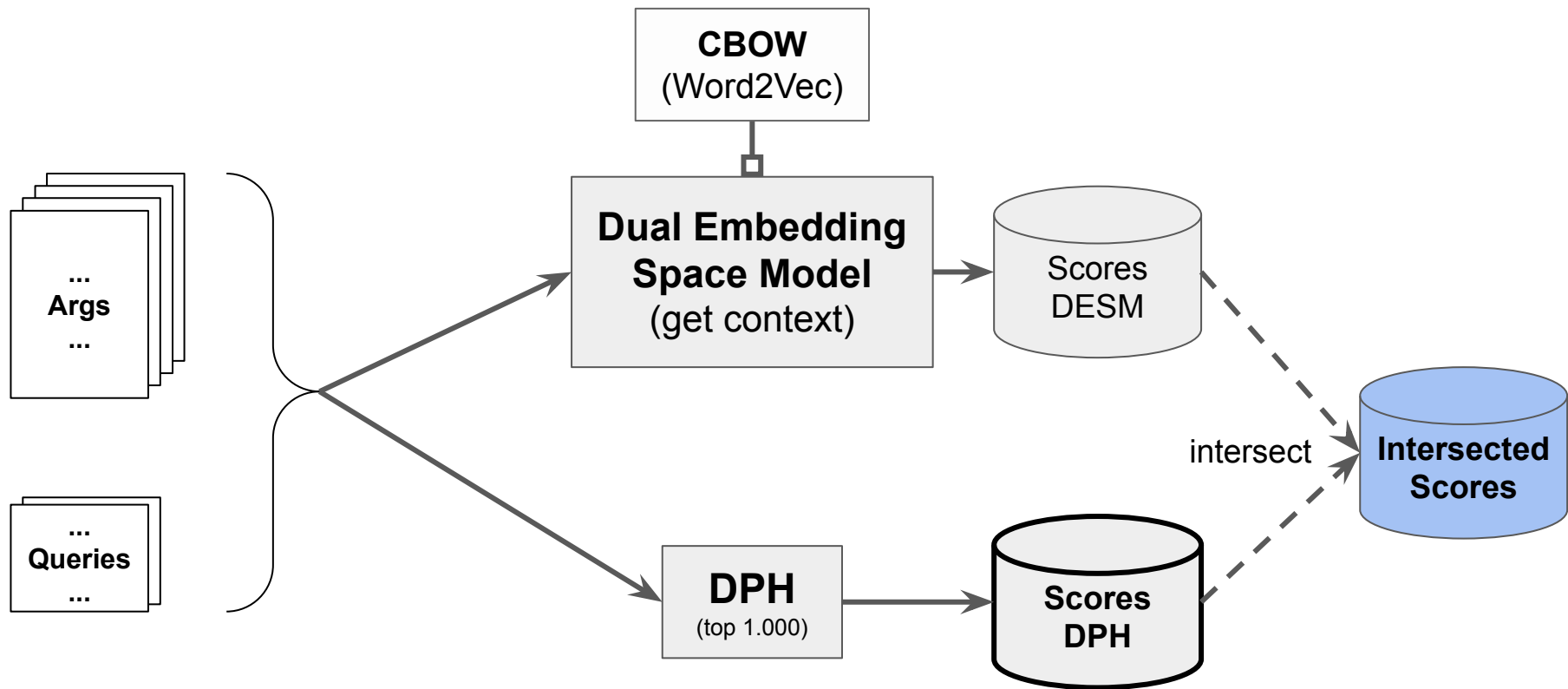


# **SentArg: A Hybrid Doc2Vec/DPH Model with Sentiment Analysis Refinement**

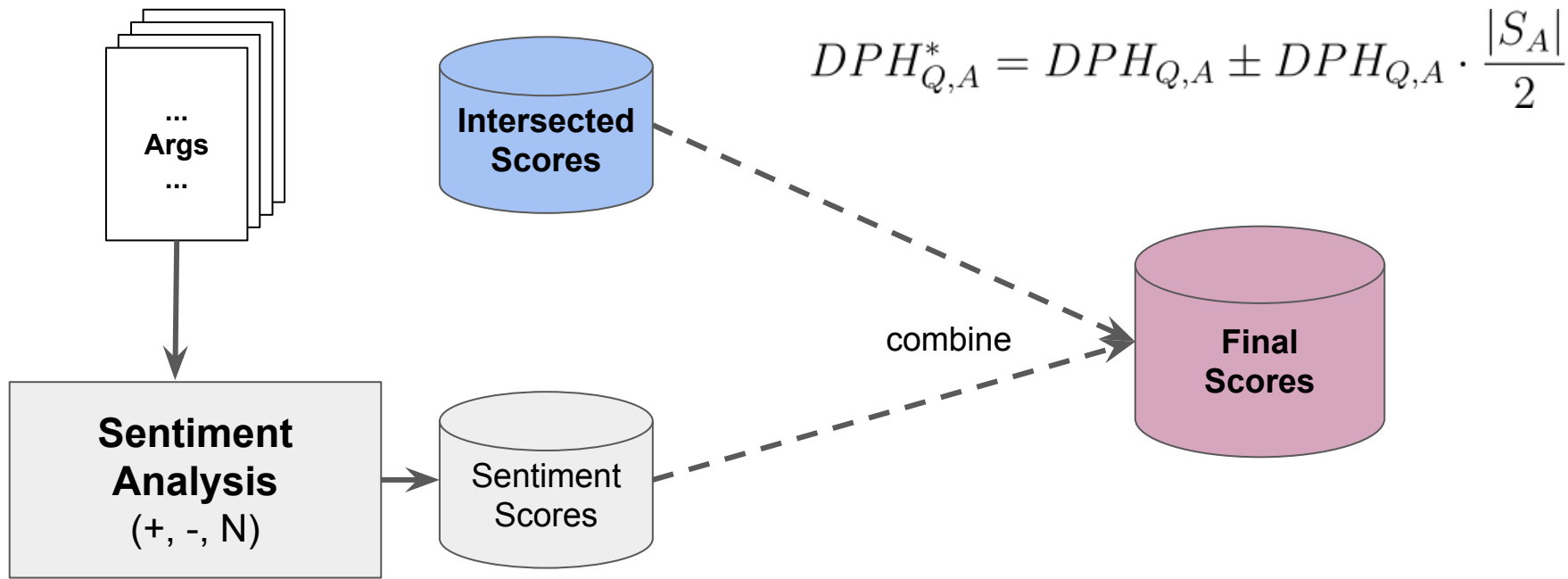
Christian Staudte and Lucas Lange  
University of Leipzig

Touché Task 1: Conversational Argument Retrieval

# Methodology (1/2)



# Methodology (2/2)



# Results

Table 2. Evaluation for different configurations: Embedding types and sentiments' influence.

	IN-OUT				IN-IN			
	nDCG	nDCG@5	nDCG@10	QrelCov@10	nDCG	nDCG@5	nDCG@10	QrelCov@10
$R_0$	0.365	0.649	0.553	6.24	<b>0.390</b>	0.635	0.538	6.06
$R_E$	0.369	<b>0.699</b>	<b>0.559</b>	6.24	0.385	0.625	0.528	5.96
$R_N$	0.337	0.517	0.456	5.18	0.359	0.500	0.437	4.94

$R_0$ : No sentiment ranking

$R_E$ : Prefer emotional arguments

$R_N$ : Prefer neutral arguments

# Argument Retrieval Using Deep Neural Ranking Models

Touché @ CLEF 2020 — Task 1

Saeed Entezari      Michael Völske  
Bauhaus-Universität Weimar

# Argument Retrieval Using Deep Neural Ranking Models

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1. Comparison of eight different architectures
2. Distant-supervision approach to train on arguments
3. Linear Aggregation

