Touché @ CLEF 2022
Shared Tasks on Argument Retrieval

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[touche.webis.de]
Touché: Argument Retrieval

Goals

- Platform for argument retrieval and argument analysis research  [touche.webis.de]
- Argument relevance / quality / stance corpora and rankings
- Tools for submission and evaluation  [tira.io]
Task 1: Supporting conversations on controversial topics

- **Scenario:** Users search for arguments on controversial topics
- **Task:** Retrieve and rank pairs of sentences, analyze quality
Touché: Argument Retrieval

Shared Tasks

Task 1: Supporting conversations on controversial topics
- Scenario: Users search for arguments on controversial topics
- Task: Retrieve and rank pairs of sentences, analyze quality

Task 2: Answering comparative questions with arguments
- Scenario: Users face personal decisions from everyday life
- Task: Retrieve and rank arguments, analyze quality, detect the stance
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- Scenario: Users search for arguments on controversial topics
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Task 2: Answering comparative questions with arguments
- Scenario: Users face personal decisions from everyday life
- Task: Retrieve and rank arguments, analyze quality, detect the stance

Task 3: Image retrieval for arguments
- Scenario: Users search for visual support for arguments
- Task: Retrieve images for each stance (pro/con) that support that stance
Touché: Argument Retrieval

Statistics

- Registrations: 58 teams (vs. 29 teams last year)
- Nicknames: Real or fictional fencers / swordsmen (e.g., Zorro)
- Submissions: 23 participating teams (vs. 27 last year)
- Approaches: 84 valid runs were evaluated (vs. 88 last year)
- Judgments: 15,644 manual judgments (sentences, passages, images)
Argument:

- A conclusion (claim) supported by premises (reasons)  
  [Walton et al. 2008]
- Conveys a stance on a controversial topic  
  [Freeley and Steinberg, 2009]

Conclusion: 

*Argumentation will be a key element of conversational agents.*

Premise 1: *Superficial conversation (“gossip”) is not enough.*

Premise 2: *Users want to know the “Why” to make informed decisions.*

Argumentation:

- Usage of arguments to achieve persuasion, agreement, …
- Decision making and opinion formation processes
Task 1: Retrieving and analyzing an argument gist

- Scenario: Users search for arguments on socially important topics
- Goal: Help to find the overview of different opinions / arguments
- Task: Retrieve and rank pairs of sentences, analyze quality
- Data: Approx. 5.7 million sentences (premises and claims).

- Run submissions similar to “classical” TREC tracks
- Software submissions via TIRA [tira.io]
Example topic for Task 1:

<table>
<thead>
<tr>
<th>Title</th>
<th>Should hate speech be penalized more?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Given the increasing amount of online hate speech, a user questions the necessity and legitimacy of taking legislative action to punish or inhibit hate speech.</td>
</tr>
<tr>
<td>Narrative</td>
<td>Highly relevant arguments include those that take a stance in favor of or opposed to stronger legislation and penalization of hate speech and that offer valid reasons for either stance. Relevant arguments talk about [...]</td>
</tr>
</tbody>
</table>
Touché: Argument Retrieval

Statistics

- Submissions: 10 participating teams
- Nicknames: Real or fictional fencers / swordsmen (e.g., Daario Naharis)
- Approaches: 43 valid runs were evaluated
- Baseline: Graph-based sentence pair extraction [Alshomary et al. 2020]
- Topics: 50 search topics
- Evaluation: 6,930 manual relevance, coherence; and quality judgments
Almost all teams outperformed the baseline

Relevance and coherence evaluation indicates promising results (improvement over the baseline)

The retrieved sentence pairs have a good quality (are argumentative)

Finding coherent pairs of sentences is challenging

Trends among submissions:
- Deploying “classical” retrieval models with parameter optimization
- Frequent focus on transformer based ML models to find coherent pairs
Task 2: Answering comparative questions with arguments

- **Scenario:** Users face personal decisions from everyday life
- **Goal:** Help to come to an informed decision on the comparison
- **Task:** Retrieve and rank arguments, analyze quality, detect stance
- **Data:** Approx. 1 million passages from ClueWeb12

- Run submissions similar to “classical” TREC tracks
- **Software submissions via TIRA** [tira.io]
Touché: Argument Retrieval

Statistics

- Registrations: 10 teams (46 teams: for task 2 + other tasks)
- Nicknames: Real or fictional fencers / swordsmen (e.g., Katana)
- Submissions: 7 participating teams (vs. 6 last year)
- Approaches: 25 valid runs were evaluated (vs. 19 last year)
- Baseline: BM25 / always ‘no stance’
- Evaluation: 2 107 manual judgments: relevance, quality, stance (vs. 2 076 last year)
Example topic for Task 2:

<table>
<thead>
<tr>
<th>Title</th>
<th>Should I major in philosophy or psychology?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objects</td>
<td>major in philosophy, psychology</td>
</tr>
<tr>
<td>Description</td>
<td>A soon-to-be high-school graduate finds themself at a crossroad in their life. [. . . ] searching for information about the differences and similarities, advantages and disadvantages of majoring in either of them (e.g., with respect to career opportunities).</td>
</tr>
<tr>
<td>Narrative</td>
<td>Relevant documents will overview one of the two majors in terms of career prospects or developed new skills, or they will provide a list of reasons to major in one or the other. [. . . ] Not relevant are study program and university advertisements or general descriptions of the disciplines that do not mention benefits, advantages, or pros/cons.</td>
</tr>
</tbody>
</table>
A few used relevance judgments from previous Touché

Many labeled a sample of retrieved documents themselves

Or relied on zero-shot approaches like T0++

Using the docT5query-expanded document collection

Main trend: transformer-based models (ColBERT, monoT5, duoT5)

Stance: supervised classifiers (XGBoost, LSTM, RoBERTa, etc.)

“Best” so far: retrieval / ranking pipelines that include argument mining methods and argument quality estimation
Task 3: Image retrieval for arguments

- **Scenario:** Users search for images to corroborate their argumentation
- **Task:** Retrieve and rank images to support or attack a given stance
- **Data:** 24,000 web images with respective web documents

- Run submissions similar to “classical” TREC tracks
- Software submissions via TIRA [tira.io]
Touché: Argument Retrieval

Statistics

- Submissions: 3 participating teams (+ baseline)
- Approaches: 12 valid runs were evaluated (+ baseline)
- Baseline: Google image search with query suffix “good” or “anti”
- Evaluation: 7,000 images-topic pairs judged manually (MTurk, MACE)

- Santiago Cabrera as Aramis in “The Musketeers”
- Sean Bean as Boromir in “The Lord of the Rings”
- Jester image by @deantna (on Pinterest).
- Minsc (and Boo) by u/Kazuliski (on Reddit)
All three teams employed text extraction from images (Tesseract OCR)

Two teams (including best-performing) used also web page text

All teams used sentiment or emotion features: from text, colors, or faces

“Best”: Retrieval on image + page text; stance/sentiment classifier with BERT

Baseline beaten: Google image search with appending “good” or “anti” to topic

Visually compare the results:  https://images.args.me
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-09:05</td>
<td>Welcome</td>
</tr>
<tr>
<td>09:05-09:45</td>
<td>Session 1: Argument Retrieval for Controversial Questions</td>
</tr>
<tr>
<td>09:05-09:15</td>
<td>Overview of Task 1 on Argument Retrieval for Controversial Questions (Shahbaz Syed) [paper]</td>
</tr>
<tr>
<td>09:15-09:25</td>
<td>Team Bruce Banner at Touché 2022: Argument retrieval for controversial questions (Bernardo Moreira) [paper]</td>
</tr>
<tr>
<td>09:25-09:35</td>
<td>The Pearl Retriever: Two-Stage Retrieval for Pairs of Argumentative Sentences (Sebastian Schmidt) [paper]</td>
</tr>
<tr>
<td>09:35-09:45</td>
<td>Team INTSEG on Argument Retrieval for Controversial Questions (Paria Tahan) [paper]</td>
</tr>
<tr>
<td>09:45-10:00</td>
<td>Best of Touché 2021: Query Expansion, Argument Mining and Document Scoring for an Efficient Question Answering System (Alaa Alhamzeh)</td>
</tr>
<tr>
<td>10:00-10:30</td>
<td>Keynote: Ranking Arguments and Argumentative Documents: Case Studies and Challenges (Andrea Galassi)</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Coffee break</td>
</tr>
</tbody>
</table>
## Touché: Argument Retrieval
### Workshop Program

