

# Sentiment and Hate Speech Detection for African Languages : Ethiopia as a Use-case



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**Disclaimer:** Slides adapted from sources such as  
EthioNLP, AfriSenti, AfriHate, ...

# outline

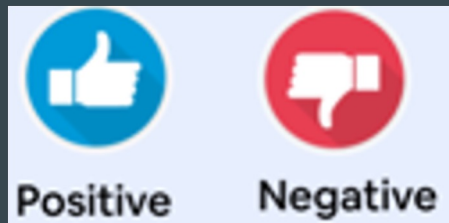
- Low-resource-ness

- Pre-processing
- Tasks
- Challenges
- Wayout



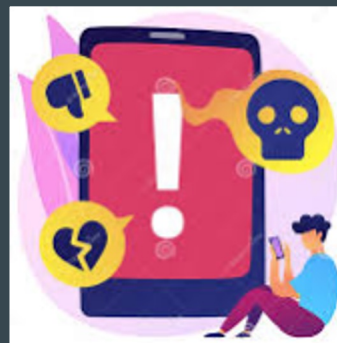
- Sentiment Analysis

- Annotation
- Challenges
- Wayout



- Hate speech detection

- Annotation
- Challenges
- Wayout





# Research focuses

Kalika Bali, Monojit Choudhury, Sunayana Sitaram, Vivek Seshadri (2019) ELLORA: Enabling Low Resource Languages with Technology

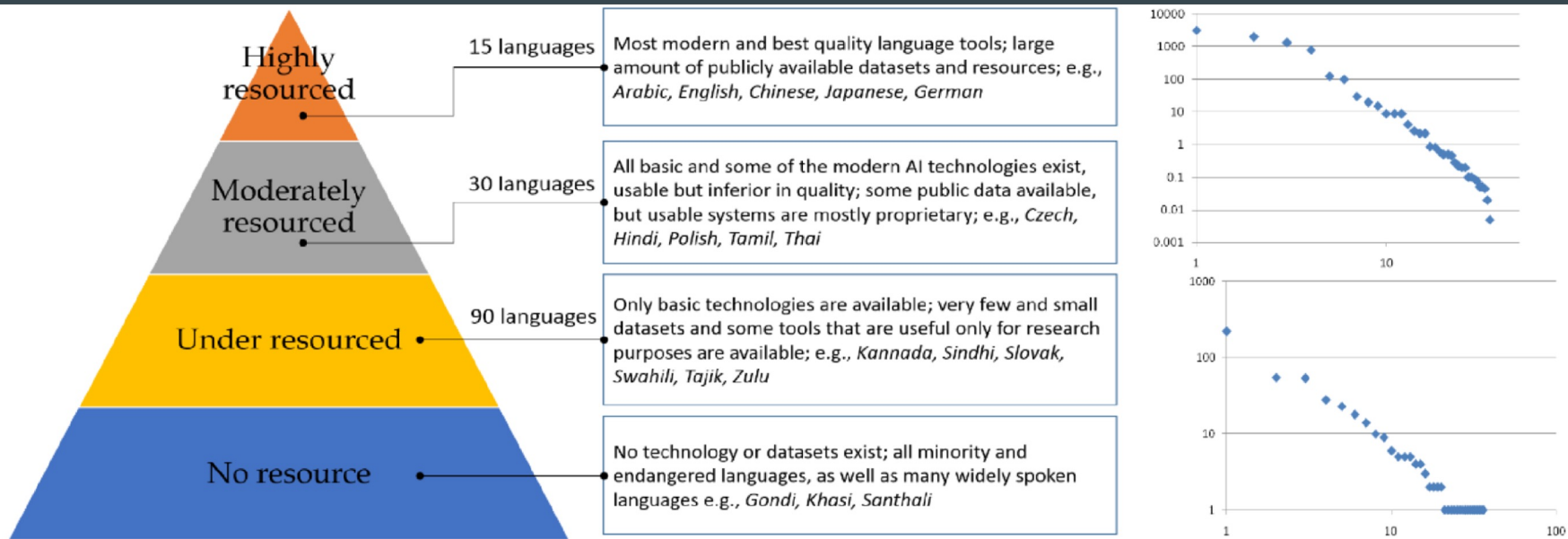
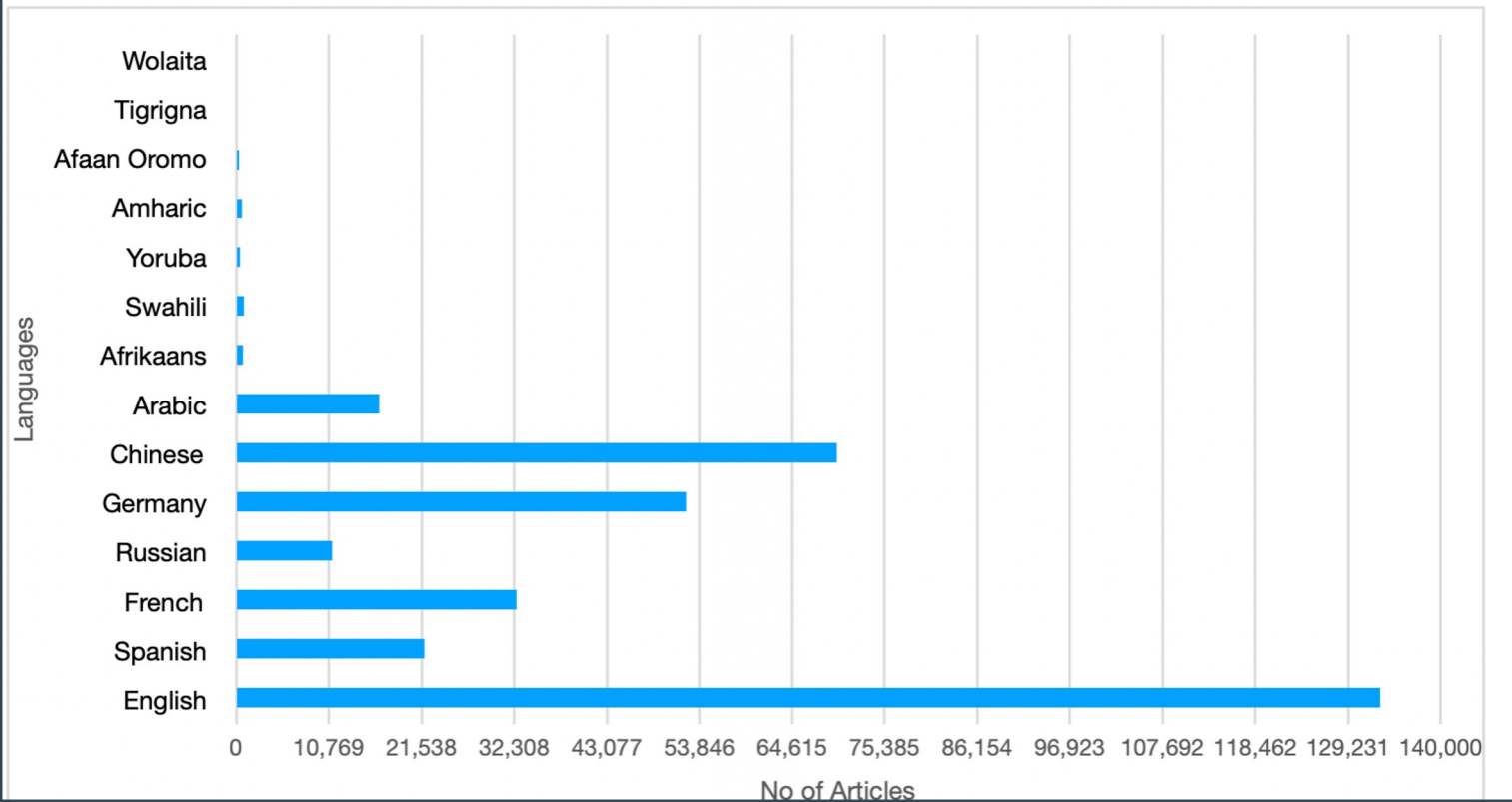


Figure 1: Classification of languages according to the availability of language technology, tools and resources (left) based on the power-law distribution of the resources across the languages of the world (right).

