VANCOUVER WELCOMES YOU!
MINIMALIST METONYMY RESOLUTION

Annual Meeting of the Association for Computational Linguistics
July 30-August 4, 2017
Vancouver, Canada
THE ROAD MAP

THE PROBLEM + BRIEF HISTORY

PREWIN
FEATURE SELECTION

MODEL
MINIMALIST NN

RELOCAR
NEW DATASET

RESULTS + SUMMARY
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WHAT IS A (METONYMIC) LOCATION?

MOSCOW TO DISCUSS EBOLA RISKS IN WEST AFRICA. ALUMINIUM AND GAS TRADING PICKED UP IN MOSCOW.

LONDON VOTED TO STAY IN THE EUROPEAN UNION. LONDON CONSTITUENCY VOTED TO REMAIN IN THE EU.

METONYMY ~20% OF ALL LOCATIONS (BNC, WIKIPEDIA)
NER & METONYMY - GREATEST PROBLEM IN NLP? OR NOBODY CARES!??
**VERY BRIEF HISTORY OF METONYMY RESOLUTION**

- Nissim et al. (2002, 03, 05) SEMEVAL (2007) Shared Task
- Brun et al. (2007) 85.1%
- Farkas et al. (2007) 85.2%
- Nastase et al. (2009, 2012) 86.1%
- Nastase et al. (2013) 86.2%
- Zhang et al. (2015) 86.5**

**TASK DEPENDENT AND/OR HEAVY FEATURE ENGINEERING**

**not peer reviewed, only in preprint**
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WHAT IS PREWIN?

BASELINE 5, 10, 50 WINDOW

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KERAS MINIMALIST MODEL

LEFT HAND SIDE INPUT

0 0 0 0 0

Embedding (50D)

LSTM (15 units)

Dropout

One-Hot Encoding

Dense (15 units)

Dropout

RIGHT HAND SIDE INPUT

0 0 0 0 0

is the host city of

Embedding (50D)

LSTM (15 units)

Dropout

One-Hot Encoding

Dense (15 units)

Dropout

nsubj det comp attr prep

Concatenate

Fully Connected (10 units)

Output (Sigmoid)
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RESULTS + SUMMARY
RELOCAR (REAL LOCATION RETRIEVAL) VERSUS SEMEVAL

TRAIN 1,026
TEST 1,000

LITERAL 49%
MIXED 2%
METONYMIC 49%

FULLY ANNOTATED AT CAMBRIDGE UNI FACULTY FOR MODERN AND MEDIEVAL LANGUAGES

Germany, US and France talk climate science...
THE ROAD MAP

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RELOCAR NEW DATASET

RESULTS + SUMMARY
THE RESULTS

SEMEVAL (SOTA 86.2%)

- Base 5: 81.3
- Base 10: 81.9
- Paragraph: 81.3
- PreWin: 83.1

ENSEMBLE 84.6%

RELOCAR (SOTA 84.8%)

- Base 5: 81.4
- Base 10: 81.3
- Paragraph: 80
- PreWin: 83.6

ENSEMBLE 84.8%
THE RESULTS

SEMEVAL TEST DATA

Trained on Semeval: 82
Trained on Relocar: 58
Trained on CONLL: 66

RELOCAR TEST DATA

Trained on Semeval: 82
Trained on Relocar: 58
Trained on CONLL: 82
THE RESULTS

Prewin Window Size Comparison

- **CONLL**
- **Semeval**
- **Relocar**
SCIENCE REPLICATION

Vancouver Welcomes You!

Minimalist Location Metonymy Resolution

Welcome to the home of the code and data accompanying the publication.

Python libraries requirements

- keras - www.keras.io
- nltk - www.nltk.org
- spacy - www.spacy.io

Embeddings

To fully replicate the results, you need to download the GloVe embeddings and save in a local directory. Go to http://nlp.stanford.edu/projects/glove/ and change the PATH to the embeddings in the LSTM_(train/test).py files.

How to replicate

- ensemble.py -> this is the evaluation script (accuracy, precision, recall, f-score). It can be used for ReLocaR and SemEval evaluation (see internal comments for usage instructions). Both the ensemble approach and single model results will be calculated, see output.
- create_prewin.py -> this is the preprocessing script used for taking TEXT files and outputting the processed pickled files for LSTM_train(and test).py. For replication purposes, this script applies the PREWIN method to text.
SUMMARY & FUTURE WORK

- RELOCAR MORE TEST DATA
- PREWIN FEATURE SELECTION
- MODEL MINIMALIST NN

- NER DOES NOT DO METONYMY
- METONYMY AS ORGS, LOCS, PRODUCTS...
- SMALL DATA & MODEL CAN WORK
THANK YOU ALL

DATA, RISK & ENVIRONMENTAL ANALYTICAL METHODS

WWW.DREAM-CDT.AC.UK