TermRaider

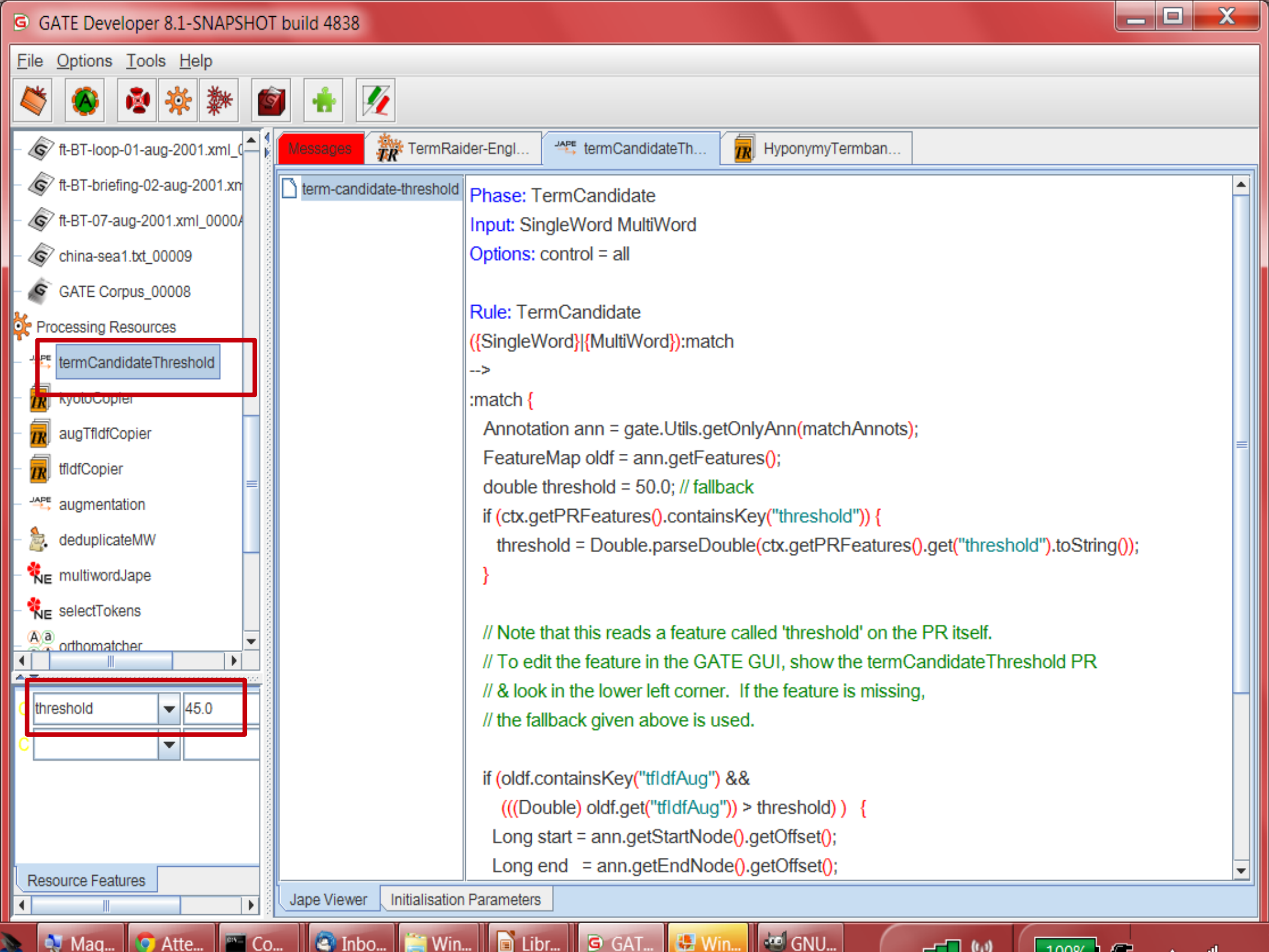
- GATE plugin for detecting single and multi-word terms
- Based originally on a simple web service - now extended to run in GATE, with visualisation tools, and extended functionality (new scoring systems, and an adaptation for German).
- Terms are ranked according to three possible scoring systems:
  - tf.idf = term frequency (nbr of times the term occurs in the corpus) divided by document frequency (nbr of documents in which the term occurs)
  - augmented tf.idf = after scoring tf.idf, the scores of hypernyms are boosted by the scores of hyponyms
  - Kyoto domain relevance = document frequency × (1 + nbr of hyponyms in the corpus), Bosma and Vossen 2010

