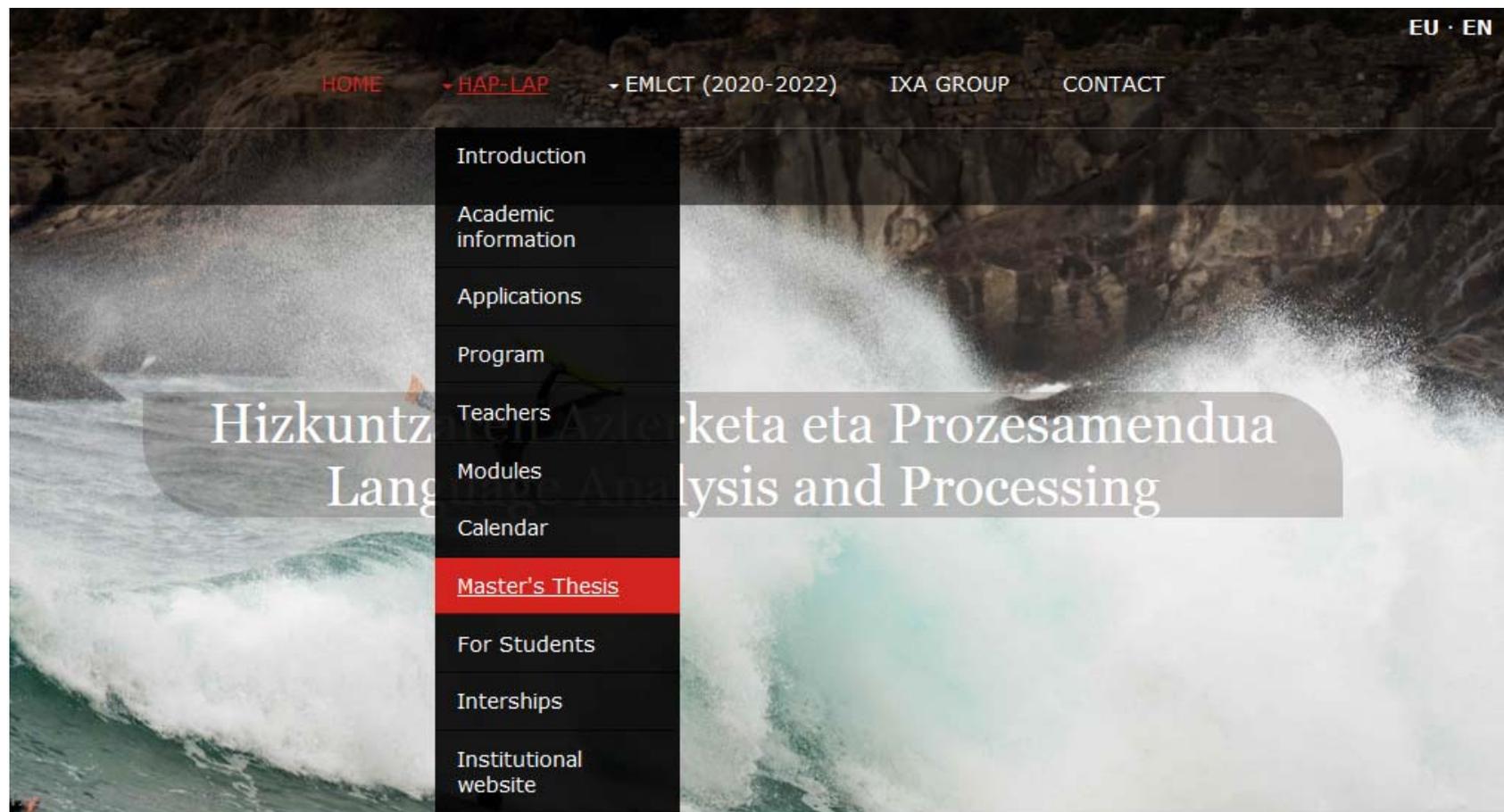


# **MASTER THESIS PROPOSALS**

**2020-2021**





<http://ixa.si.ehu.es/master/>

Advanced applications, based on the use of Language Analysis and Processing techniques, such as machine translation, automatic speech recognition and synthesis, dialogue systems, question answering, information extraction and web search systems are fast becoming an integrated part of our digital devices and daily lives. They are a key component in artificial intelligence-based solutions that provide people with natural ways to communicate with machines (e.g. Siri or Alexa), other people (e.g. machine translation in Skype), information repositories and much more.

