



FAUST

Feedback Analysis for User Adaptive Statistical Translation

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Project Overview

Objective

Develop interactive machine translation systems which adapt rapidly and intelligently to user feedback

Translation Language Pairs

Czech-English, French-English,
Romanian-English, Spanish-English,
Spanish-Catalan, Arabic->English,
Chinese->English

Project Duration

1 February 2010 – 31 January 2013

Seventh Framework Programme

Theme FP7-ICT-2009-4

Objective 2.2: Language-based interaction

Grant agreement no. 247762 (STREP)

Budget

3.76 Meuro (funded at 2.85 Meuro)

Website

<http://divf.eng.cam.ac.uk/faust>

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Project Partners

- Academic Partners
 - University of Cambridge, UK
 - Universitat Politècnica de Catalunya, Spain
 - Charles University, Czech Republic
- Commercial Partners
 - Language Weaver Inc., USA
 - Language Weaver SRL, Romania
 - Softissimo , France



Project Motivation - 1

- Current MT systems do not respond to suggestions for improvement. There are diverse technical reasons for this, including:
 - User feedback tends to be very noisy
 - No research published to date makes explicit how statistical translation and language models can be adapted to benefit from feedback provided by web users
 - No mechanisms exist to identify user feedback of value
 - No mechanisms exist for immediately affecting the behavior of a statistical MT system so that subsequent users do not run into the same problem
- As a consequence users are passive and unable to contribute to any improvement in SMT

Project Motivation - 2

- Current SMT systems and research efforts are aimed at *sophisticated users* - translation professionals, intelligence analysts, etc. These users develop an understanding of how to work around their system weaknesses
- Casual users tend to be frustrated by a general lack of fluency
 - In any NLP system, basic mistakes in grammar or word sense suggest that the technology is not reliable
 - Systems must be fluent if they are to be accepted and trusted by casual users

Research opportunities in improving commercial MT

- Language Weaver and Softissimo : Reverso.net
 - Popular translation service: 2nd most popular; most visited site in Europe
 - Many users - ideal for deploying and studying new translation techniques

The screenshot displays the Reverso.net homepage. At the top, there is a navigation bar with buttons for Translation, Dictionary, Conjugation, Grammar, and More... Below this, a large text area is provided for entering text to be translated. To the right of the main content, there is a sidebar containing 'Reverso News', 'Reverso on Facebook', 'Make your translations speak!', and 'Free Online Dictionaries'. An 'Advertising' sidebar is also visible on the right side of the main content area.

Research Challenge: Incorporation of User Feedback

- Unexploited user feedback from users of the Reverso.net website
 - plenty of feedback, but its noisy
 - unclear how it should be used

Translation request	MT output	User feedback
Wie steht mir die Farbe?	How does the color stand to me?	How does the color look on me?
Sie werden heute die Bestellung erhalten.	Aujourd'hui, ils recevront la commande(distribution).	Aujourd'hui, vous recevrez la commande.
je m'apelle hamza	I apelle hamza me	my name is hamza
Il y a combien de temps que tu pratiques la gymnastique ?	There is how that you practise the gymnastics?	How long ago did you practice gymnastic
j'ai laisser une note	I have to leave a note	I have left a note
DESOLEE J AI BEAUCOUP DE MAL AUJOURDHUI	SORRY J HAVE DIFFICULTY AUJOURDHUI	SORRY J HAVE DIFFICULTY TODAY
bonjour comment vas tu	Hello how go you	Hello how are you you
quand mon père viendra me rechercher	When my father will come to look for me	When my father will come pick me up

Project Goals – Scientific and Technological Innovation

- 1 Enhance the high-volume, reverso.net translation website with an **experimental and evaluation infrastructure** for the study of instantaneous user feedback
 - State of the art: High-volume translation without real-time adaptation.
 - FAUST: high-volume translation systems capable of adapting to user feedback in real-time.

- 2 Deploy novel **web-oriented, feedback collection mechanisms** that reduce noise and increase the utility of the web contributions
 - State of the art: Simple user feedback collection
 - FAUST: feedback from users guided to improve specific translation weaknesses automatically identified by the SMT system

Project Goals – Scientific and Technological Innovation

3 Automatically acquire novel **data collections to study translation as informed by user feedback**

State of the art: static data collections collected and evaluated independently of user interest

FAUST: collections created and evaluated by interested users

4 Develop mechanisms for **instantaneously incorporating user feedback into the machine translation engines** used in 24x7 production environments

State of the art: no published results on instantaneous machine translation adaptation to user feedback.

FAUST: translation models and mechanisms that adapt instantaneously

Project Goals – Scientific and Technological Innovation

- 5 Create novel **automatic metrics of translation quality** which reflect preferences learned from user feedback

State of the art: MT relies on metrics which do not reflect user interest

FAUST: MT metrics as models of user feedback

- 6 Develop new **translation models based on user feedback data** and develop novel approaches to integrate natural language generation directly into MT to **improve translation fluency and reduce negative feedback**

State of the art: Corpus-level optimization of 'translate and forget' MT systems

FAUST: User-driven MT systems

Project Highlights – Public Outputs, Community Benefits

- FAUST will create new additions to the Reverso.net translation services:
 - labs.reverso.net : research MT systems will be deployed directly on so that researchers can observe users interacting directly with MT systems.
 - forums.reverso.net : will provide a meeting place for translation users to interact with each other and to experiment with novel feedback collection mechanisms.
- Commercial spinoffs, derivatives
 - any developments fielded by Language Weaver and Softissimo

Possible next steps - beyond the current scope

- Finding Groups and Communities of MT Users (and users of other language technologies)
 - Goal: Find large multilingual collections and the people who need to access them
 - Identify research problems outside the scope of the localization and translation industry
 - Not a 'grand challenge'
 - Aim is to identify a large number of research problems and market opportunities
 - Emphasis on language technology resources would be secondary
 - Would be complementary to activities of ELRA, FLARENET, etc.
 - Potential strategy: provision and support for free online translation services in exchange for learning about the applications envisioned by users
 - Willing users and their resources could then be invited into funded research projects
 - researchers preparing proposals could select potential application areas for their projects