## Research focus in Africa

- Most African countries allocate less than **1%** of their budget for Research
- According to the Ethiopian Technology and Innovation Institute report of 2017, Ethiopia allocates **0.27%** of its budget for research



## ACL Anthology paper search

Tonja et al. (2023): Natural Language Processing in Ethiopian Languages: Current State, Challenges, and Opportunities

Part-of-speech	37500
"Part-of-speech"	25000
Amharic Part-of-speech	293
"Amharic Part-of-speech"	10
Tigrinya Part-of-speech	114
"Tigrinya Part-of-speech"	1
Oromo Part-of-speech	119
"Oromo Part-of-speech"	0
speech recognition <b>2019</b>	27300
"speech recognition"	11700
Amharic speech recognition	221
"Amharic speech recognition"	9
Tigrinya speech recognition	127
"Tigrinya speech recognition"	6
Oromo speech recognition	90
"Oromo speech recognition"	0

ACL  
Anthology  
Phrase search

Phrase	Count
<b>Part-of-speech</b>	54,100
<b>"Part-of-speech"</b>	33,500
<b>Amharic Part-of-speech</b>	397
<b>"Amharic Part-of-speech"</b>	19
<b>Tigrinya Part-of-speech</b>	132
<b>"Tigrinya Part-of-speech"</b>	
<b>Oromo Part-of-speech</b>	137
<b>"Oromo Part-of-speech"</b>	0
speech recognition <b>2023</b>	35,100
<b>"<u>s</u>peech recognition"</b>	15,600
<b>Amharic speech recognition</b>	313
<b>"Amharic speech recognition"</b>	59
<b>Tigrinya speech recognition</b>	116
<b>"Tigrinya speech recognition"</b>	7
<b>Oromo speech recognition</b>	127
<b>"Oromo speech recognition"</b>	0



# Big Tech for low-resource langs!

- **chatGPT** same question in English and Amharic
- The answer to the Amharic question is **totally rubbish, meaningless!**

SE

List all Ethiopian leaders in order



1. Menelik II - Emperor from 1889-1913
2. Lij Iyasu - Emperor from 1913-1916
3. Zewditu - Empress from 1916-1930
4. Haile Selassie I - Emperor from 1930-1974
5. Mengistu Haile Mariam - President from 1974-1987 and Chairman of the Derg from 1977-1991
6. Tesfaye Gebre Kidan - Chairman of the Military Administrative Council from 1987-1991
7. Meles Zenawi - Prime Minister from 1995-2012
8. Hailemariam Desalegn - Prime Minister from 2012-2018
9. Abiy Ahmed - Prime Minister from 2018-present



SE

የኢትዮጵያን መሪዎች በቅደም ተከተል ዘርዝር

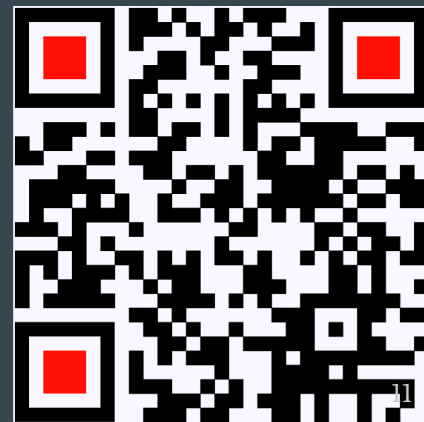


አባ ማርያም, ድንቅ ነገሥት አርአይጥ ገብረ አግዚአብሔር, ምንጭ አብዲአስ, ስምዖን አሜሪካ, ሃያላንድ ሰላም, የድሮ ዳርቻ አብዲስ አልማዝ, ሞላዊ ገዳማት መንግሥት ምስራቅ, የውሃ ግንባታ አስተዳደር አህመድ, የውድ ግርማ ወይም የአውሮፓ ነገሥ ዶክተር ጊዮርጊስ መካከለኛ ነገሮች ናቸው።



# Recent initiatives - EthioNLP

- Established in 2018 (COLING 2018, Santa Fe, USA)
- More than 30 members as of today
- It was not active for the last 4 years, getting more active now
- Twitter - <https://twitter.com/EthioNLP>
- Facebook - <https://www.facebook.com/groups/1275577692604176/about/>
- Slack - <https://ethionlp.slack.com/home>
- Telegram - [https://t.me/+f\\_5gMa4KhtU2NWUy](https://t.me/+f_5gMa4KhtU2NWUy)



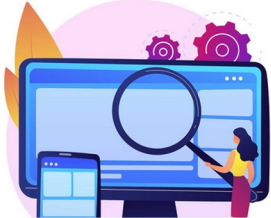
# Recent initiatives - GanaNLP




- <https://ghananlp.org/>
- Processing (NLP) of Ghanaian Languages & it's Applications to Local Problems

**Our Projects**

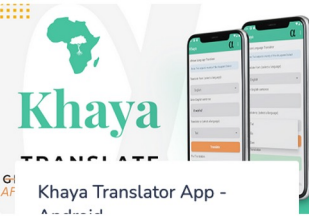
Here are projects contributed to by the community




Khaya Translator Web App



ABENA



Khaya Translator App - Android



Khaya Translator App - IOS

# Recent initiatives - HausaNLP



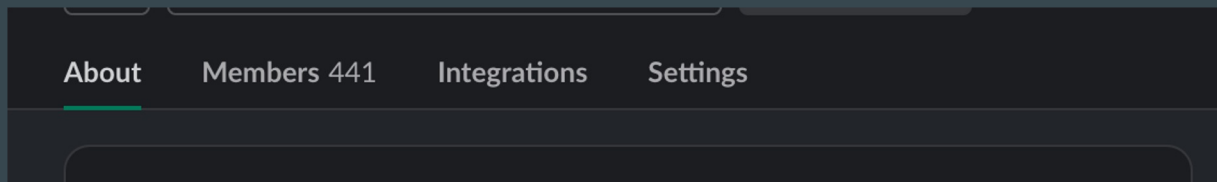
- Papers
- Datasets
- Models
- Repositories

- <https://github.com/hausanlp/Awesome-HausaNLP>
- Collaborate with EthioNLP for AfriHate and AfriSenti Projects