TermRaider: Methodology

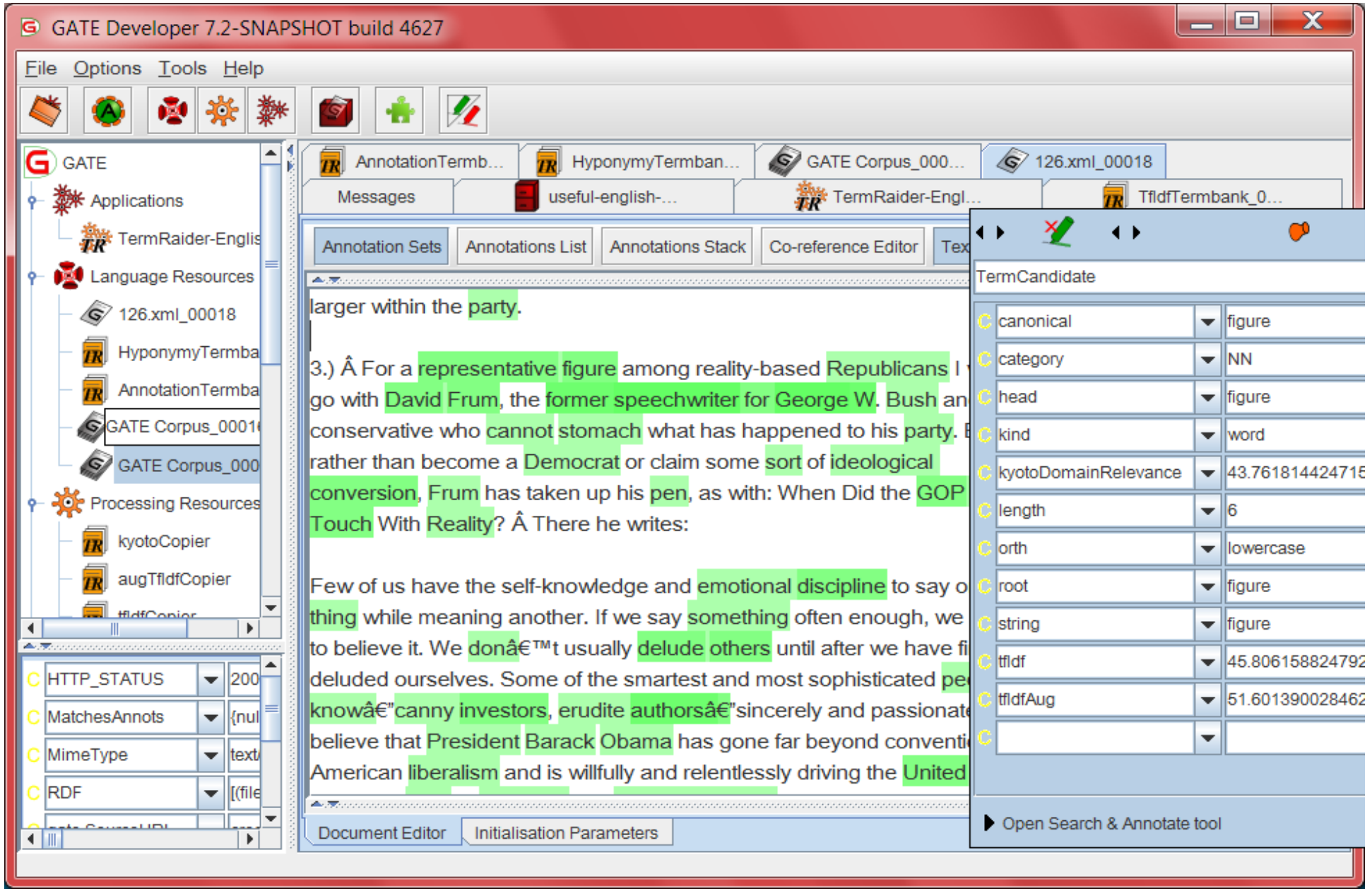
- After linguistic pre-processing (tokenisation, lemmatisation, POS tagging etc.), nouns and noun phrases are identified as initial term candidates
- Noun phrases include post-modifiers such as prepositional phrases, and are marked with head information for determining hyponymy. Nested nouns and noun phrases are all marked as candidates.
- Term candidates are then scored in 3 ways.
- The results can be viewed in the GATE GUI, exported as RDF, or saved as CSV files
- The viewer can be used to adjust the cutoff parameter. This is used to determine the score threshold for a term to be considered valid
- Terms can also be shown as a tag cloud