## Master-tesiak / Master's Thesis

Master-tesiaren aurkezpena 20 minutu ingurukoa izango da, eta 20 minutu gehiago epaimahaikoien galderetarako.

The Master's Thesis defence will take about 20 minutes plus up to 20 minutes for the tribunal's questions.

### 2019-2020

#### 1. deialdia / 1<sup>st</sup> call:

Txostena entregatzea Submission date	Aurkezpen publikoa Public defence date
<b>1. aukera / 1<sup>st</sup> option</b>	
Otsailaren 10ean February 10	Otsailaren 24an February 24
<b>2. aukera / 2<sup>nd</sup> option</b>	
Ekainaren 5ean June 5	Ekainaren 19an June 19

#### 2. deialdia / 2<sup>nd</sup> call:

Txostena entregatzea Submission date	Aurkezpen publikoa Public defence date
Irailaren 7an September 7	Irailaren 21an September 21

### Azken urteetako lanak / Theses completed in previous years

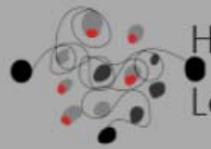
 Azken urteetako master-tesiak / Master's thesis

**Master-tesi proposamenak / Master's thesis proposals (2020-2021)**

 Master's Thesis proposals (2020-2021)

 Presentation ppt of MASTER THESIS PROPOSALS (2019-2020)





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## Master's Thesis

- Master's Thesis guidelines
- Master's Thesis regulations
- Master's Thesis finalized

Title	Tutor	File	Assigned
[eu en] Multilingual modeling of a linguistic/multimodal phenomenon in wordnets.	ltziar@gonzalezd@ehu.eus		
[en] Embeddings for Word Sense Disambiguation	german.rigau@ehu.eus		
[en, eu] Discourse Based Automatic Summarization -- Diskurtso-egituran oinarrituriko laburpen automatikoa	mikel.iruskiet@ehu.eus		
[en] Multilingual and Multi-Domain Opinion Mining and Sentiment Analysis	rodrigo.agerri@ehu.eus		
[eu] Sare neuronaletan oinarritutako dialogo-sistemak	e.agirre@ehu.eus , a.soroa@ehu.eus		
[en] WordNets from scratch	german.rigau@ehu.eus		
[en, eu] Methods and applications in discourse parsing	mikel.iruskiet@ehu.eus		
[en, eu] Unsupervised multilingual embeddings for deep learning	e.agirre@ehu.eus		
[eu] Gazteak eta euskara sare sozialetan: zer nori nor?	rodrigo.agerri@ehu.eus		



**SHERPA**



**sherpa.ai**



COMPANY

# ABOUT SHERPA.AI

*Sherpa.ai is a leading Artificial Intelligence services company in Europe and a global leader in Data Privacy AI services (Federated Learning & Differential Privacy)*

## LEADERSHIP



**Xabi Uribe-Etxebarria**

· Founder & CEO of Sherpa



**Tom Gruber**

· Co-founder and former CTO of Siri  
· Former head of Siri Advanced Development Group at Apple



**Rajeev Singh-Molares**

· Founding Partner of Alma Mundi Ventures  
· Former President of Alcatel-Lucent Asia-Pacific