# Recent initiatives - Maskhane

## A grassroots NLP community for Africa, by Africans

- <https://www.masakhane.io/>



### Values

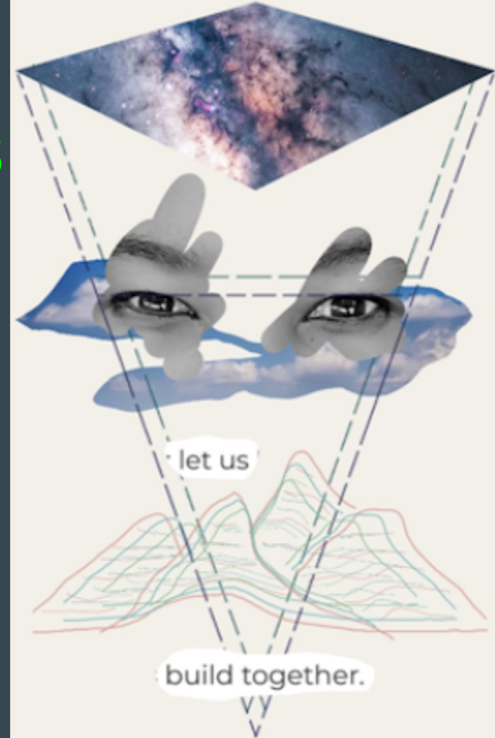
Umuntu Ngumuntu Ngabantu

African-centricity Ownership Openness

Multidisciplinarity Everyone has valuable knowledge

Kindness Responsibility Data sovereignty

Reproducibility Sustainability



# Semantic Models for Amharic

- Purposes
  - Benchmark Datasets
  - Open sources (models, codes, tools, data)

## Announcements

🎉🎉🎉 The Amharic RoBERTa model is uploaded in Huggingface [Amharic RoBERTa Model](#) 🎉🎉🎉

🎉🎉 The Amharic FLAIR embedding model is integrated into the FLAIR library as [am-forward](#) 🎉🎉 The model will be accessible on the next FLAIR release. [Details](#)

🎉🎉 The Amharic Segmenter, Tokenizer, and Transliterator is released and can be installed as `pip install amseg` 🎉🎉

🎉🎉 The Flair based Amharic NER classifier model is now released [am-flair-ner](#) 🎉🎉

🎉🎉 The Flair based Amharic Sentiment classifier model is now released [am-flair-sent](#) 🎉🎉

🎉🎉 The Flair based Amharic POS tagger is now released [am-flair-pos](#) 🎉🎉

**Different semantic models and applications for Amharic**



**AMHARIC NLP**  
BENCHMARK RESOURCES

<https://github.com/uhh-lt/ethiopicmodels>



# Semantic Models for Amharic (Yimam et al. 2021)

- Corpus
  - At the [Mendeley Dataset Repository](#)
- Datasets
  - Sentiment analysis
  - NER
  - POS tagging
  - Question classification
- Models
  - Language models
    - AmRoBERTa at Huggingface
    - AmFLAIR - at FLAIR repository
    - Word2Vec
    - fastText
- Segmenter/tokenizer

Hosted inference API ⓘ

Fill-Mask **uhhlt/am-roberta** Example 2 ▾

Mask token: <mask>

የአገሪቱ አጠቃላይ የሰነድ አቅርቦት ሰነድ አራተኛው የሚመረጠው በአገር <mask> ነው።

Compute

Computation time on Intel Xeon 3rd Gen Scalable cpu: 0.043 s

ወስጥ	0.952
ጸረጽ	0.025
ወስጥ	0.003
ወስጥም	0.003
ወስጥ	0.003

```
pip install amseg
```

# Why **STILL** low-resource, see MT as an example for **Amharic**

2003 application of corpus-based techniques to amharic texts

2006 guarani: a case study in resource development for quick ramp-up mt

2017 amharic-english speech translation in tourism domain

2018 parallel corpora for bi-lingual english-ethiopian languages statistical machine translation

2018 parallel corpora for bi-directional statistical machine translation for seven ethiopian language pairs

2019 english-ethiopian languages statistical machine translation

2019 language modelling with nmt query translation for amharic-arabic cross-language information retrieval

2022 geezswitch: language identification in typologically related low-resourced east african languages

2022 extended parallel corpus for amharic-english machine translation



# Application of corpus-based techniques to Amharic texts

Sisay Fissaha and Johann Haller

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Tel +49-681-3895126, Fax +49-681-3895140

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<http://www.iai.uni-sb.de>

No mention of “low-  
resource”

2003

## Abstract

A number of corpus-based techniques have been used in the development of natural language processing application. One area in which these techniques have extensively been applied is lexical development. The current work is being undertaken in the context of a machine translation project in which lexical development activities constitute a significant portion of the overall task. In the first part, we applied corpus-based techniques to the extraction of collocations from Amharic text corpus. Analysis of the output reveals important collocations that can usefully be incorporated in the lexicon. This is especially true for the extraction of idiomatic expressions. The patterns of idiom formation which are observed in a small manually collected data enabled extraction of large set of idioms which otherwise may be difficult or impossible to recognize. Furthermore, preliminary results of other corpus-based techniques, that is, clustering and classification, that are currently being under investigation are presented. The results show that clustering performed no better than the frequency base line whereas classification showed a clear performance improvement over the frequency base line. This in turn suggests the need to carry out further experiments using large sets of data and more contextual information.

In this paper, it is mentioned 4X “low-resource”

# Extended Parallel Corpus for Amharic-English Machine Translation

Andargachew Mekonnen Gezmu, Andreas Nürnberger, Tesfaye Bayu Bati

## Abstract

2022

This paper describes the acquisition, preprocessing, segmentation, and alignment of an Amharic-English parallel corpus. It will be helpful for machine translation of a low-resource language, Amharic. We freely released the corpus for research purposes. Furthermore, we developed baseline statistical and neural machine translation systems; we trained statistical and neural machine translation models using the corpus. In the experiments, we also used a large monolingual corpus for the language model of statistical machine translation and back-translation of neural machine translation. In the automatic evaluation, neural machine translation models outperform statistical machine translation models by approximately six to seven Bilingual Evaluation Understudy (BLEU) points. Besides, among the neural machine translation models, the subword models outperform the word-based models by three to four BLEU points. Moreover, two other relevant automatic evaluation metrics, Translation Edit Rate on Character Level and Better Evaluation as Ranking, reflect corresponding differences among the trained models.

# Why we are getting more “low-resource” over time

- “Low-resource” - becomes **buzzword**
  - Funding
  - Research gap, an opportunity for students
- English and other languages are getting more attention
- The works are less impactful
  - Unpublished
  - Not used in industry

