Automatic Identification of Suicide Notes

from Linguistic and Sentiment Features
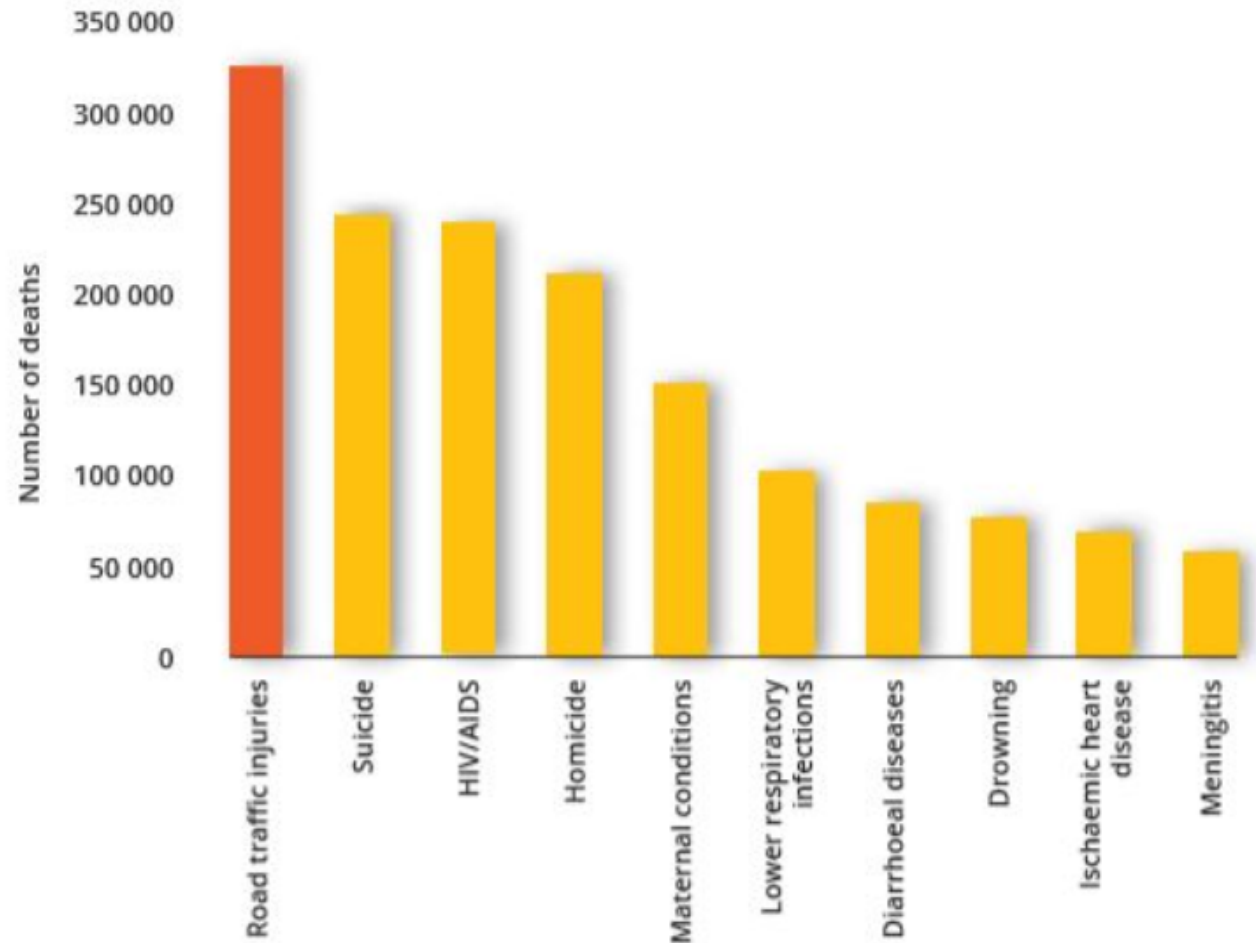
Importance

