

# CoQEx: Entity Counts Explained

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## Aggregating context and instance evidences over multiple texts to increase answer coverage and user comprehension

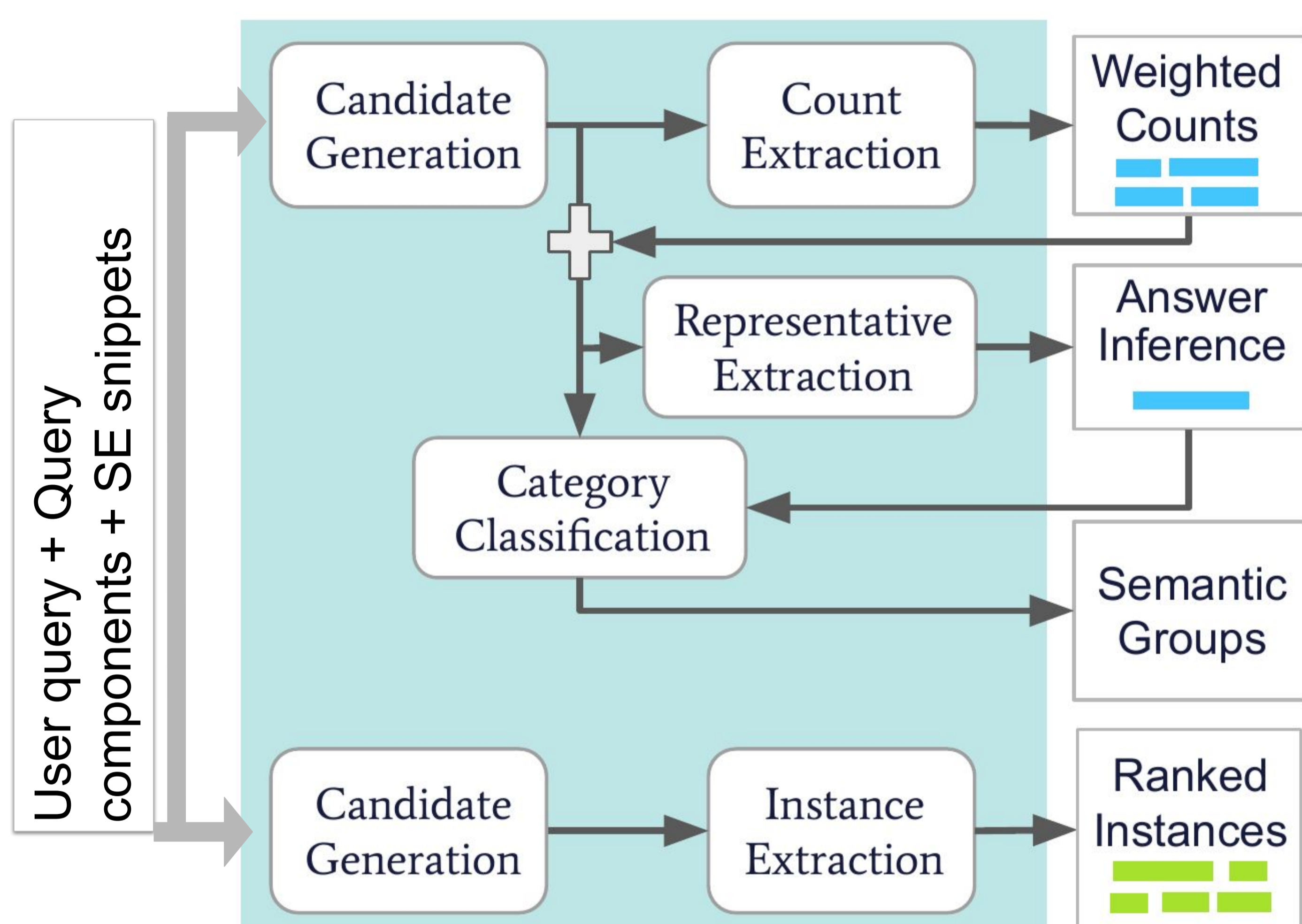
### Motivation

- **Infer a representative count** from the numeric distribution over multiple text snippets
- **Interpret count contexts** w.r.t the main answer through semantic groups of synonyms and subgroups
- **Exemplify through instances** by ranking instances from the snippets that are counted in the main answer

### System Overview

1. Input user query (live or over CoQuAD)
2. Extract query components using CoQEx
3. Top 50 text snippets from Bing API
4. Extraction and consolidation

### Extraction and Consolidation



### Answer with Explanations

Query

language **ANSWER TYPE** Indonesia **ENTITY** spoken **CONTEXT**

#### Answer inference

Count from weighted median of extracted counts  
Context from representative extraction

estimated 700 languages

#### a. Explanation by contexts

Weighted count distribution  
Semantic groups w.r.t answer inference

##### Explanation by Contexts

order by count

74 living languages <b>0.88</b>	300 different native languages <b>0.92</b>	
estimated 700 languages <b>0.91</b>	700 languages <b>0.66</b>	
707 living languages <b>0.97</b>	709 languages <b>0.97</b>	725 languages <b>0.78</b>

Semantic groups of count contexts w.r.t the answer inference

709 languages	700 languages
653 languages	707 living languages

Count contexts suggesting subgroups

300 different native languages	
74 living languages	365 languages

#### b. Explanation by instances

Instances ranked by answer type compatibility

##### Explanation by Instances

order by compatible an

Bahasa <b>0.96</b>	Javanese <b>0.96</b>	Sundanese <b>0.94</b>	Indonesian <b>0.92</b>
Austronesian <b>0.9</b>	Indonesia <b>0.43</b>		

#### c. Explanation by provenance

Snippets annotated with context and instance candidates

##### Explanation by Provenance (44 Snippets)

Model confidence thresholds for candidate selection: **Count contexts = 0.5** **Instances = 0.4** Threshold **not** crossed

all snippets

- 1 **Indonesia** **0.01** recognizes only a single national language, and indigenous languages are recognized at the regional level, although
- 2 There are an **estimated 700 languages** **0.91** used in Indonesia, most of which are **Austronesian** **0.47** languages. The de jure official

CoQuAD dataset

- how many novels did agatha christie write
- how many mayors in new york

Live questions

- number of songs by Bob Dylan
- how many astronauts have visited the ISS



Methodology

Answering Count Queries with Explanation. Ghosh S., Razniewski R., Weikum G.: SIGIR 2022.

Demo

nlcounqer.mpi-inf.mpg.de

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