# Argument Retrieval Using Deep Neural Ranking Models

Touché @ CLEF 2020 — Task 1

Saeed Entezari      Michael Völske  
Bauhaus-Universität Weimar

1. Comparison of eight different architectures
2. Distant-supervision approach to train on arguments
3. Linear Aggregation

Interaction focus & contextual embeddings both help

## Distant Supervision Approach

$$\mathcal{L} = \max \{0, 1 - f(q, d^+) + f(q, d^-)\}$$



## Distant Supervision Approach

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## Distant Supervision Approach

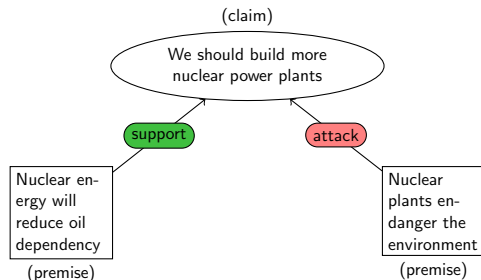
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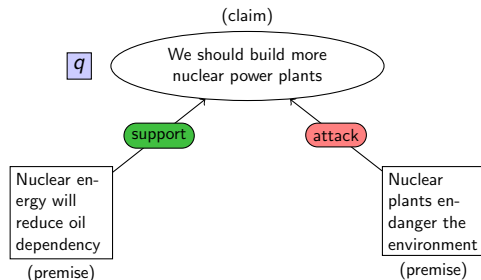
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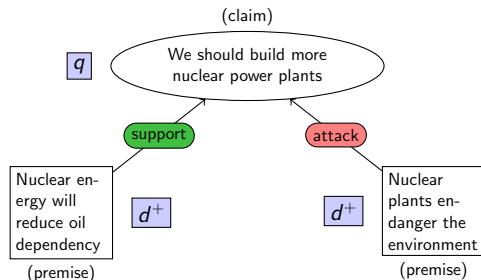
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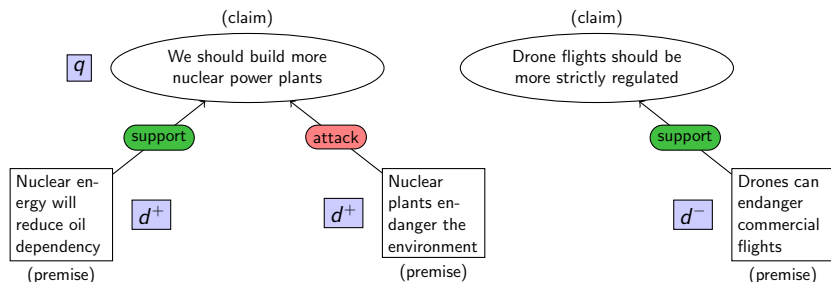
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# Distant Supervision Approach

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## Ranking Architectures and Results

Model	Type	Embedding	Re-rank
GRU	rep	static	yes
DRMM	int	static	yes
KNRM	int	static	yes
CKNRM	int	static	yes
Vanilla BERT	int	contx	yes
DRMM BERT	int	contx	yes
KNRM BERT	int	contx	yes
SNRM	rep	static	no
Aggregation	-	-	-



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Aggregation	-	-	-

# Ranking Architectures and Results

Model	Type	Embedding	Re-rank	MAP@20 (val)
GRU	rep	static	yes	0.24
DRMM	int	static	yes	0.53
KNRM	int	static	yes	0.73
CKNRM	int	static	yes	0.73
Vanilla BERT	int	contx	yes	0.88
DRMM BERT	int	contx	yes	0.88
KNRM BERT	int	contx	yes	0.90
SNRM	rep	static	no	0.70
Aggregation	-	-	-	N/A

## Ranking Architectures and Results

Model	Type	Embedding	Re-rank	MAP@20 (val)
GRU	rep	static	yes	0.24
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Aggregation	-	-	-	N/A