**Publish and Perish**



# Sentiment Analysis



Negative

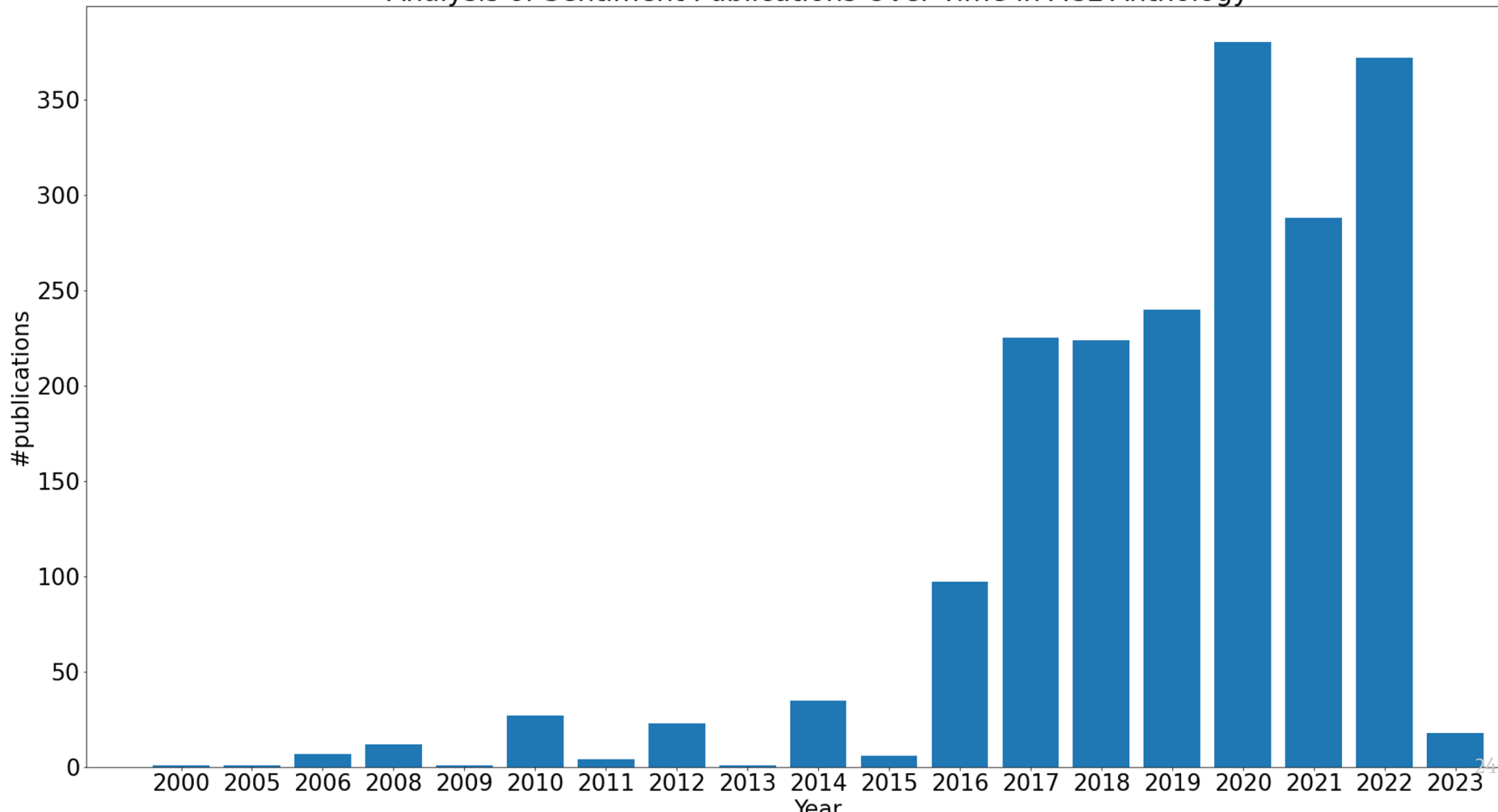


Neutral



Positive

## Analysis of Sentiment Publications Over Time in ACL Anthology



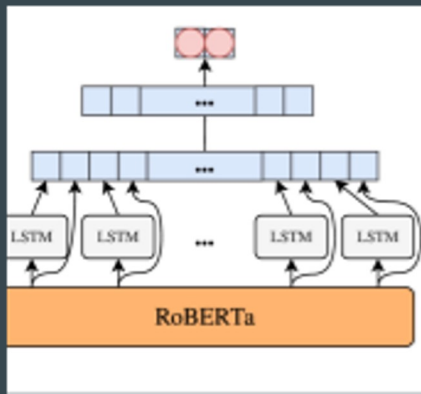
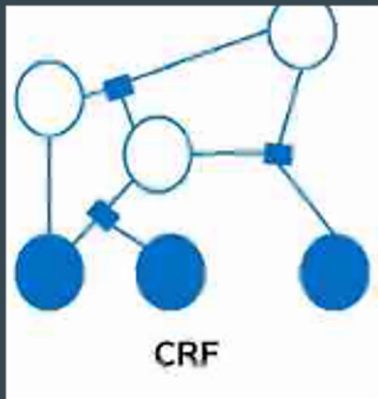
# Why sentiment analysis is important

- No exception: understand users opinion towards a target
- But, why focus on low-resource languages
  - Difficult to get suggestions/recommendations from multiples sources - **low-resource**
  - Opinions are culturally different - communities have their own language to understand a text
  - Understand opinions for local events, **disaster**, conflict,



# ASAB approach

Filter tweets that are written in Fidel (ⱮⱮⱮ) script



Annotate using ASAB (three users)



Building supervised and deep learning ML models



## ASAB tool - <https://github.com/uhh-lt/ASAB>

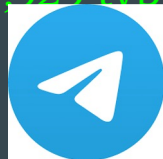
- ASAB support **mobile card vouchers** rewards for annotators.
- Reward given when a user **annotates 50 tweets**.
- ASAB integrates a **controlling control questions** for every 6 tweets.
- Users with 3 consecutive mistakes will receive a **warning** message.
- Users **blocked** after the fourth wrong attempt.

# ASAB ML models

- Baseline methods:
  - Stratified, Uniform, and Most frequent.
- Supervised approaches:
  - SVM, KNN, Logistic regression, Nearest centroid
  - Features: TF-IDF with the CountVectorizer and TfidfTransformer methods from scikit-learn.
- Deep learning approaches:
  - Models based on FLAIR deep learning text classifier.
  - Features: Word2Vec, network embeddings, contextual embeddings (RoBERTa and FLAIR embeddings)

# Results

- 9.4k tweets annotated (143,848 words and 45,525 types), each tweet three annotators.
- A total of 92 Telegram users visited ASAB.
- 58% of users completed at least 50 tweets and got rewarded.
- 4 users blocked for consecutive mistakes.

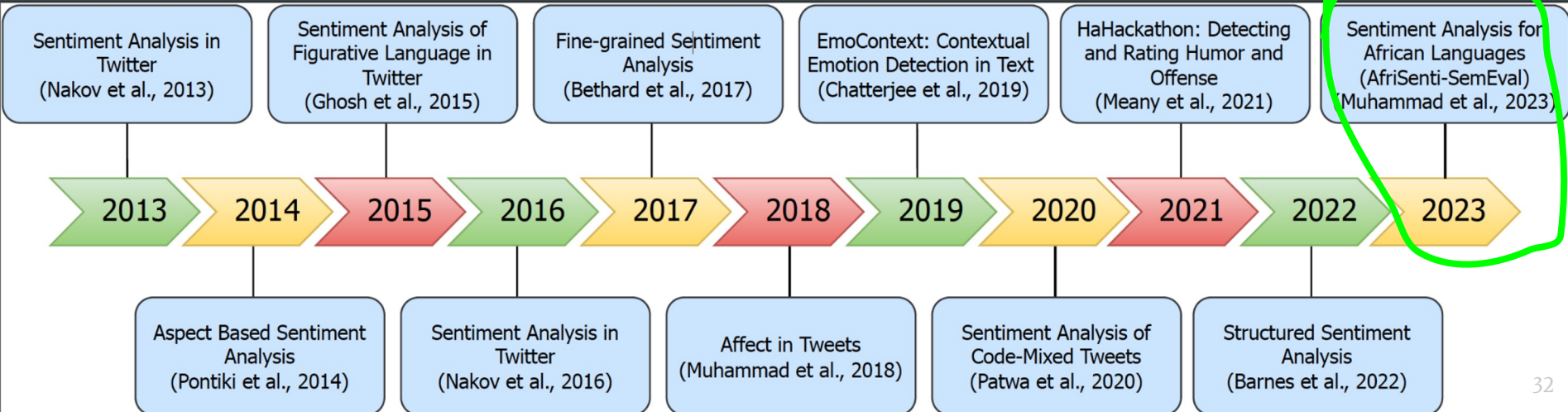


# Analysis

- We randomly select tweets where the **model prediction** and the **user annotations** differ.
- Possible source of errors:
  - Users press the **wrong button** by mistake.
  - Some users might not **understand the tweet**.
  - **Slow internet connection**, some users reported that there was a delay between the first and the second tweet.
  - **Sarcasm, figurative speech, mixed scripts**, incomplete phrases and sentences, and spelling and grammar errors cause most of the model errors.

