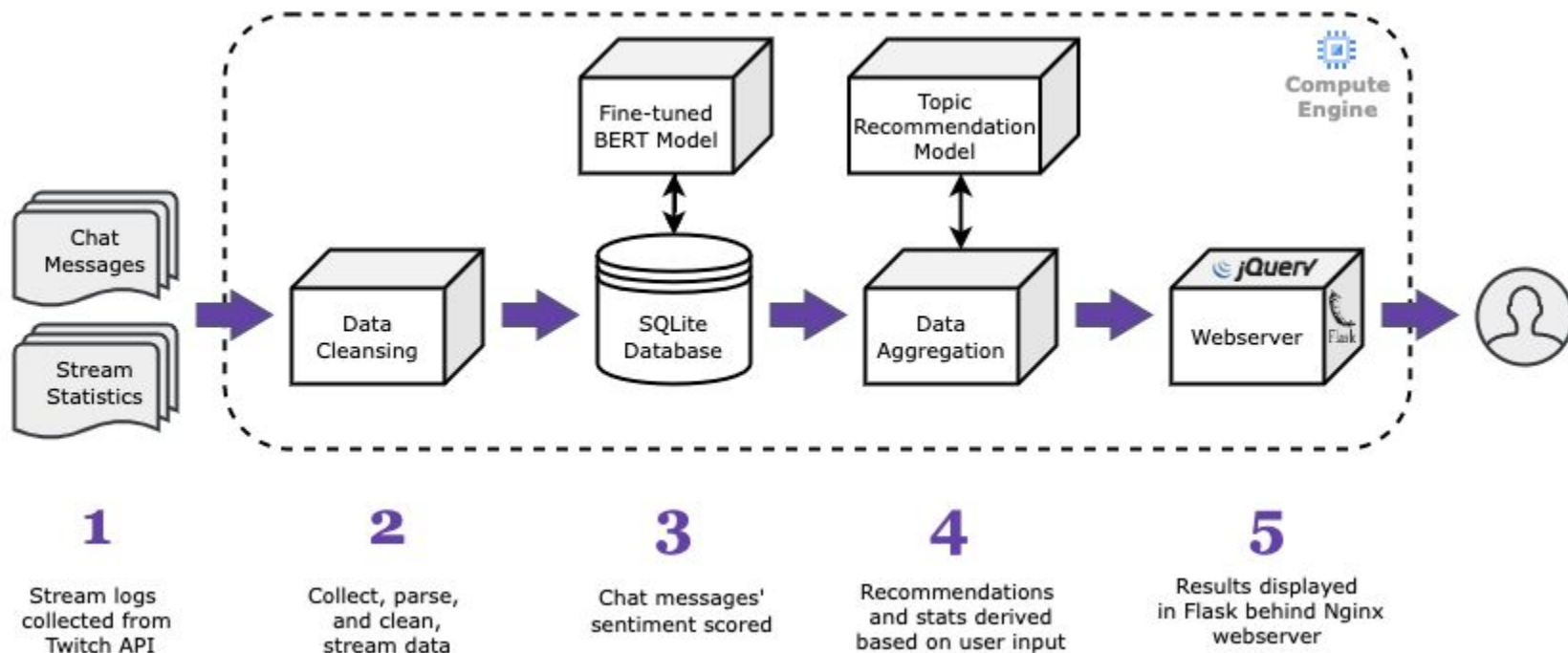
## Category Summary

Topic	Avg viewers	Avg sentiment	Subscriber Δ	Followers Δ	Score %
Just Chatting	30845.0	0.16	39	51	71.0
Evolve Stage 2	30141.0	0.22	7	30	29.0