## Ranking Architectures and Results

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Model	Type	Embedding	Re-rank	MAP@20 (val)	nDCG@5 (test)
GRU	rep	static	yes	0.24	N/A
DRMM	int	static	yes	0.53	N/A
KNRM	int	static	yes	0.73	0.68
CKNRM	int	static	yes	0.73	N/A
Vanilla BERT	int	contx	yes	0.88	0.40
DRMM BERT	int	contx	yes	0.88	0.37
KNRM BERT	int	contx	yes	0.90	0.32
SNRM	rep	static	no	0.70	N/A
Aggregation	-	-	-	N/A	0.37

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Model	Type	Embedding	Re-rank	MAP@20 (val)	nDCG@5 (test)
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Aggregation	-	-	-	N/A	0.37

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Aggregation	-	-	-	N/A	0.37

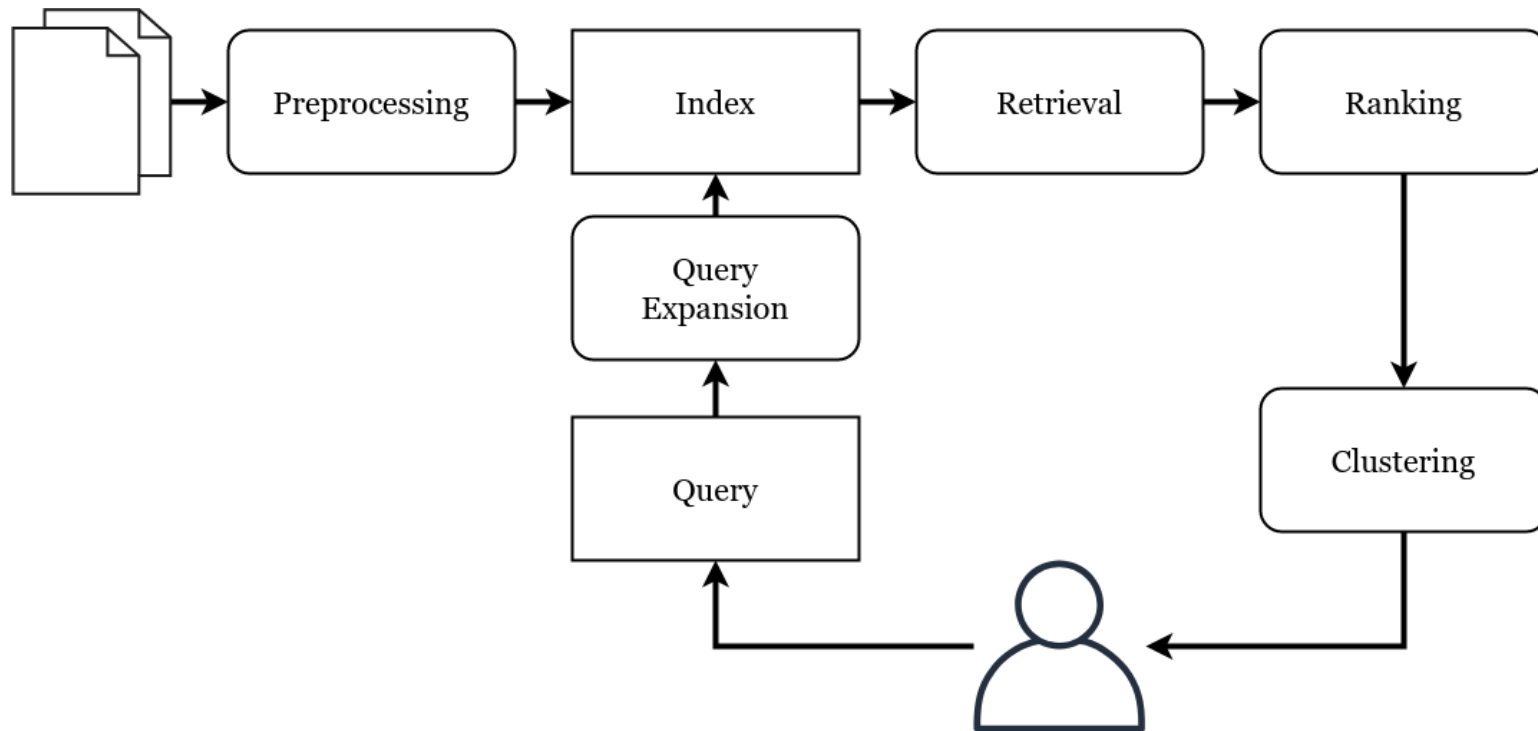
Relevant arguments  $\neq$  Good arguments