**Doug Solomon**

· Former Chief Strategy Officer at Apple  
· Former CTO of IDEO



**Joanna Hoffman**

· Former VP of Marketing of Apple Macintosh, NeXT and General Magic



**Alex Cruz**

· Chairman & CEO of British Airways  
· Advisor & Shareholder



**Marcelo Gigliani**

· Managing Partner at Apax Digital



**Chris Shipley**

· Technology analyst and strategist  
· Former DEMO conference producer

# AWARDS AND RECOGNITION: 2020

- CB insights just released the list of the 100 most promising AI Startups for 2020, and Sherpa.ai is the only Spanish company listed, and one of just five European companies featured.
- Also in 2020, Datamation magazine named Sherpa.ai one of the 10 leading Artificial Intelligence companies, along with Google, IBM, Amazon, Microsoft, etc.
- Sherpa.ai was considered one of the 100 most innovative companies in Artificial Intelligence by various different rankings, like Fortune AI 100, CB Insights, and Analytics Insights, in 2019, and received the Best Intelligent Assistant award at the AI Breakthrough Awards, where Lenovo and IBM also received awards.



TOP AI 100 CB  
INSIGHTS



Source: Datamation

“ One of the leading Artificial Intelligence companies globally.

**FORTUNE**

# Sherpa AI Team



**Xabi Uribe-Etxebarria**  
CEO & FOUNDER OF SHERPA.AI



**Miguen Angel Vezanzones**  
AI DIRECTOR OF SHERPA.AI

**+ - 40 TEAM MEMBERS**

▶ 80% STEM GRADUATES

▶ 40% PHD



**Celestino García**  
VICE PRESIDENT OF BUSINESS  
DEVELOPMENT OF SHERPA.AI



**Joanna Hoffman**  
FORMER MARKETING EXECUTIVE AT  
APPLE, NEXT AND GENERAL MAGIC



**Doug Solomon**  
SENIOR ADVISOR IN BUSINESS  
DEVELOPMENT & PRODUCT DESIGN AT  
SHERPA.AI



**Tom Gruber**  
AI SENIOR ADVISOR AT SHERPA.AI



**Jose Antonio Lozano**  
ALGORITHMS & MODELS SENIOR ASSOCIATE  
RESEARCHER AT SHERPA.AI

- Next Place Prediction
- Multi-Arm Bandits for Systems of Recommendation and Notification Systems
- Dynamic Latent Topics

**+ 1 RESEARCHER**



**Eneko Agirre**  
NLP - SENIOR ASSOCIATE RESEARCHER AT  
SHERPA.AI

- Stance Detection
- Hyperpartisanism
- Text Summarization

**+ 2 RESEARCHERS**



**Francisco Herrera**  
DL & ML SENIOR ASSOCIATE RESEARCHER  
AT SHERPA.AI

- Federated Learning
- Differential Privacy
- Email Intent Classification

**+ 6 RESEARCHERS**

*\* All of the Intellectual Property generated by our team is owned by Sherpa.ai, including that which comes from university collaboration.*

# Aula Sherpa



# sherpa.ai

## Colaboración Universidad – Empresa

Espacio físico en la Fac. Informática San Sebastián

### Objetivos:

1. Prácticas de Empresa
2. Proyectos Fin de Grado en Empresa
3. Becas de Master y Tesis de Master en Empresa
4. Doctorados Industriales
5. Proyectos de Investigación en Empresa
6. Ofertas de Empleo
7. Participación de la Empresa en la Formación del alumnado de Grado y Posgrado
8. Participación de la Empresa en Eventos en la Universidad
9. Promoción de Actividades para el alumnado de Grado y Posgrado en la Empresa

# TECHNOLOGY

# SHERPA'S BUSINESS TO BUSINESS



## Conversational AI



Sherpa.ai Conversational AI is a service for creating speech and text dialogue interfaces. Start asking questions and quickly get answers from a wide range of domains, such as sports, stock market, restaurants, and events.