## Statistics over Time



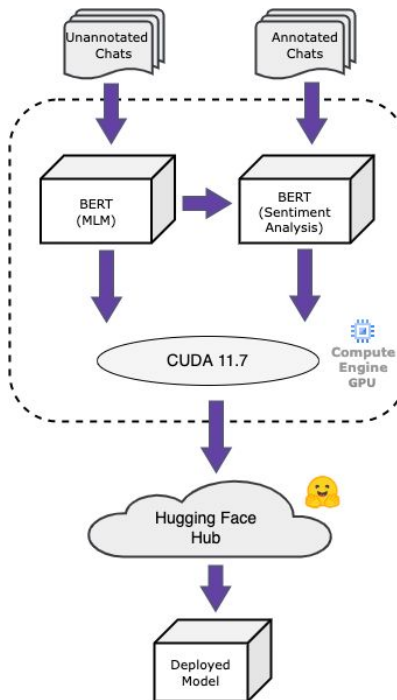
# TECHNICAL PIPELINE



# BERT TWITCH SPECIFIC FINE TUNING

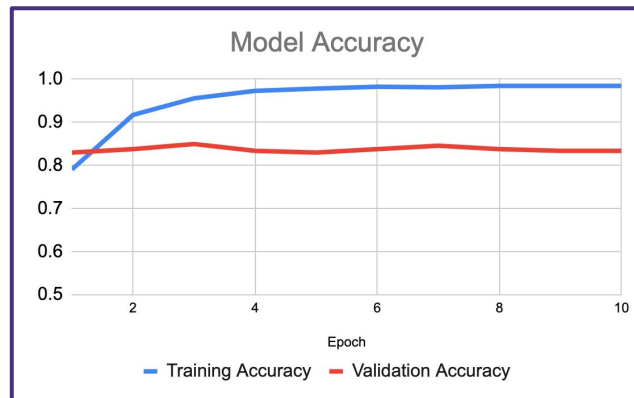
We utilized Google Cloud with 2 X K8 NVidia GPUs on CUDA 11.7 for training...

## Model Architecture



## Fine Tuning Sentiment Classification

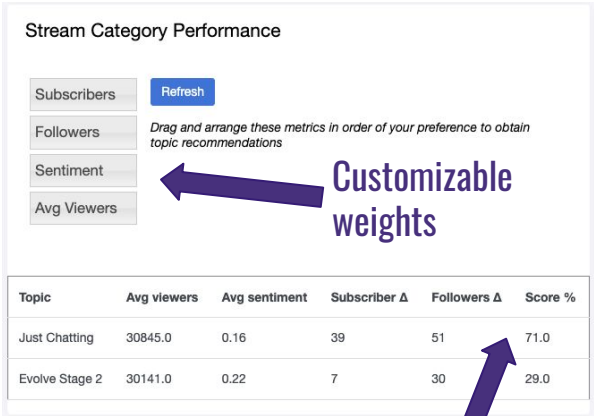
**84.5%**  
Validation Accuracy





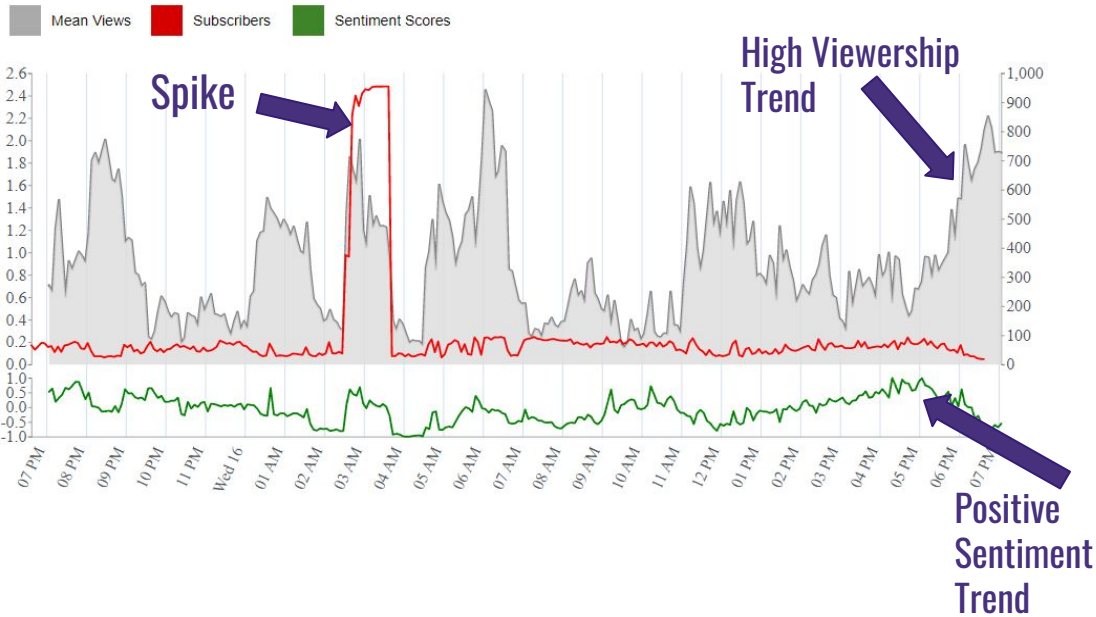
# CONTENT CATEGORY EXPLORATORY TOOL

**Recommended Category** =  $f(\text{Subscribers Gained, Followers Gained, Average Sentiment Score, Average Viewership})$