# Ranking Architectures and Results

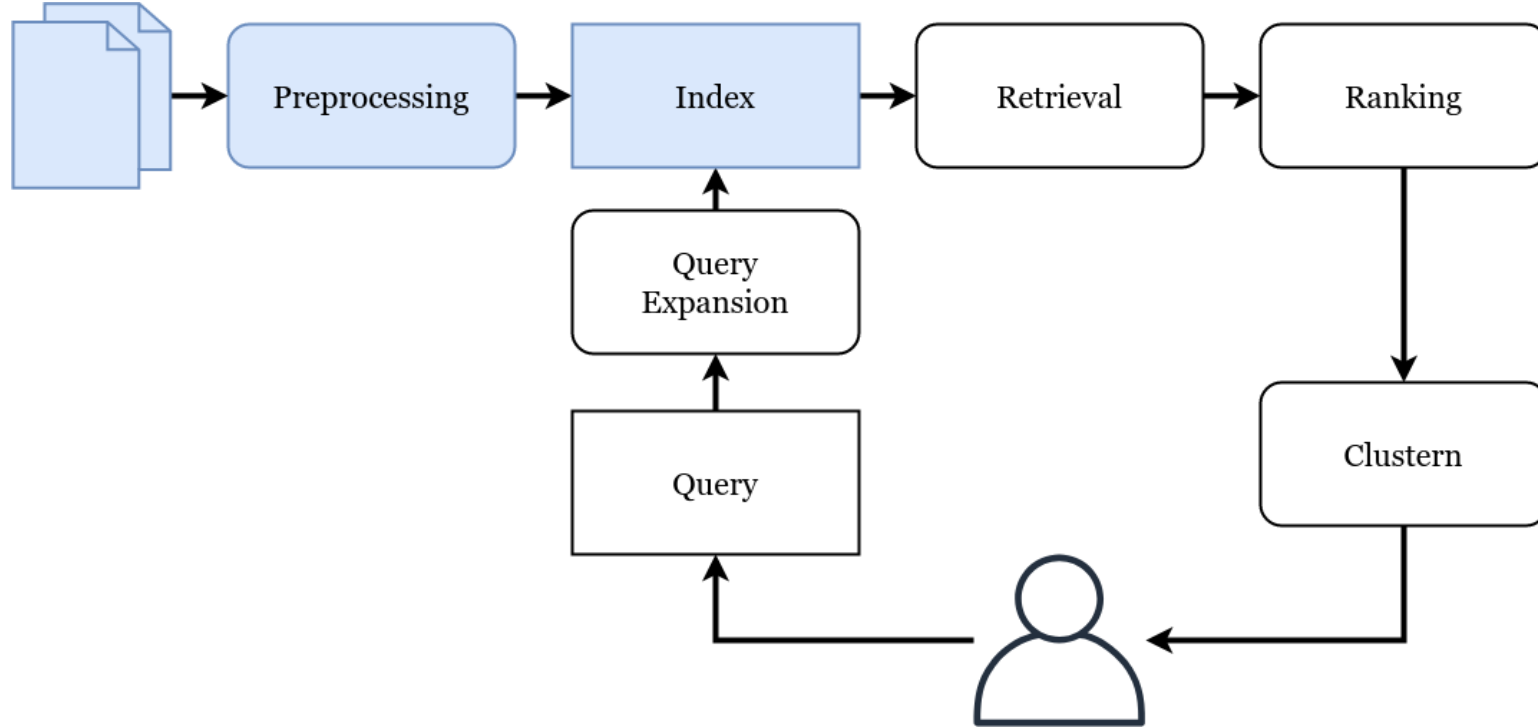
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Aggregation	-	-	-	N/A	0.37