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 2: Argument Retrieval for Comparative Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00-11:10</td>
<td>Overview of Task 2 on Argument Retrieval for Comparative Questions (Alexander Bondarenko) [paper]</td>
</tr>
<tr>
<td>11:10-11:20</td>
<td>Grimjack at Touché 2022: Axiomatic re-ranking and query reformulation (Jan Heinrich Reimer) [paper]</td>
</tr>
<tr>
<td>11:20-11:30</td>
<td>LeviRank: Limited query expansion with voting integration for document retrieval and Ranking (Ashish Rana) [paper]</td>
</tr>
<tr>
<td>11:30-11:40</td>
<td>Stacked model based argument extraction and stance detection using embedded LSTM model (Pavani Rajula) [paper]</td>
</tr>
<tr>
<td>11:35-11:40</td>
<td>Retrieving comparative arguments using deep language models (Viktoria Chekalina) [paper]</td>
</tr>
<tr>
<td>11:40-12:10</td>
<td>Session 3: Image Retrieval for Arguments</td>
</tr>
<tr>
<td>11:40-11:50</td>
<td>Overview of Task 3 on Image Retrieval for Arguments (Johannes Kiesel) [paper]</td>
</tr>
<tr>
<td>11:50-12:00</td>
<td>Aramis at Touché 2022: Argument detection in pictures using machine learning (Jan Braker) [paper]</td>
</tr>
<tr>
<td>12:00-12:10</td>
<td>Boromir at Touché 2022: Combining natural language processing and machine learning techniques for image retrieval for arguments (Miriam Louise Carnot) [paper]</td>
</tr>
<tr>
<td>12:10-12:30</td>
<td>Closing: remarks, plenary discussion, future plans</td>
</tr>
</tbody>
</table>

[ touche.webis.de ]
Task 1: Argument Retrieval for Controversial Questions

- **Scenario:** Users search for arguments on controversial topics.
- **Task:** Retrieve and rank relevant and high-quality documents; identify the document stance.
- **Data:** ClueWeb22 (10 billion web documents); will be indexed in [ChatNoir]

<table>
<thead>
<tr>
<th>Title</th>
<th>Should teachers get tenure?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claim</td>
<td>Teachers should get tenure</td>
</tr>
<tr>
<td>Description</td>
<td>A user has heard that some countries do give teachers tenure and others don’t. Interested in the reasoning for or against tenure, the user searches for positive and negative arguments. [...]</td>
</tr>
<tr>
<td>Narrative</td>
<td>Highly relevant documents clearly focus on tenure for teachers in schools or universities. Relevant documents consider tenure more generally, not specifically for teachers, or [...]</td>
</tr>
</tbody>
</table>
Task 2: Causal Retrieval

- Scenario: Support users that search for answers to causal questions
- Task: Retrieve and rank causality-related relevant documents and detect if the document supports or refutes the causal statement
- Data: ClueWeb22 (10 billion web documents); will be indexed in [ChatNoir]

<table>
<thead>
<tr>
<th>Title</th>
<th>Can broccoli cause constipation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Claim</td>
<td>Broccoli causes constipation</td>
</tr>
<tr>
<td>Description</td>
<td>A young parent has a child experiencing constipation after eating some broccoli for dinner and is wondering whether broccoli could cause constipation [...]</td>
</tr>
<tr>
<td>Narrative</td>
<td>Relevant documents will discuss if broccoli and other high fiber foods can cause or ease constipation [...]</td>
</tr>
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</table>
Task 3: Image Retrieval for Arguments

- **Scenario:** Users search for images to corroborate their argumentation
- **Task:** Retrieve and rank images that can be used to support or attack a given stance
- **Data:** > 30 000 web images with respective web documents

*Should hate speech be banned?*
Task 4: Intra-Multilingual and Multi-target Stance Classification

- **Scenario:** Users want to form an opinion on an important societal topic

- **Task:** Detect the stance of a comment towards a proposal

- **Data:** 4200 proposals and 20000 comments focused on various topics from Online Participatory Democracy Platform

<table>
<thead>
<tr>
<th>Title</th>
<th>Topic</th>
<th>Proposal</th>
<th>Comment</th>
<th>Stance</th>
</tr>
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<tr>
<td>Focus on Anti-Aging and Longevity research</td>
<td>Health</td>
<td>The EU has presented their green paper on aging, and correctly named the aging . . .</td>
<td>The idea of prevention being better than a cure is nothing new or revolutionary. Rejuvenation . . .</td>
<td>Pro</td>
</tr>
<tr>
<td>Impose an IQ or arithmetic-logic test to immigrants</td>
<td>Migration</td>
<td>We should impose an IQ test or at least several cognitive tests making sure immigrants have . . .</td>
<td>On ne peut pas trier les migrants par un simple score sur les capacités cognitives. Certains fuient la guerre et vous . . .</td>
<td>Against</td>
</tr>
</tbody>
</table>
## Touché: Argument and Causal Retrieval

**Outlook 2023**

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### Task 4: Intra-Multilingual and Multi-target Stance Classification

- **Scenario:** Users want to form an opinion on an important societal topic
- **Task:** Detect the stance of a comment towards a proposal
- **Data:** 4,200 proposals and 20,000 comments focused on various topics from Online Participatory Democracy Platform

<table>
<thead>
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**thank you!**