[Learn more](#)

## Recommendation and Predictive AI



Sherpa.ai provides general purpose solutions for anticipating user preferences and tailoring recommendations. With Sherpa.ai, you can include personalized, ad hoc recommendations made by AI models in your products and services.

[Learn more](#)

## Privacy AI



The Sherpa.ai Federated Learning and Differential Privacy Framework has been developed to facilitate open research in the field, with the objective of building models that learn from decentralized data, preserving data privacy. It is an open-source framework and supports 100 percent of the AI algorithms used in industry.

[Learn more](#)

# HAP/LAP PROJECTS

# Sherpa Projects – Master HAPLAP

## Artificial Journalism

- News Content Analysis
- Personalized Recommendation
- Natural Language Generation

# Sherpa Projects – Master HAPLAP

Data Privacy AI:

Federated Learning & Differential Privacy for NLP

- Federated Language Models
- Federated Use Cases

# Sherpa Projects – Master HAPLAP

## Explainable AI & Ethics

- Interpretable Language Models
- Bias in Language Models

## Sherpa Projects – Master HAPLAP

- Place: Aula Sherpa
- Mentoring:
  - Prof. Eneko Agirre (IXA, EHU/UPV)
  - Dr. Miguel A. Veganzones (Sherpa.ai)
- Remuneration: 2600 €
- Duration: 3 – 6 months (to be agreed)

# Sherpa Projects – Master HAPLAP

- Contact:
  - Dr. Miguel A. Veganzones (Sherpa.ai)  
ma.veganzones@sherpa.ai
  - Prof. Eneko Agirre (IXA, EHU/UPV)  
r.agirre@ehu.es
  - Prof. Ruben Urizar (Master HAPLAP)  
ruben.urizar@ehu.eus

**VICOMTECH**

# Deep Learning Question Answering systems exploration

2020/12/18

Aitor García Pablos [agarciap@vicomtech.org](mailto:agarciap@vicomtech.org)

# Description

- Deep Learning has boosted the capabilities and performance of **Question Answering Systems**
  - **Transformers** based architectures have become a revolution
- Almost each month a new model or system is proposed
  - beating the previous state-of-the-art in some way:
    - more robust, more efficient, more flexible, more capable...
- Different Question Answering Systems:
  - Extractive: given a context and a question select a text span from the context as the answer
  - Extractive (but disjoint): the same but able to extract more than one text span
  - Abstractive/Generative: generate the answer using Natural Language Generation
  - Open Domain: Work on a large amounts of data (combining IE + QA techniques)
  - Knowledge-based: work on [semi-]structured content like knowledge-graphs or databases
  - Etc.

# Different answering capabilities

- Different types of answering capabilities:
  - Single text span (from context)
  - Multiple text spans (from context)
  - Generate brand new answers (NLG)
  - Yes/no answers
  - Emit no answer when the information is not present in the context
  - Take into account previous questions/answers (conversation context)
  - Make some simple reasoning
  - Basic arithmetic operations (e.g. calculate time difference from two dates)
  - Etc.

# Existing datasets (from training/evaluation)

- There exist a (growing) ecosystem of datasets:
  - Usually in English (but not only)
  - Oriented towards different types of question/answer systems
- Examples:
  - **SQUAD2.0**: <https://rajpurkar.github.io/SQuAD-explorer/>
  - **QUAC**: <https://quac.ai/>
  - ... (many more, researching about them is part of this proposal)

# Goals of this proposal

- The overall objective is to get familiar with how the modern, neural-based, Question-Answering models work:
  - Explore the current **State-of-the-Art**
  - Learn to **implement/train/evaluate** a Deep Learning based **Question-Answering model/s**
    - There are a lot of open-source repositories and tools
  - **Learn how to use** the trained models to showcase them
    - for example, making a Q/A demonstrator
  - Document all this work