# ASAB dataset - extension

- Used for **AfriSenti-SemEval Shared Task 12 - 2023**
- Data is used for the **Amharic Semantic model** project (Yimam et al. 2021)
- ASAB tool is being extended for **general-purpose text annotation**



# ASAB model - example usage

Model is currently hosted at the **LT Group** data server

```
import wget
import flair
from flair.data import Sentence
am_sent_model = wget.download("http://ltdata1.informatik.uni-hamburg.de/amharic/taskmodels/sent/final-model.pt")
```

39% [.....]

] 197582848 / 503849408

```
# create example sentence
sentence = Sentence('የብርሃኑ ምርጫ ለኢትዮጵያውያን አሜሪካውያን ስለአገራቸው በደል በቁጣ የሚናገሩበት ይሆናል!')
```

```
# predict class and print
from flair.models import TextClassifier
classifier = TextClassifier.load(am_sent_model)
classifier.predict(sentence)
print(sentence.labels)
```

```
['Sentence[10]: "የብርሃኑ ምርጫ ለኢትዮጵያውያን አሜሪካውያን ስለአገራቸው በደል በቁጣ የሚናገሩበት ይሆናል!" / 'POSITIVE' (0.8838)']
```

# Hate Speech





# Addressing hate speech on social media: Contemporary challenges

- Freedom of speech?
- “Six part threshold test” to justify restrictions on freedom of expression
  - considering the **socio political** context,
  - status of the **speaker**,
  - intent to incite **antagonism**,
  - speech **content**,
  - extent of **dissemination**
  - likelihood of **harm**.



# Analysis of Hate Speech Publications Over Time in ACL Anthology

```
for paper in papers:  
    if " hate " in paper['abstract'] or " hate " in paper['title'] or \  
        " offensive " in paper['abstract'] or " offensive " in paper['title'] or \  
        " abusive " in paper['abstract'] or " abusive " in paper['title'] or \  
        " toxic " in paper['abstract'] or " toxic " in paper['title'] :
```

```
{'2014': 1,  
'2017': 14,  
'2018': 31,  
'2019': 129,  
'2020': 178,  
'2021': 210,  
'2022': 224,  
'2023': 14}
```

#publications

0

2014

2017

2018

2019

2020

2021

2022

2023

Year

# Is **hate speech** a new event?

Ask ChatGPT! :-)



No, hate speech is not a new event. Hate speech has existed for centuries and has been used to target and discriminate against individuals or groups based on their race, religion, ethnicity, gender, sexual orientation, and other characteristics. The term "hate speech" itself may be relatively new, but the concept and practice of using language to express hatred or prejudice towards others is not new. With the rise of social media and other digital platforms, however, hate speech has become more visible and widespread in recent years.



# Why **hate speech** detection models for **low-resource** languages?

- **Social media** and mobile usage increases
  - Less awareness of media usage
  - Social media becomes a fertile ground for hate speech
  - Escalate to **offline unrest** (Nkemelu et al. 2023)
- Utilize knowledge of experts of the **community** along models
- Application developers and **social media moderators**
  - Use models to detect hate speech before reaching larger audience
- Plan **counter-hate speech** - peace build up - responsible AI
- But
  - **Small** and **unbalanced** dataset
  - **Unpublished** resources/models

# Hate speech in Ethiopia - the 5J

- Use the **Toloka Yandex** crowdsourcing
- **Crowdsourcing** is getting more popular for data annotation due to its **lower cost**, **higher speed**, and diversity of opinions



# 5Js - Unpacking Ethiopia's Controversial Five Consecutive Junes: A Period of Turmoil and Change (Ayele et al. 2022)

The 5  
consecutive  
&  
controversial  
Ethiopian  
Junes: 5Js

- **June 2018**  
Bomb attack at a rally



- **June 2019**  
Assassination of Officials



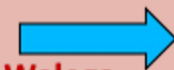
- **June 2020**  
Assassination of Hachalu H.



- **June 2021**  
National Election 2021



- **June 2022**  
Massacre in Kelem Wolega



# Data collection and annotation

- Toloka setups:
  - 20 training tweets
  - 50 control tweets
  - Smart mixing:
    - a task has 15 tweets
    - The one is a control question



## COLLECTION SPAN

- ↪ 5 Controversial June events, in 5 years
- ↪ approximately 1k tweets for each June



Toloka



## ANNOTATION

- ↪ 5.4k tweets
- ↪ 2 pilots & 5 pools
- ↪ Each tweet labelled by 3 annotators
- ↪ Gold label: majority voting

Fleiss Kappa Agreement



- **Pilot1: 0.15,**
- **Pilot2: 0.25 and**
- **Main Task: 0.34**

# Sample Toloka User Interface for presented for Performers

Tasks Active Messages 18:36 / \$0.10 የጥላቻ ንግግር ? \$0.00 / \$0.00 Instructions

“ @USER ጥቅሙ የተነካበት፣ ፊሪ፣ ሸንታም፣ ደደብ፣ የጠባብ ሀዋት አሸከር.ሌላ ማን ሊሆን ይችላል!

How would you classify the tweet?

1  hate 2  offensive 3  normal  
4  unsure

Against whom is the hate or offense directed?

q  racial target w  non-racial target e  unsure

“ ኦብዛህኛው ሰው በሚሰራው ስራው ስጦት እየተደመመና አድናቂው ሁኖ ሳለ በጥላቻና ስብሄሩ ብቻ ሚታገል ዘረኛ እንደሆነ ነው ሚመለከቱት ቢሆንም አሱ ሁሌ በሚሰራው ስራ አድማሚ ነው። አሏህ

How would you classify the tweet?

1  hate 2  offensive 3  normal  
4  unsure

“ Cካሽ ተግባር . #meskelsquare #devil በከበረው የሰው ህይወት ሞት እና ደም መፍሰስ ደስታን ለማግኘት የሚደረግ አረመኔያዊ የሰይጣን ተግባር Thank You

How would you classify the tweet?

1  hate 2  offensive 3  normal  
4  unsure

“ አንዱት ሰው በሰው ላይ ሰይጣን ይሆናል!!! RIP !

How would you classify the tweet?

1  hate 2  offensive 3  normal  
4  unsure

“ ሰበር ወራ፡-በዛረው ዕለት በመስቀል አደባባይ በተደረገው የድጋፍ ሰልፍ ላይ በምብ ተወርሮ የሞትና የመቁሰል አደጋ ደርሷል። የጉዳቱን መጠን ለማወቅ አልተቻለም። ጉዳዩን አስመልክቶ

How would you classify the tweet?