Top ten causes of death among people aged 15–29 years, 2012

Suicide Leads

- Trend:
  - Publish suicide notes in social media
  - Express suicidal feelings online
- Language represents shifting in psychological states

Cynthia Lee

leon aka my " dad" your A GOOD FOR NOTHING DRUG CHEATING LOSER I HATE YOU YOUR NOT ALOUD AT MY FUNERAL DUDE FOR REAL! to anyone else who was real to me im very sorry i cant handle this shit anymore..... RYAN DAVID HARDWICK i love you with all my heart but every time we get caught talking you go to jail i will NOT ever be a reason you go there again my pain is too strong to strong to handle any longer im so sorry for hurting you just know U R MY TRUE LOVE... mom here i come

Share · 17 hours ago · 🌐

Social Network Application

- Facebook – User reporting

- Google – Automatic detection

Related Works

- Provide evidence to genuine notes (manual)
- Sentiment features (manual)
- Models based on linguistic only (auto)
  - structural features (nouns, adj., length)
  - 82% prediction
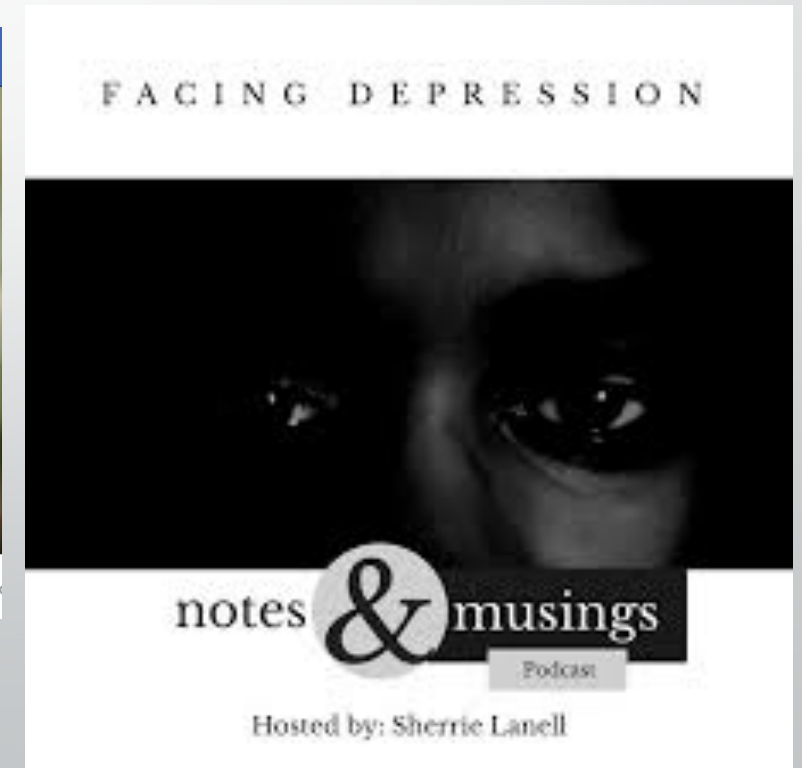