# Tasks and plan

1. Make and exploratory analysis of the State-of-the-Art (become familiar with the field)
  - Elaborate a report to guide the rest of the steps
2. Find or generate a labelled Question-Answering dataset for evaluation purposes
  - In Spanish and/or Basque, and general or specific domain (to be decided)
3. Pick and implement a question-answering system based on State-of-the-Art architectures and evaluate it
  - The objective is to train and integrate one or more Question-Answering models into a working system that can be evaluated, compared, and showcased

# Deep Learning Question Answering systems exploration

2020/12/18

Aitor García Pablos [agarciap@vicomtech.org](mailto:agarciap@vicomtech.org)

**IZASKUN ETXEBERRIA**



## Euskal dialektoen arteko distantziaren neurketa corpusetan oinarrituta

- Ainara Estarrona, Ander Soraluze, Izaskun Etxeberria
- J. R. Pichel ikerlariaren tesia: “*Corpus based metrics for measuring distances between languages*” (2020)
- Neurketa horiek ekarri euskalkietara
  - Euskara batuarekiko distantzia
  - Euskalkien arteko distantzia sinkronikoki: denboran zehar, une jakin batean

...



**OIER Iz. de LACALLE**

**ON LINE**



**NORA ARANBERRI**

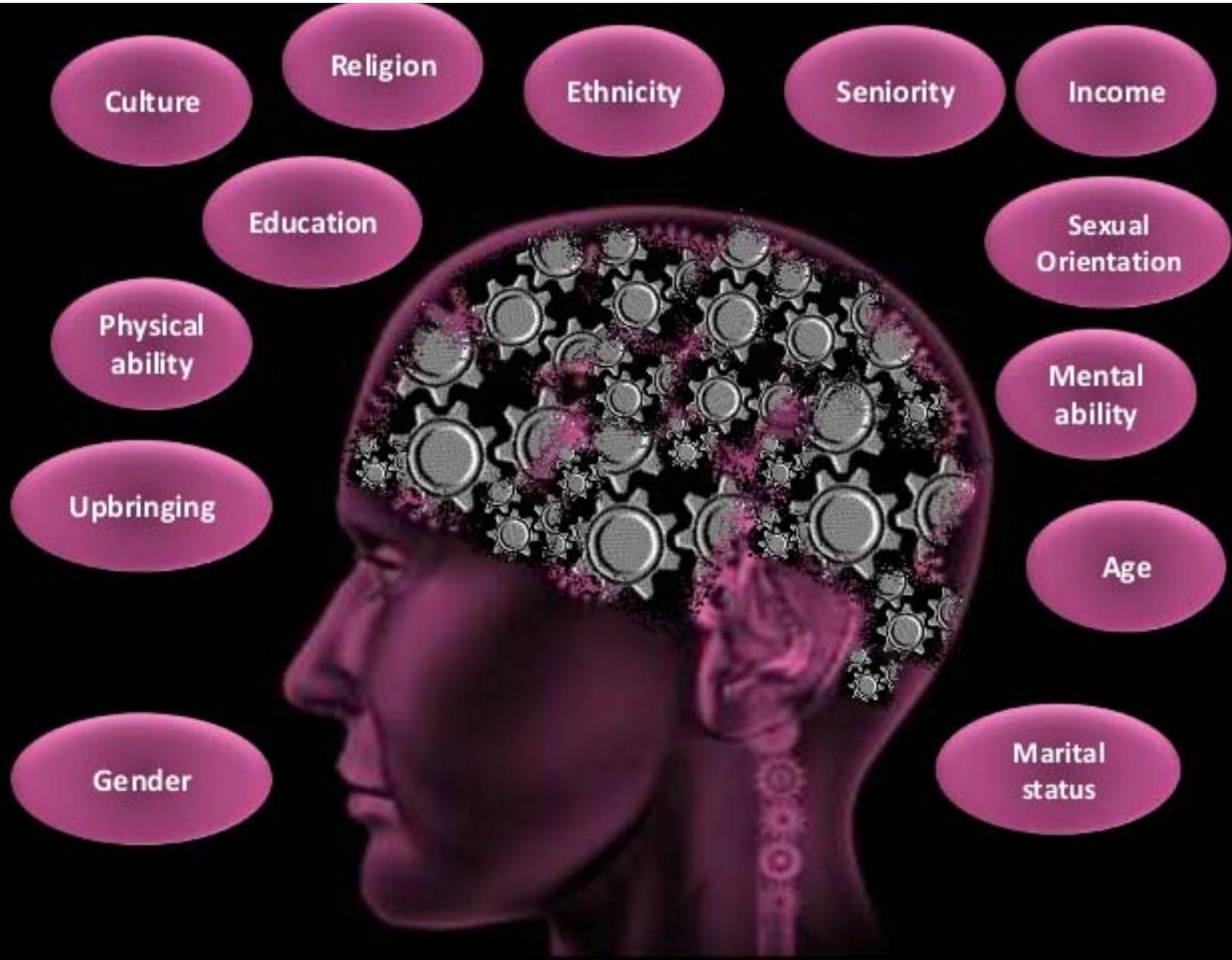


# A FEW MASTER THESIS PROPOSALS 2020-2021

Nora Aranberri & Co



# Bias



- Implementation of an educational tool: a multilingual search system and characterization of biased texts