1  hate 2  offensive 3  normal  
4  unsure

“ @USER አንተ የቀን ጅብ! ነግረናቸሁ ነበር።

How would you classify the tweet?

1  hate 2  offensive 3  normal  
4  unsure

Against whom is the hate or offense directed?

q  racial target w  non-racial target e  unsure

“ ለጠ.ሚ አብይ አህመድ በመስቀል አደባባይ የተካሄደው የድጋፍ ሰልፍ አንዲሁም በገምብ ፍንዳታ የደረሰው አደጋ በከፊል ።

How would you classify the tweet?

1  hate 2  offensive 3  normal  
4  unsure

“ ሸቦሲያ አፈንዳ አይባል ከሸቦሲያ ጋር ታርቀናል፣ በግንቦት 7 አይሰብብ ግንቦት ሰባት ተሰማምቷል? ኮነግ ጋር ማ ታርቀናል። ታዲያ በንቡን ማን አፈንዳው? የቀን ጅብቹ?

How would you classify the tweet?

1  hate 2  offensive 3  normal  
4  unsure

“ ተጨማሪ መረጃ በመስቀል አደባባይ በነበረው ሰልፍ የበምብ ጥቀት ፈፀመዋል ተብለው የተጠረጠሩ 3 ሰዎች መያዛቸውን የአይን ለማኛቸው ተናገሩ። ሰዎቹ የተያዙት

How would you classify the tweet?

1  hate 2  offensive 3  normal  
4  unsure

# Annotation errors

- Possible source of **variations among human annotators** might be due to:
  - Negligent or malicious annotators working only for financial rewards.



- Tweets containing **idiomatic** and **poetic expression** are difficult to understand
- The **context** in which some tweets are written is not known



# Error analysis

#	Tweet	Anno1	Anno2	Anno3	Gold
1	@USER አንተ ደደብ ቁራ...ትህን ግራ። (@USER You idiot. educate your cattle called K...)	<u>normal</u>	<u>normal</u>	offensive	<u>normal</u>
2	...ኛ ከአሮምያ ከኢትዮጵያ ካልጠፋ ሰላም የለም። (If the mu... does not disappear from Oromia and Ethiopia, there will be no peace.)	<u>normal</u>	<u>normal</u>	<u>normal</u>	<u>normal</u>
3	አማራነትን መርጦ የዘር ጭፍጨፋ ማድረግ ይቁም!! (Stop genocide of ethnic Amhara's!!)	<u>hate</u>	<u>hate</u>	<u>hate</u>	<u>hate</u>
4	@USER ተጠያቂነት ካልሰፈነ ጭፍጨፋው ይቀጥላል። (@USER Without accountability, the massacre will continue.)	<u>hate</u>	<u>hate</u>	<u>hate</u>	<u>hate</u>
5	<u>የተበተኑት አውሎ ነፋስ ሆኖ መጣ።</u> (The dis... your comes as a whirlwind.)	<u>normal</u>	<u>normal</u>	unsure	<u>normal</u>
6	@USER አንተ ቀልድ፡ አህያውን ፈርቶ ዳውለውን (@USER you are joking; while fearing the donkey, you deal with what the donkey carries)	<u>hate</u>	<u>hate</u>	<u>hate</u>	<u>hate</u>

Hate

Hate

Normal

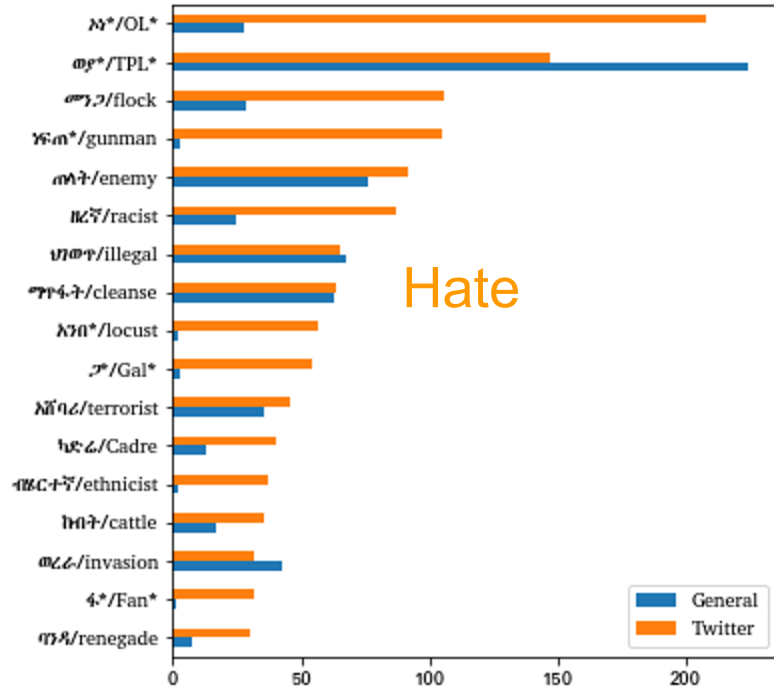
Normal

Sarcasm

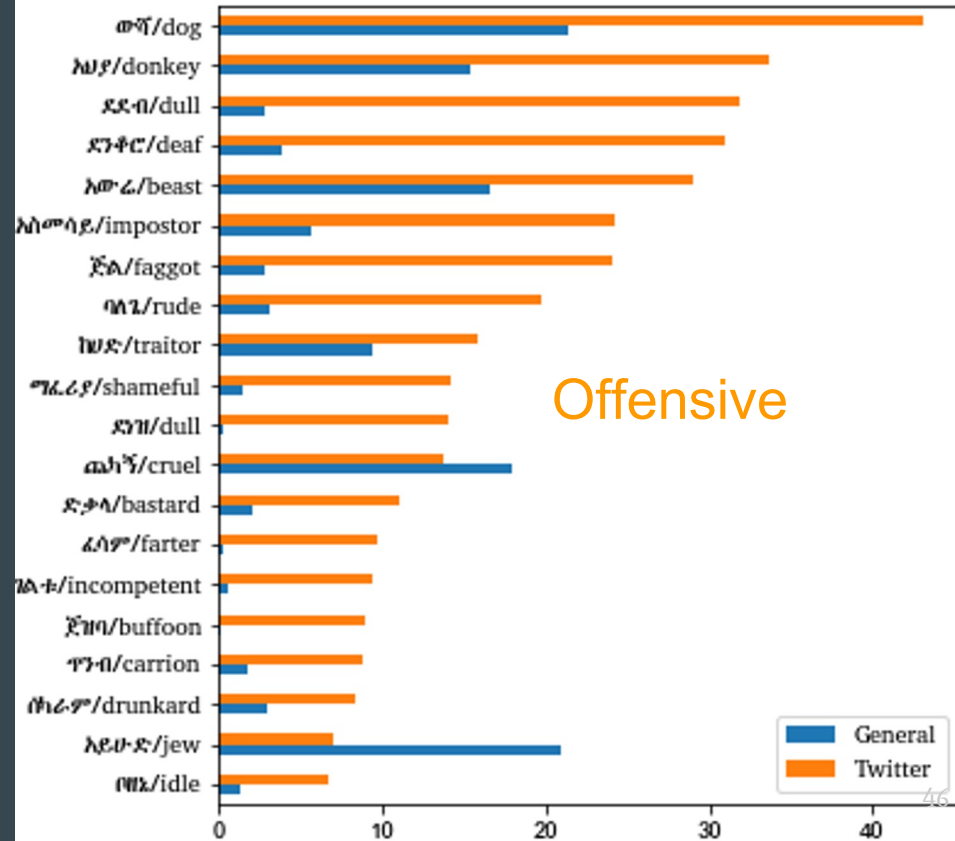
Idiom

# Comparison of keywords in Twitter and general corpus

(Yimam et al. 2019)