- New work –

   combining features
disorders notes
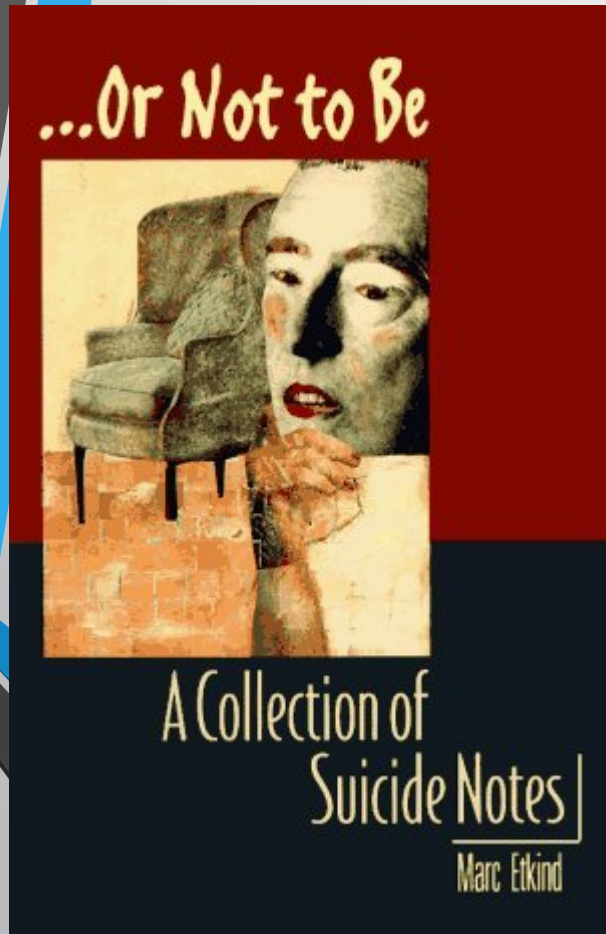
Genuine / Fake Notes