Relevant arguments  $\neq$  Good arguments

**Thanks!**



ML on Webis-ArgQuality-20 Corpus  
→ Quality ratings

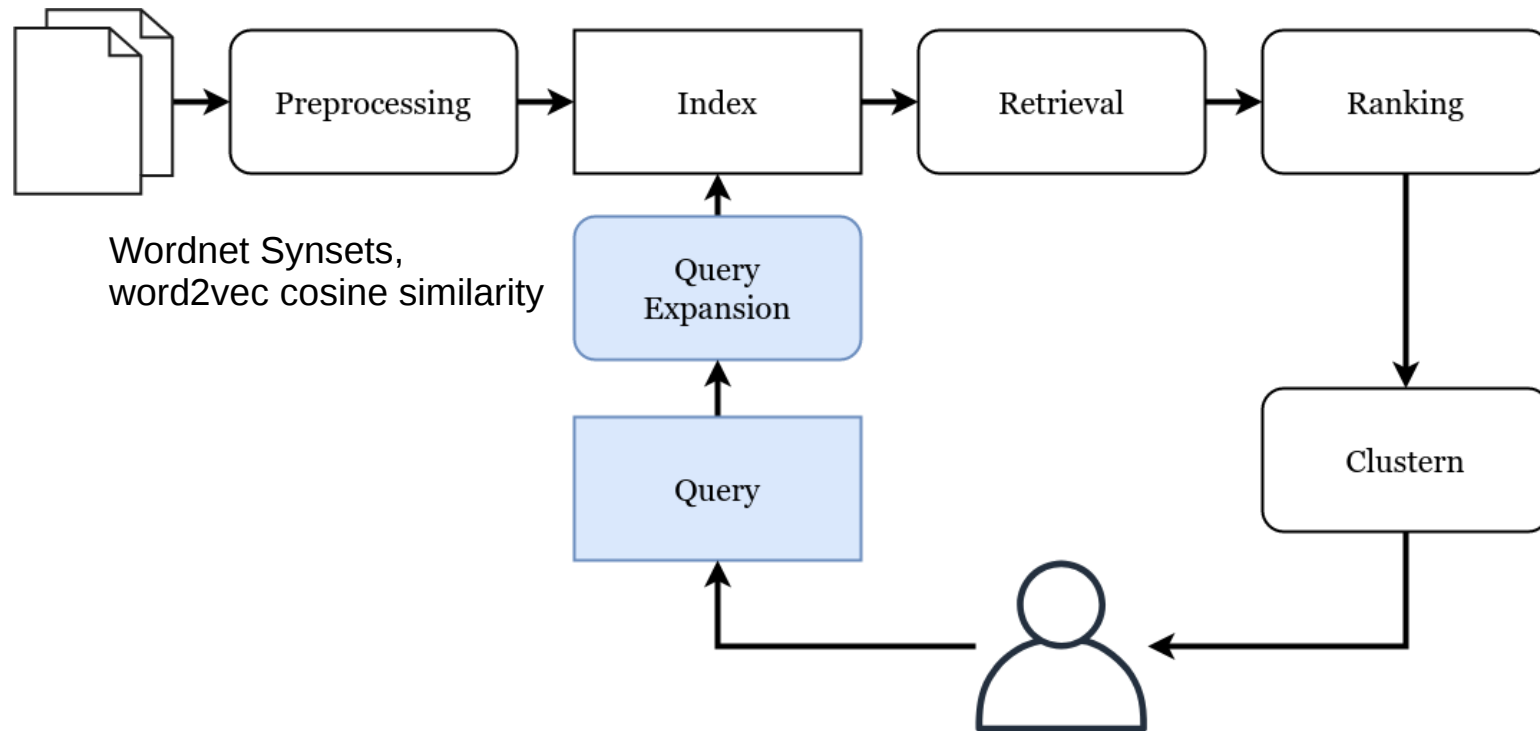


Touché

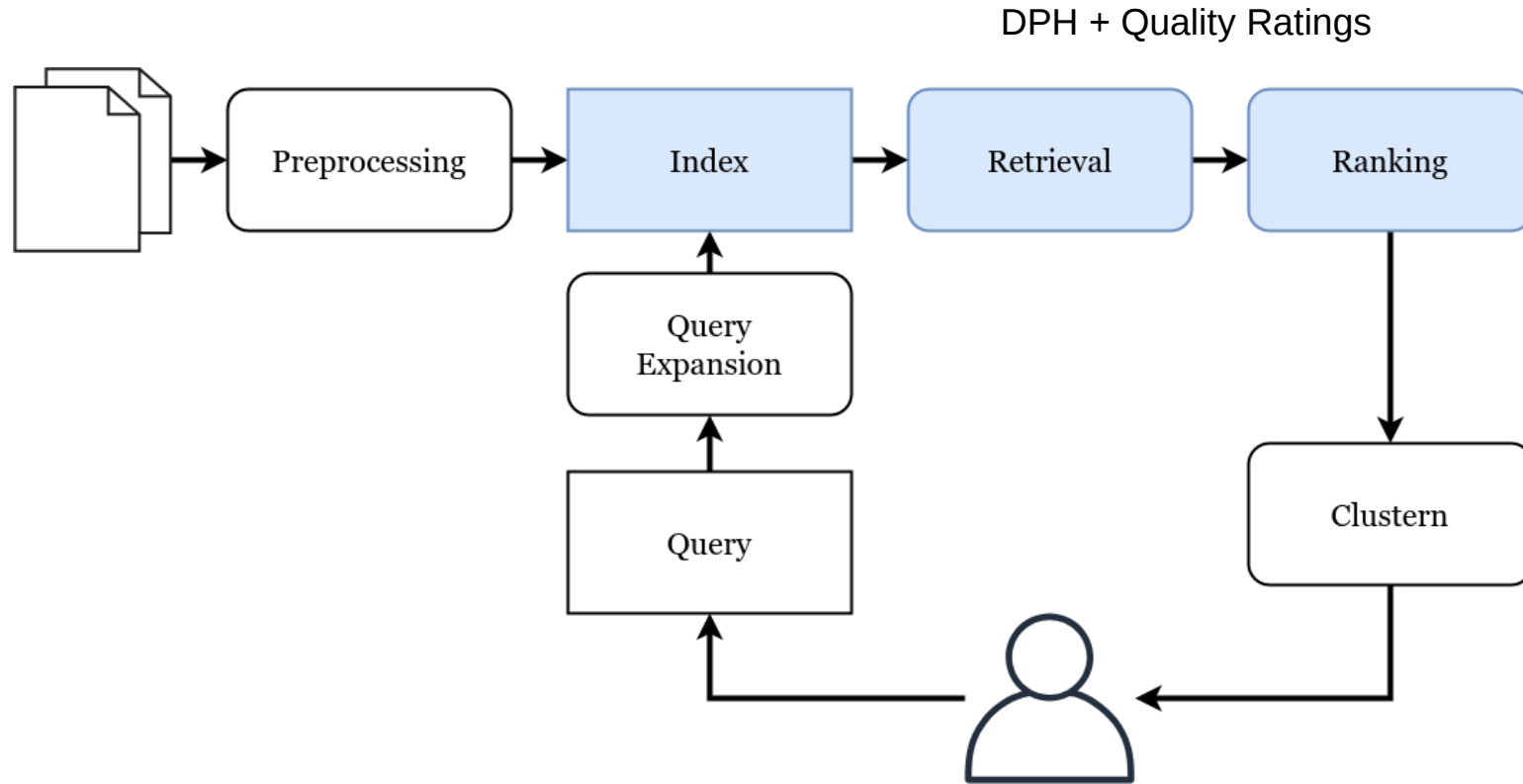
Task 1: Conversational Argument Retrieval