Hate



Offensive

# Challenges in hate speech annotation

- **Data selection:** Lexicon? **Party** names? **Ethnics** names? Tricky!!
- **Costly:** no difference from English and similar high-resource languages
- **Sensitive:** Annotators can be annoyed (religion/ethnicity)?
- **Native speaker:** You need speakers who speak the language (annotation, guideline)
- **Awareness:** Teaching annotators the implication of the annotation, why do they care?
- **Infrastructure:** Most have mobiles, web-based tools will not help. Where to publish the data (GitHub??)

# Lacuna Funding 2022



## AfriHate Datasets

### Nigeria

Hausa, Igbo, Pidgin, Yoruba

### Ghana

Twi, Pidgin

### South Africa

Afrikaans, isiZulu, Isixhosa

### Ethiopia

Amharic, Tigrinya, Oromo, Somali

### Kenya

Swahili

### Somalia

Somali

### Algeria

Algerian Arabic

### Sudan

Sudanese Arabic

### Morocco

Darija

### Mozambique

Portuguese

### Rwanda

Kinyarwanda

## Project Leading Universities

Bayero University  
Kano, Nigeria



Bahir Dar University,  
Ethiopia



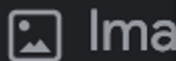
## Project Partner Organizations



# Take home message

- Most languages, for example Amharic, they are **not anymore low-resource** for some tasks, they are **less-organized**.

"Amharic Machine translation



About 1,340 results (0.55 seconds)

Bahir Dar University  
Institutional Repository System

BDU IR Home → Search

Search

Search: All of IR

language processing | Amharic

Add filters

Showing 10 out of a total of 1504 results. (0.026 seconds)

1 2 3 4 ... 151 Next Page

Communities or Collections matching your query

[Ethiopian Languages and Literature - Amharic](#)

Items matching your query



[AUTOMATIC IDIOM RECOGNITION MODEL FOR AMHARIC](#)  
ANDUAMLAK, ABEBE FENTA (2021-07)

**Language Processing**: researches has been influenced by the existence of idioms in natural language. This research shows that idiom affects NLP researches such as machine translation, sentiment analysis, information retrieval, question answering and next word prediction.



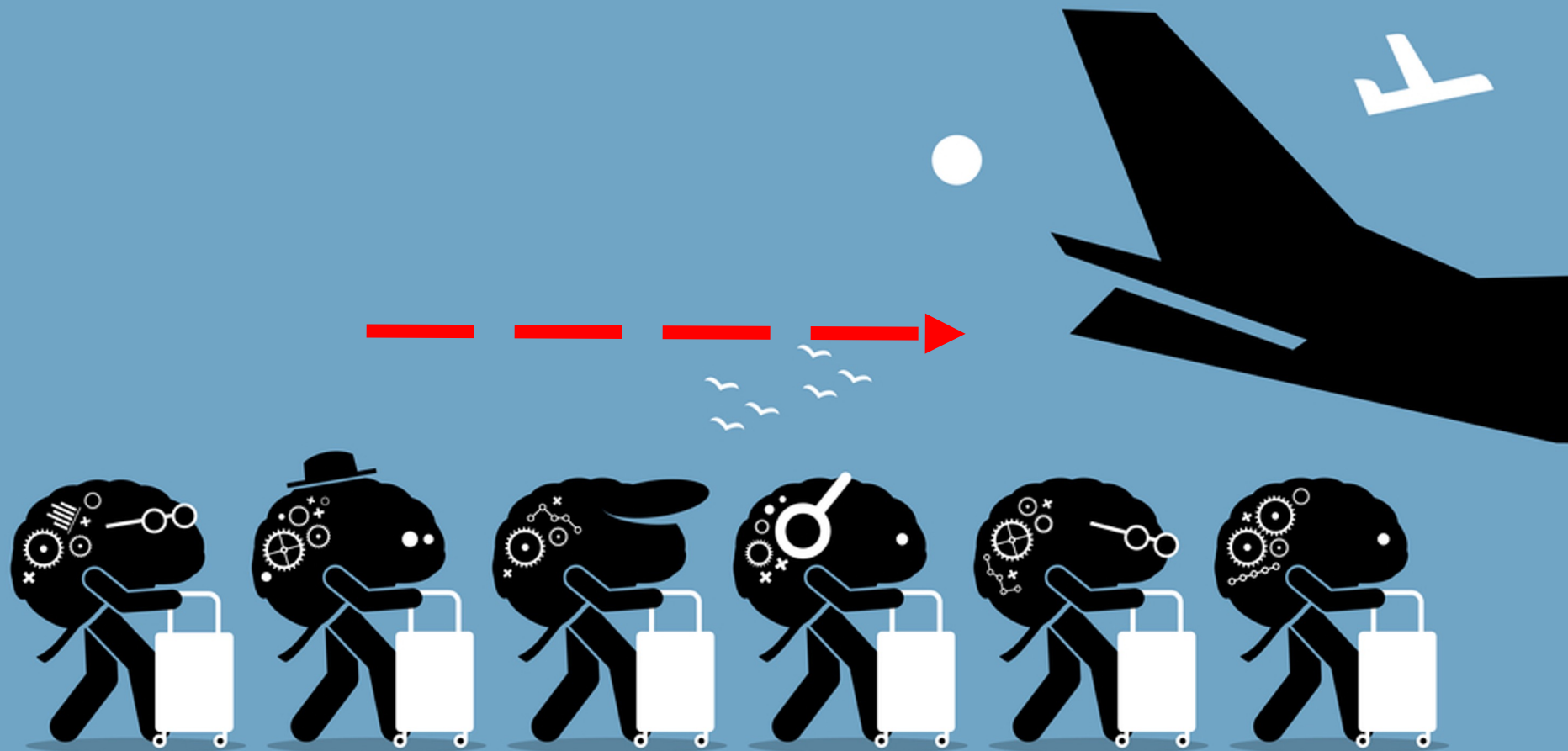
[IDIOMATIC EXPRESSION IDENTIFICATION FROM AMHARIC USING DEEP LEARNING](#)  
TIRUDELLE, ASTERAYE TSIGIE (2022-07)

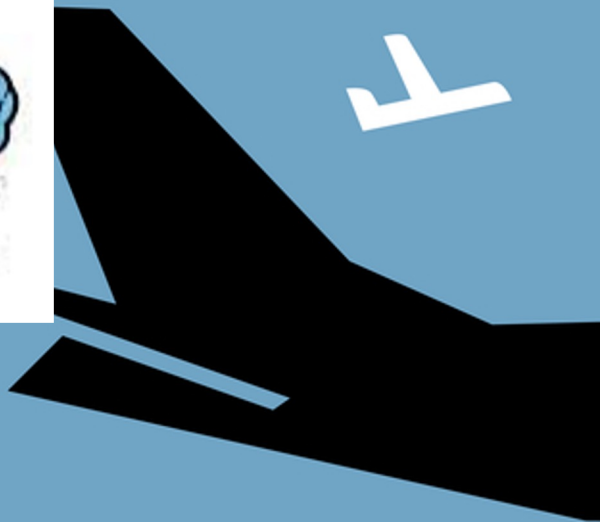
This research proposes a deep learning-based algorithm for identifying idiomatic expressions in Amharic text. The experimental result shows that the proposed algorithm performs better than SVM, KNN, CNN, and LSTM. Keywords: Amharic, Idiomatic Expression, Deep Learning.