**Recommendation score**

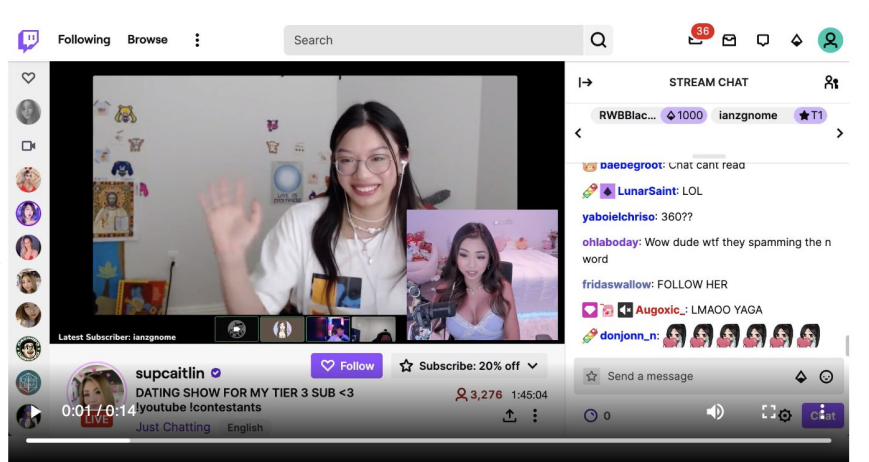
Detailed analysis of last 12 hours of livestream for the selected date



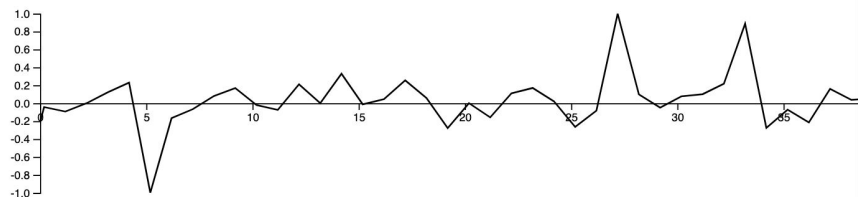
# DIGESTIBLE INFORMATION: STREAMER'S AUDIENCE VIEW



Live Stream  
View



Live Audience  
Sentiment



# CONSTRUCTIVE USER FEEDBACK: POSITIVELY RECEIVED

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## Liked

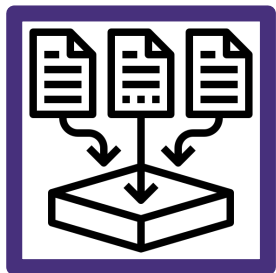
- Product was easy to learn and to use.
- Liked that product allowed for creator(s) to better understand audience spontaneity.
- Thought sentiment scores would be a good indicator to decide what content to make.

## Would Like

- Sentiments split into other feelings like 'anger' or 'excitement'
- More stats related to audience actions like new subs and retention rate

# NEXT STEPS - VERSION TWO AND BEYOND?

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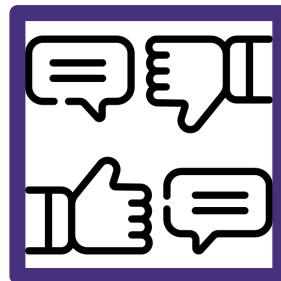
## Improve and Expand Model

- Improve **accuracy** NLP model by adding more data over time and fine tuning
- Make topic **recommendations** based data from other streamers



## Expansion and Development

- Develop browser extension for **customization**
- Create app to increase **accessibility** of tool
- Expand to other social media



## Collecting More Feedback

- Continue user testing with more emerging creators and **establish** our main user base
- Reach out to more SMEs in the Twitch community for **feedback**

# KEY LEARNING TAKEAWAYS: INDUSTRY AND TECHNICAL

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1

Labeling and annotating new data for a sentiment model can be rife with bias, especially when there are not many opinions to base a sentiment value on.

2

Measuring “context” is extremely difficult. Adding additional feature sets derived from audio transcription and computer vision would be logical next steps.

3

Sarcasm and snark are difficult to train models to identify, which, for an environment like Twitch, is paramount in understanding chats.

4

Negative chat sentiments do not necessarily mean that a channel will be unpopular. In fact, some of the most popular channels have notoriously toxic chats.

# Acknowledgments

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Mark Butler *Instructor - NLP, UC Berkeley*

Andy Reagan *Instructor - Data Visualization, UC Berkeley*

Paul Spiegelhalter *Instructor - NLP, UC Berkeley*



## OUR MISSION

“Enabling emerging streamers growth through custom content strategy.”

How are viewers reacting to my content?

THANK YOU

Questions?



# Icon Sources

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- `<a href="https://www.flaticon.com/free-icons/data-collection" title="data collection icons">Data collection icons created by Becris - Flaticon</a>`
- `<a href="https://www.flaticon.com/free-icons/mobile-app" title="mobile app icons">Mobile app icons created by Eucalyp - Flaticon</a>`
- `<a href="https://www.flaticon.com/free-icons/trust" title="trust icons">Trust icons created by Freepik - Flaticon</a>`
- `<a href="https://www.flaticon.com/free-icons/beta" title="beta icons">Beta icons created by Flat Icons - Flaticon</a>`