+

Suicide / other

Data Collection

Suicide Note Purpose

- Current feeling

- Apologize

- Instructions

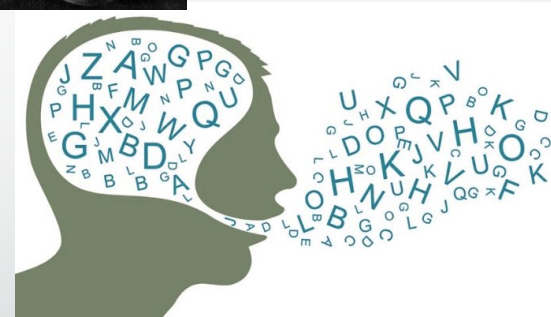- To comfort the survivors

Level \ Type of self disclosure

Features

- Sentiments
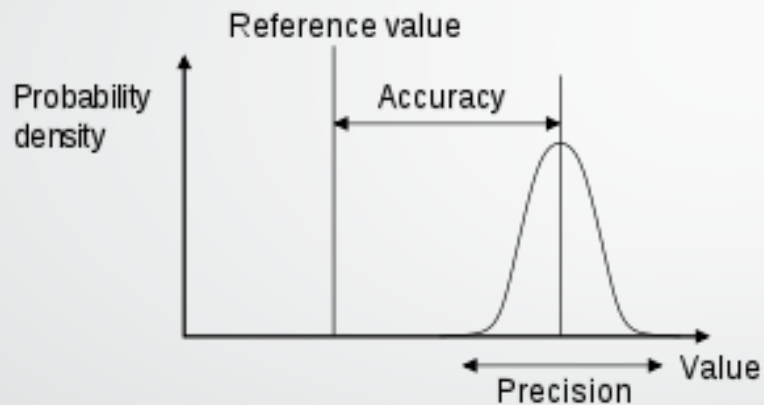
- Linguistic

- Statistics

Results of Classification - intro

- WEKA classifiers:
  - **LMT** - logistic tree regressor
  - **J48** - decision tree classifier
  - Naïve Bayes classifier
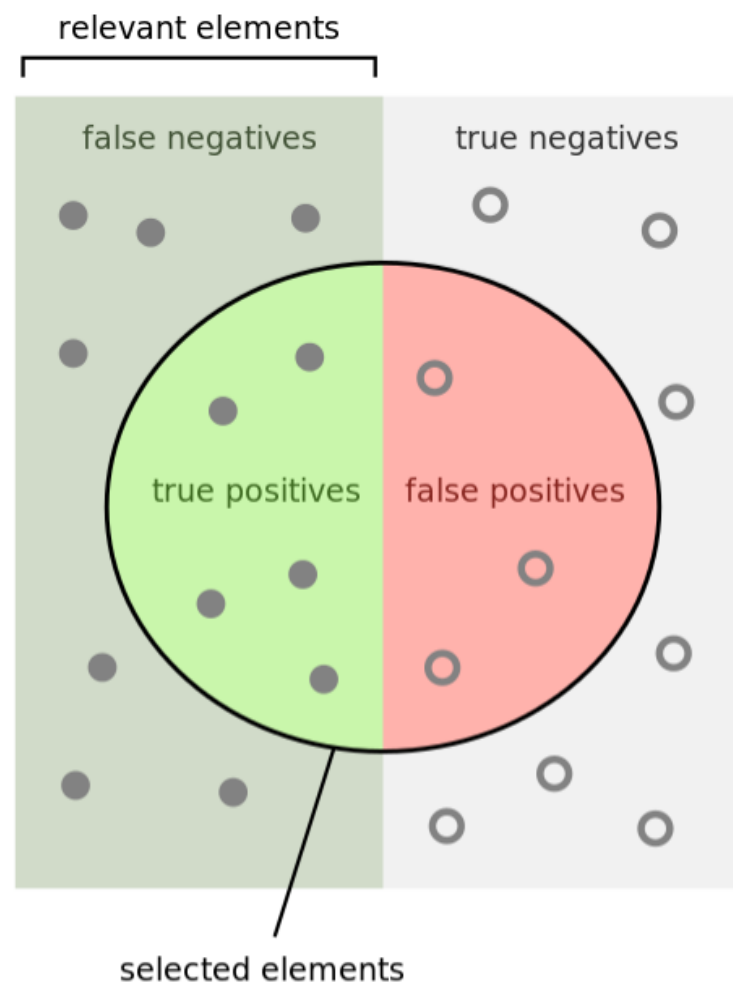 - **Zero-R** - simple majority baseline

Statistics Terming

- Accuracy
- Precision
- Recall
- F-score

$$F = 2 \cdot \frac{\text{precision} \cdot \text{recall}}{\text{precision} + \text{recall}}$$

Results of Classification

all features

sentiment features only

linguistic features only

Classifier	ACC	PRE	REC	F-Score
LMT	**86.61**	**0.86**	**0.86**	**0.86**
J48	78.87	0.78	0.78	0.78
Naive Bayes	74.17	0.76	0.74	0.74
Zero-R	32.86	0.21	0.32	0.23
LMT	**78.63**	**0.79**	**0.78**	**0.78**
J48	71.36	0.71	0.71	0.71
Naive Bayes	69.01	0.72	0.69	0.68
Zero-R	32.86	0.21	0.32	0.23
LMT	**75.35**	**0.75**	**0.75**	**0.75**
J48	67.60	0.67	0.67	0.67
Naive Bayes	65.96	0.67	0.66	0.65
Zero-R	32.86	0.21	0.32	0.23

Discussion of Sentiment Features
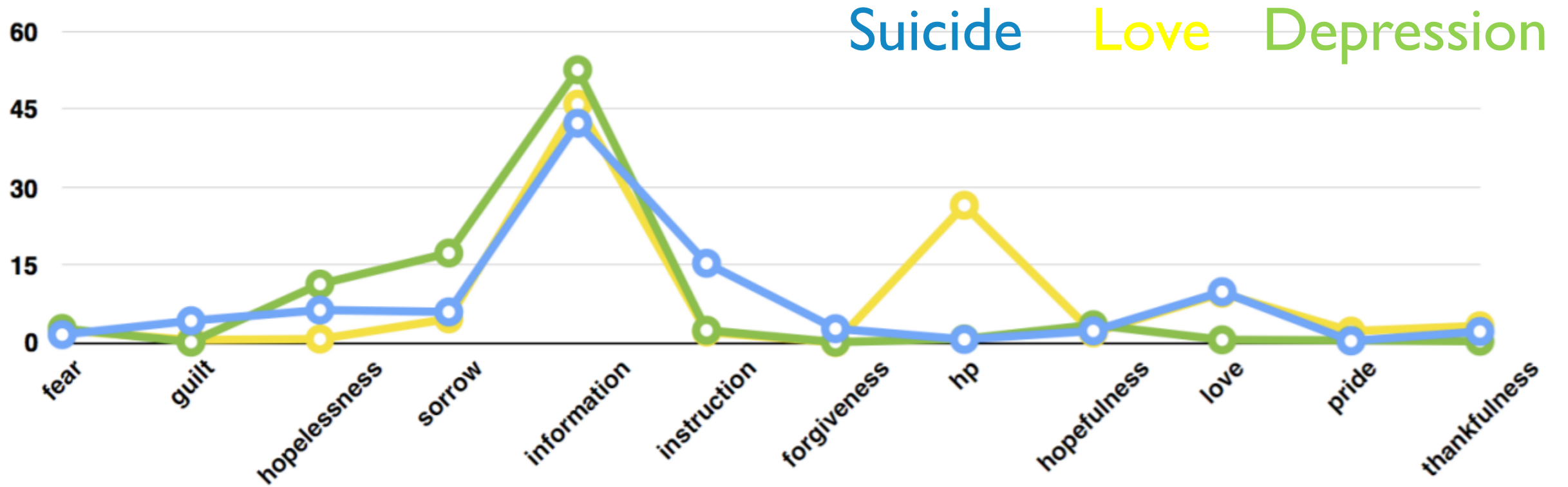
Discussion of Linguistic Features

