

**Exeter at CLEF 2001: Experiments with Machine Translation
for Bilingual Retrieval**

Gareth J. F. Jones Adenike M. Lam-Adesina

Department of Computer Science

University of Exeter, Exeter, U.K.

Overview

- Objectives of Participation
- CLIR Strategy
- Experimental Results
- Failure and “Success” Analysis
- Further Work

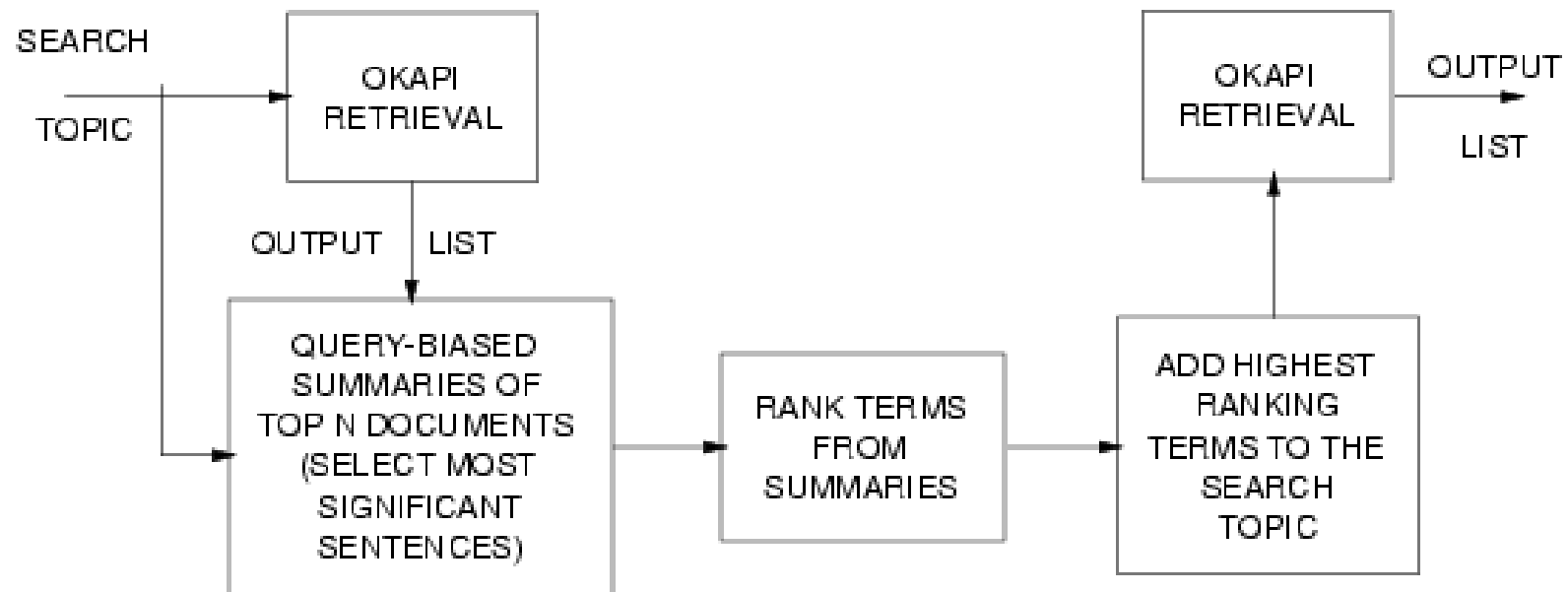
Objectives of Participation

- Compare bilingual retrieval behaviour for different topic languages.
- Use similar easily available machine translation resources for each topic language.
- Investigate the behaviour of a new summary based pseudo relevance feedback method in CLIR.

CLIR Strategy

- Topics translated for retrieval using readily available machine translation systems.
 - Official submissions use Alta Vista Babelfish - based on SYSTRAN.
 - Further experiments using Globalink Power Translator Pro.
- Retrieval using the City University research distribution of the Okapi system.
 - Around 260 stop words removed from the texts, Porter stemming applied and a small set of synonyms used.
- Okapi augmented with summary-based pseudo relevance feedback.

CLIR Strategy



Summary-based pseudo relevance feedback.

Experimental Results

Official submissions for French, German, Chinese and Japanese.

Subsequent runs for English, Spanish and Italian.

All runs use Topic Title and Description fields.

	Topic Language						
Prec.	Eng.	Fren.	Germ.	Ital.	Span.	Chin.	Japan.
10 docs	0.406	0.366	0.330	0.298	0.353	0.287	0.332
Av. Prec.	0.484	0.473	0.398	0.375	0.389	0.341	0.411
% chg.	—	-2.3%	-17.8%	-22.5%	-19.6%	-29.5%	-15.1%

Baseline retrieval results for topic translation using Babelfish.

Experimental Results

	Topic Language						
Prec.	Eng.	Fren.*	Germ.*	Ital.	Span.	Chin.*	Japan.*
10 docs	0.400	0.366	0.336	0.320	0.394	0.296	0.362
Av Prec.	0.517	0.489	0.415	0.395	0.423	0.336	0.431
% no FB.	+6.8%	+3.4%	+4.3%	+5.3%	+8.7%	-1.5%	+4.9%
% chg.	—	-5.4%	-19.7%	-23.6%	-18.1%	-35.0%	-16.6%

Retrieval results for topic translation using Babelfish with summary-based expansion term selection.

* indicates official CLEF 2001 submitted run.

Failure and “Success” Analysis

Initial analysis so far for Japanese-English retrieval.

- Dictionary Issues:
 - Topic 47: *Chechnya* correctly translated into katakana in the Japanese; Babelfish fails to attempt an English translation.
 - Topic 48: *Bosnia* correctly translated into katakana in the Japanese; Babelfish gives an English translation *boss*.
 - Topic 66: *Latvia* correctly translated into katakana in the Japanese; Babelfish gives correct English translation.
 - Topic 83: *Lennon* correctly translated into katakana in the Japanese; Babelfish fails to give an English translation.

Failure and “Success” Analysis

Initial analysis so far for Japanese-English retrieval.

- Experimental Design:
 - Topic 69: *cloning* becomes *clone technology* which appears to be better for retrieval. The Japanese translation implies technology, but it's a reasonable translation.
- Spelling Mistakes in Dictionary:
 - Topic 80: “hunger strikes” was translated as “hanger strikes”.
- Better term from Dictionary:
 - Topic 89: “property” was translated as “real estate”. The Japanese is a good translation of either of these.

Ongoing Work

- Experiments with Globalink Power Translator Pro.
- Exploration of the use of Data Fusion and Query Combination using the two translation systems.
- Further failure analysis for the other language pairs
 - Is Chinese harder, or is the translation resource weaker?