Uncovering Plagiarism, Authorship, and Social Software Misuse

PAN 2011 Results

[pan.webis.de]
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Plagiarism Detection

The web is rife with text reuse: boilerplate, translations, paraphrases, summaries, and plagiarism.
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Plagiarism Detection

The web is rife with text reuse: boilerplate, translations, paraphrases, summaries, and plagiarism.

Tasks:

- **External Detection.** Given a suspicious document and a set of potential source documents, the task is to find all plagiarized passages in the suspicious document and their corresponding source passages in the source documents.

- **Intrinsic Detection.** Given a suspicious document, the task is to extract all plagiarized passages based on clues extracted from the document itself.

Corpus:

- PAN plagiarism corpus of 2010, 2011  [www.webis.de/research/corpora]
- 61 000 plagiarism cases hidden in about 27 000 documents
- 5 plagiarism-relevant parameters  (length, language, task, obfuscation, fraction)
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External plagiarism detection:

- Plagdet
- Precision
- Recall
- Granularity

Intrinsic plagiarism detection:

- Oberreuter
- Stamatos
- Kestemont
- Akiva
- Gupta

- Plagdet combines the measures as $F / \log(\text{granularity})$.
- Granularity measures the average number of times a plagiarism case is detected.
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Authorship Identification

Many texts on the web are of uncertain authorship.
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Tasks:

- **Authorship Attribution.** Given a document of uncertain authorship and documents from a set of candidate authors, the task is to map the document onto its true authors among the candidates.

- **Authorship Verification.** Given a document of uncertain authorship and a document from a specific author, the task is to determine whether the given text has been written by that author.

Corpus:

- **Subset of the Enron Email Dataset** [www.cs.cmu.edu/~enron]
- More than 12,000 documents written by 118 authors.
- **3 relevant parameters** (task, candidate set size, closed vs. open candidate set)
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Authorship attribution:

Authorship verification:
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Wikipedia Vandalism Detection

Every edit on Wikipedia has to be double-checked for integrity.
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Wikipedia Vandalism Detection

Every edit on Wikipedia has to be double-checked for integrity.

Task:

- Given a set of edits on Wikipedia articles, separate the ill-intentioned edits from the well-intentioned edits.

Corpus:

- About 2 800 vandalism cases among about 30 000 edits
- 3 languages with corpus annotations obtained from Mechanical Turk.
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Wikipedia Vandalism Detection

![Graphs showing precision-recall curves for different languages and systems.]

- **English**
  - West and Lee (PR-AUC 0.82230)
  - Drăgușanu et al. (PR-AUC 0.42464)

- **German**
  - West and Lee (PR-AUC 0.48938)
  - Aksit (PR-AUC 0.42464)

- **Spanish**
  - West and Lee (PR-AUC 0.70591)
  - Mola Velasco (PR-AUC 0.66522)
  - Adler et al. (PR-AUC 0.49263)

- **English, PAN-WVC-10**
  - West and Lee (PR-AUC 0.75385)
  - Mola Velasco (PR-AUC 0.66522)
  - Adler et al. (PR-AUC 0.49263)
Quo Vadis PAN?
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Lessons Learned and Outlook

- **Focus & Simplicity**
  - Focus on specific aspects of the tasks.
  - Reduced number of task variants.
  - Reduced number of parameters and limited ranges.

- **Realism & Scale**
  - New corpora for plagiarism detection and authorship identification.
  - Scale up where necessary, scale down otherwise.

- **Contributions & Challenges**
  - Inclusion of real plagiarism and real cases of disputed authorship.
  - Distinguishing text reuse and plagiarism.
  - Considering human performance.
Thank you!

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Mail us at  pan@webis.de.