Chatbot for oracy skills



- Framework for a chatbot for oracy skills development in Secondary Education



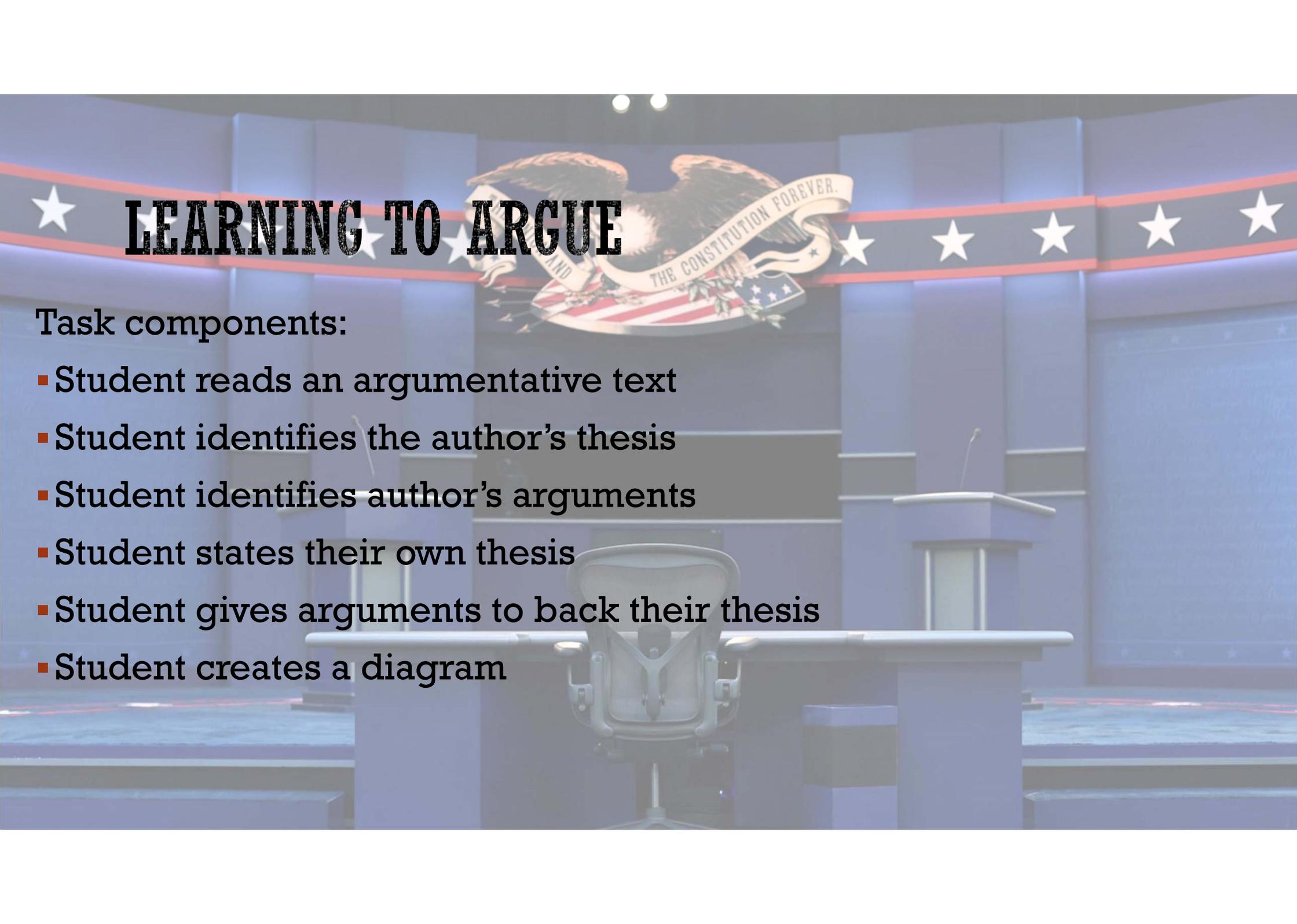
Cecilia  
Domingo



Arantxa Otegi







# LEARNING TO ARGUE

Task components:

- Student reads an argumentative text
- Student identifies the author's thesis
- Student identifies author's arguments
- Student states their own thesis
- Student gives arguments to back their thesis
- Student creates a diagram