- Best predictors:
  - Length of a note
  - #of verbs and nouns
  - Endearment
  - Signs
  - Relativity
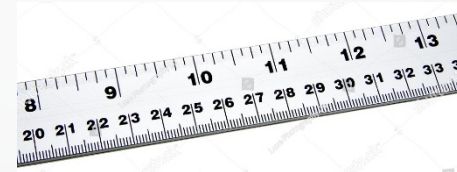
"," "&" > "and"

Oluwaseun Abiodun Awosanya

56 mins ·

26th of Dec Is Supposed my Birthday But It will Be My Last Day Please People if you Love or Loved me Take a one minute Stand for me in Black I will be Gone to the Place Of Rest May Our Dear Lord Jesus Christ Accept my Sinful Soul Till We meet Again.. Your Dearest Oluwaseun Maria Omo Awosanya 😇😇😇😇😇😇😇

Conclusion and Future Works

- Important research direction
- Combination of **sentiment** and **linguistic** features
- Automatization of **sentiment analysis**
- Limitations:
  - language change affects
  - linguistic characteristic of online notes

REACHING OUT / SAVING LIVES
SUICIDE PREVENTION

Hi google! I'm not depressed. It's just case study about suicide.

Google

כלים　הגדרות　　　עוד　　מפות　סרטונים　חדשות　תמונות　**הכל**
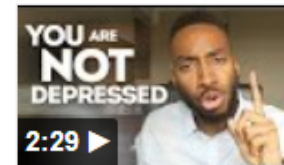
כ-18,300,000 תוצאות (0.71 שניות)

YOU ARE NOT DEPRESSED, STOP IT! - YouTube
תרגם דף זה ▼ https://www.youtube.com/watch?v=ykvC3QXJb18
21 ביוני 2016 - הועלה על-ידי Prince Ea
Sorry, but somebody had to say **it**. This video focuses on mood depression, **not** clinical depression ...
חסר: ~~case~~　2:29 ▶

For Those Considering Suicide - YouTube
תרגם דף זה ▼ https://www.youtube.com/watch?v=IqqlV8x82Qc
13 במאי 2013 - הועלה על-ידי watchwellcast
For more resources, please look here: http://goo.gl/7xlUv If your Friend is having thoughts of **suicide**, please ...
חסר: ~~case~~　4:31 ▶

Are You Thinking of Killing Yourself? | Speaking of Suicide : ...
https://www.speakingofsuicide.com/2013/04/15/are-you-thinking-of-killing-yourself/
15 באפר׳ 2013 - They may feel, often rightly so, that their **suicide** will **cause** guilt in those .... feeling sorry for myself" or a better 1 is **I'm just** "looking for attention" well I .... **I'm not depressed, I'm** exhausted and the anxiety of my day to day life ...... A **google** search for me would quickly turn up this post if I signed **it** with my name.

Questions?