Deciding what is a term

- Because TermRaider ranks every possible candidate term, you probably don't want to use all candidate terms if you're annotating terms in a text
- We therefore provide a cutoff mechanism to select what score should determine whether something is a term or not
- The last PR in TermRaider is a JAPE grammar which takes a feature “threshold” and a value, by default set to 45, and annotates candidates as “Term” only if the value of the augmented tf.idf is above the threshold.


GATE Developer 8.1-SNAPSHOT build 4838
File Options Tools Help
ft-BT-loop-01-aug-2001.xml_0
ft-BT-briefing-02-aug-2001.xm
ft-BT-07-aug-2001.xml_0000A
china-sea1.txt_00009
GATE Corpus_00008
Processing Resources
termCandidateThreshold
kyotoCopier
augTfIdfCopier
tfIdfCopier
augmentation
deduplicateMW
multiwordJape
selectTokens
orthomatcher
threshold
45.0
Resource Features
Messages
TermRaider-Engl...
termCandidateTh...
HyponymyTermban...
term-candidate-threshold
Phase: TermCandidate
Input: SingleWord MultiWord
Options: control = all
Rule: TermCandidate
({SingleWord}|{MultiWord}):match
-->
:match {
Annotation ann = gate.Utils.getOnlyAnn(matchAnnots);
FeatureMap oldf = ann.getFeatures();
double threshold = 50.0; // fallback
if (ctx.getPRFeatures().containsKey("threshold")) {
threshold = Double.parseDouble(ctx.getPRFeatures().get("threshold").toString());
}
// Note that this reads a feature called 'threshold' on the PR itself.
// To edit the feature in the GATE GUI, show the termCandidateThreshold PR
// & look in the lower left corner. If the feature is missing,
// the fallback given above is used.
if (oldf.containsKey("tfIdfAug") &&
(((Double) oldf.get("tfIdfAug")) > threshold)) {
Long start = ann.getStartNode().getOffset();
Long end = ann.getEndNode().getOffset();
Jape Viewer
Initialisation Parameters

Term candidates in a document



Try TermRaider in GATE

- Load the TermRaider plugin in GATE
- Load the corpus from hands-on-termraider
  - around 20-100 documents on a similar topic is ideal for testing
- Load TermRaider from the “Ready-made Applications” and run it on the corpus
- Note that TermRaider creates annotations on the documents and additional language resources

Try TermRaider in GATE

- Inspect the results
  - click on “SingleWord”, “MultiWord” or “Candidate Term” in the document viewer
  - look at the termbanks (language resources)
  - Try the Term Cloud viewer
- Change the threshold (open the termCandidateThreshold PR in GATE and then modify the value of “threshold” in the box in the bottom left corner). See what happens when you re-run the application.