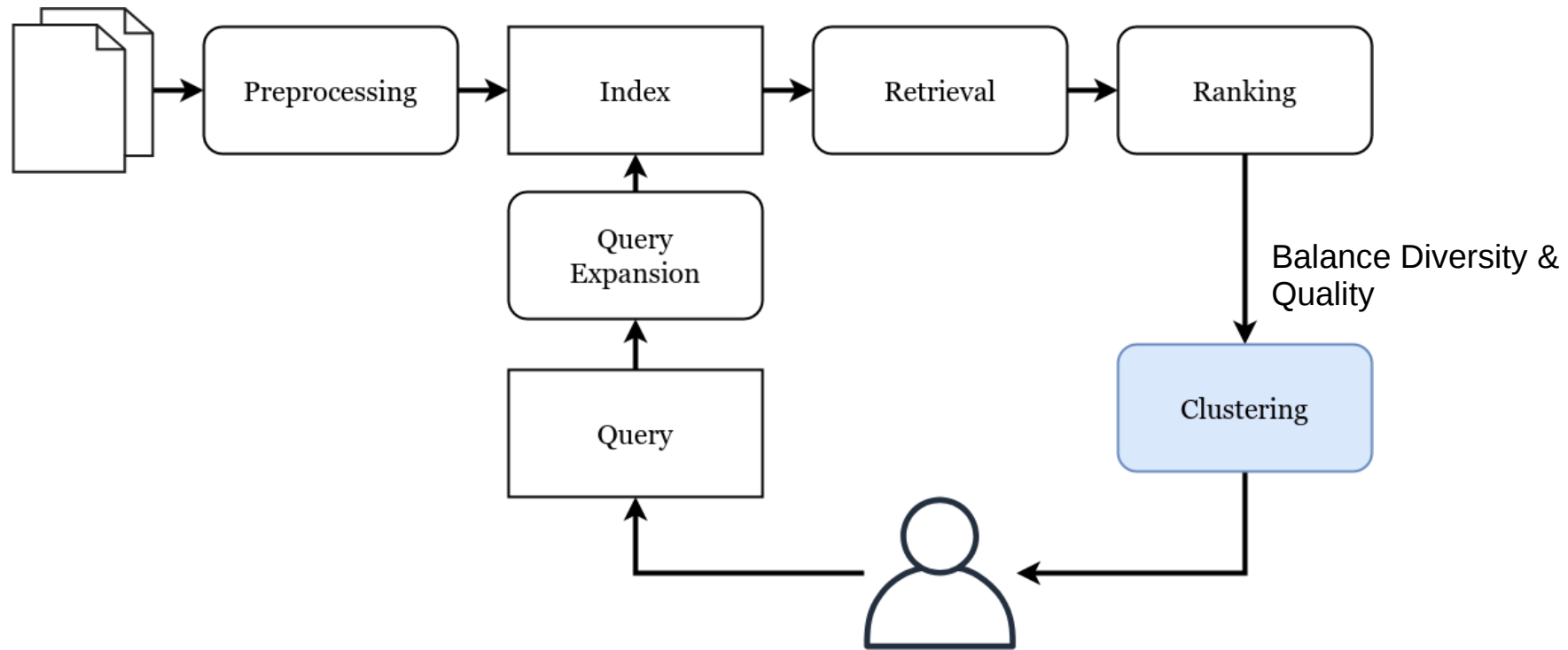
Team Weiss Schnee

M. Bundesmann, L. Christ, M. Richter (University of Leipzig)

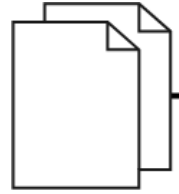








ML on Webis-ArgQuality-20 Corpus  
→ Quality ratings



Preprocessing

Apache Lucene

Index

DPH + Quality Ratings

Retrieval

Ranking

Wordnet Synsets,  
word2vec cosine similarity

Query  
Expansion

Balance Diversity &  
Quality

Query

Clustering

NDCG@5 (Corpus 1):  
**0.804**

