FEVER:
Fact Extraction and VERification

Final Project
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Intro & Project Goals

- A central problem in fact-checking:
  verification of textual claims against textual sources.
- Fact Extraction and VERification (FEVER) challenge
- Build a system: for a given claim
  1) Retrieve relevant documents.
  2) Select relevant sentences in those documents.
  3) Recognize whether the claim is supported, refuted, or indeterminate by those sentences.

FEVER Dataset

- Generated 185,445 claims by altering sentences extracted from Wikipedia (June 2017 dump).
- Separate annotators classified them as SUPPORTED, REFUTED or NOT ENOUGH INFO.
- For SUPPORTED and REFUTED, annotators also provided evidences (document URL and sentence number).

Split	SUPPORTED	REFUTED	NOT ENOUGH INFO
Training	80,035	29,775	35,639
Dev	3,333	3,333	3,333
Test	3,333	3,333	3,333
Reserved	6,666	6,666	6,666

Our Approach

- Build SQLite database from Wikipedia pages.
- Build the term-document count matrix.
  - NLTK sentence & regular expression([\w-]{3,}) tokenizer, Porter stemmer
  - Database too big for a personal laptop – divide, conquer, and then merge
  - Reweighting with TF-IDF and PMI
- Find closest documents and sentences using dot product.
- Sample evidences for training for Not Enough Info class from closest documents and sentences.
- RTE training with
  - Feature function: overlapping words / words cross product
  - Classifier: logistic regression, with hyperparameter grid cv

Progress

- All implementation finished.
- For SUPPORTED and REFUTED, compare annotated evidences and the closest documents & sentences found from the system:

	Accuracy (%)	
Num Docs	TF-IDF	PMI
1	23.2	22.1
3	45.5	46.2
5	56.9	56.6
10	69.0	68.9

	Accuracy (%)	
Num Sentences	TF-IDF	PMI
1	51.2	51.6
3	67.0	66.8
5	72.7	74.4
10	81.8	81.1

- RTE training on-going.

THANK YOU