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## Take home message

- Most languages, for example Amharic, they are **not anymore low-resource** for some tasks, they are **less-organized**.
- Lets **use, improve**, promote, critique our works,..
- Create collaboration (with positive spirit) among local researchers
- Reverse brain-drain to brain ~~drain~~.
- Funding strategies, Own funding, Member contribution,...







## Some announcements

- ICAST 2023 conference - deadline 21 May 2023
- <https://icast-conf.eai-conferences.org/2023/>

## EAI ICAST 2023 WILL BE HELD AS AN ON-SITE CONFERENCE IN BAHIR DAR, ETHIOPIA

EAI ICAST 2023 will be held as an on-site conference and if needed, Accepted Authors who are unable to attend the event in person will be given the option to present remotely.

**The Submission is open until 21 May 2023!**



### **EAI ICAST 2023 - 11th EAI International Conference on Advancements of Science and Technology**

August 25-27, 2023  
Bahir Dar, Ethiopia

## **Call for papers**

**INDEXING - SUBMITTED FOR INCLUSION IN:**

Web of Science, Compindex, Scopus, DBLP, EU Digital Library, and more

**PUBLICATION**

**EAI Endorsed Transactions on Energy Web (Open Access) – indexed in  
Scopus**

# Join/support EthioNLP

## Ethiopian Languages NLP



### Why ETHIONLP?

- ✓ Ethiopia is a multilingual and multicultural country.
- ✓ Advance NLP, data science and in general AI research for Ethiopian languages
- ✓ Establish well-organized and research-oriented community

### Tasks

-  NLP corpus collection
-  Pre-trained models
-  NLP applications
-  Organize workshops
-  Assist M.Sc. & PhD students
-  Projects & Research fund
-  and many more



### CONTACTS



info@ethionlp.com



<https://www.ethionlp.com>

@EthioNLP



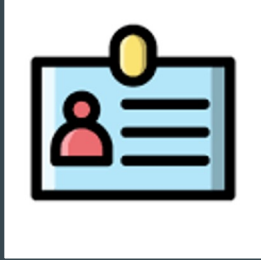
### RESOURCES



<https://github.com/EthioNLP>



# Question/discussion/contact me?



Seid Muhie Yimam

House of Computing and Data Science

Universität Hamburg

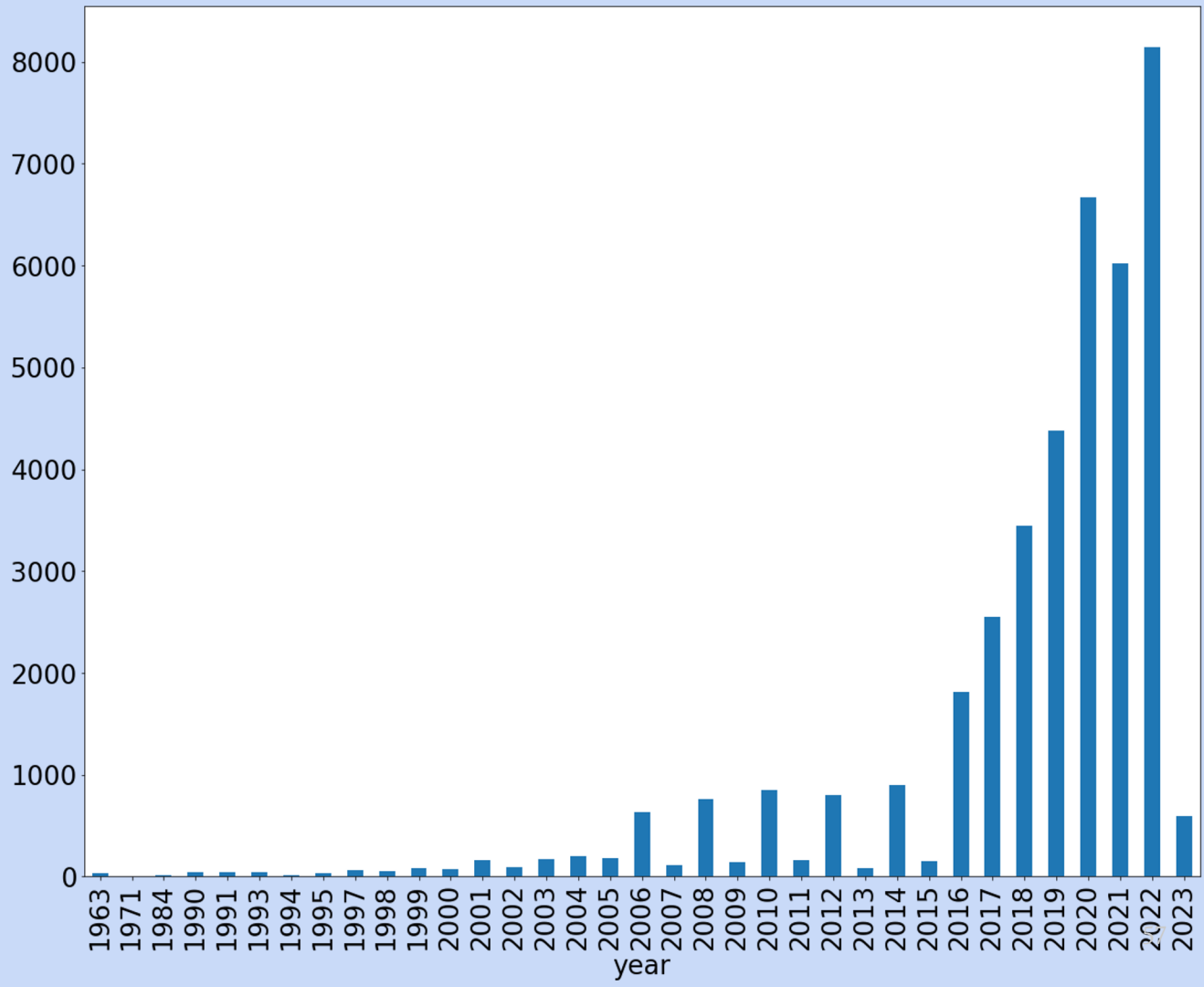


[seid.muhie.yimam@uni-hamburg.de](mailto:seid.muhie.yimam@uni-hamburg.de)



@seyyaw

# ACL Anthology papers per year



year	count
2014	85240
2015	346016
2016	433022
2017	498085
2018	695533
2019	1032463

# Amharic tweets (AmTweet)- **current status**

- Collect tweets everyday
- Tweets written in Amharic script (**Ethiopic, Fidäl, Ge'ez**)
- A total of **17,602,943 tweets** by April 16, 2023

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2020	2291416
2021	3454069
2022	6786826
2023	1979773