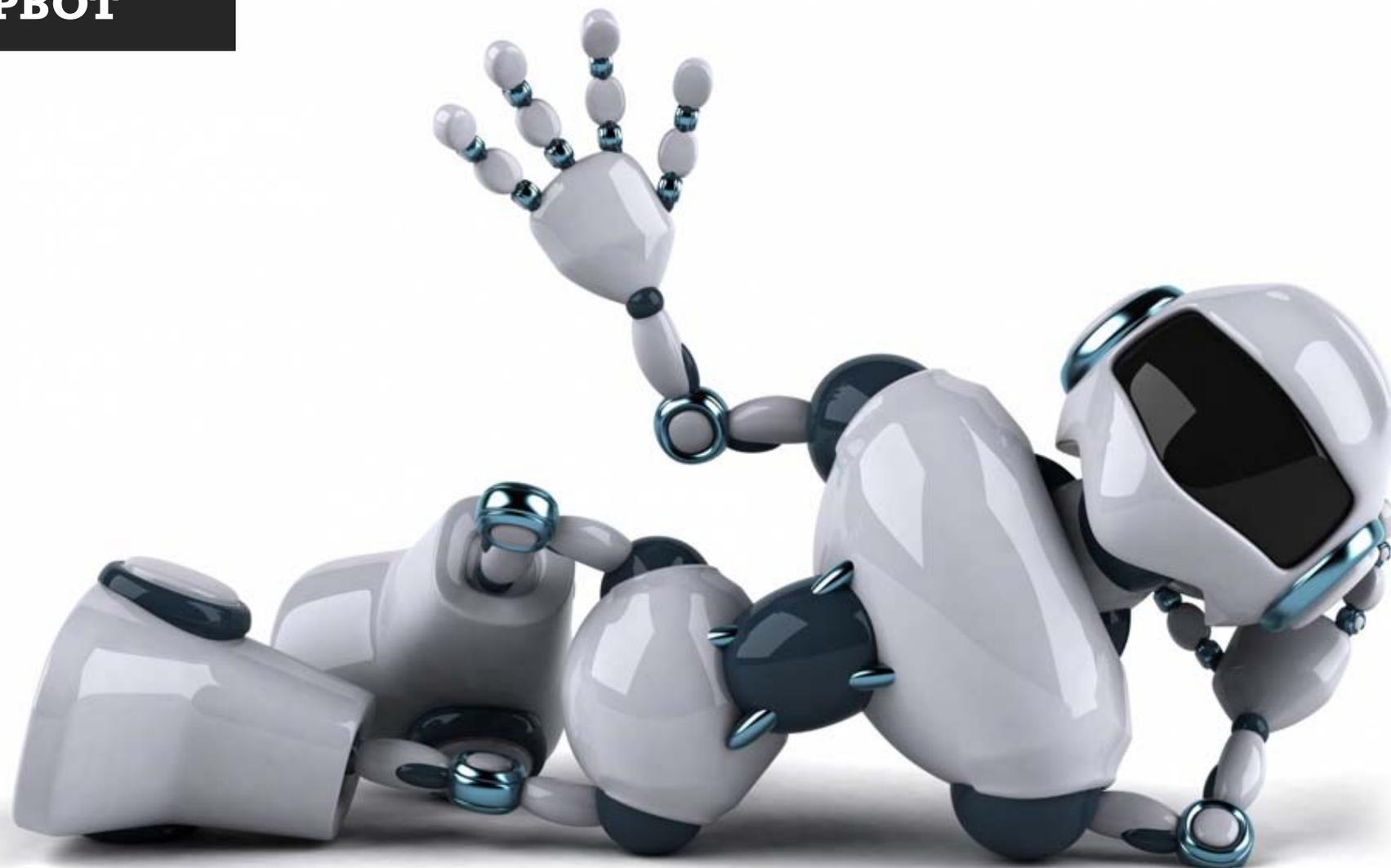
User input	System response
No input for a while	Asking if they need more time or if they want instructions or hints
Greeting	Greeting
State author's thesis	<p>Feedback:</p> <ul style="list-style-type: none"> <li>• Positive if correct → ask to describe arguments</li> <li>• Hint if incorrect</li> <li>• Solution if twice incorrect → ask to describe arguments</li> </ul>
Describe author's arguments	<ul style="list-style-type: none"> <li>• If thesis not previously stated, ask to state thesis</li> <li>• If thesis previously stated, feedback: <ul style="list-style-type: none"> <li>○ Positive if correct → ask to state own thesis</li> <li>○ Hint if incorrect</li> <li>○ Solution if twice incorrect → ask to state own thesis</li> </ul> </li> </ul>
Stating own thesis	<ul style="list-style-type: none"> <li>• If author thesis not previously stated or arguments not described, ask to state thesis and describe arguments</li> <li>• If author thesis previously stated and arguments described, feedback: <ul style="list-style-type: none"> <li>○ If relevant and supported → congratulate and encourage to proceed with non-dialogue part of task</li> <li>○ If relevant but unsupported → ask to support own thesis</li> <li>○ If irrelevant → give hint to stick to current issue</li> <li>○ If repeatedly irrelevant → give resources on the topic and encourage to take time, possibly ending task or returning after a while</li> </ul> </li> </ul>
Supporting own thesis	<ul style="list-style-type: none"> <li>• If author thesis not previously stated or arguments not described or own thesis not stated, ask to state author thesis and describe arguments or state own thesis</li> <li>• If author thesis previously stated and arguments described and own thesis stated, feedback: <ul style="list-style-type: none"> <li>○ If sufficient arguments given → congratulate and encourage to proceed with non-dialogue parts of task</li> <li>○ If insufficient arguments given → encourage to give additional arguments</li> <li>○ If repeatedly missing enough arguments → give resources on the topic and encourage to take time, possibly ending task or returning after a while</li> </ul> </li> </ul>
Asking for clarification	<p>Depending on current task stage:</p> <ul style="list-style-type: none"> <li>• Explaining the overall task</li> <li>• Giving hints to find author's thesis</li> <li>• Giving hints to find author's arguments</li> </ul>







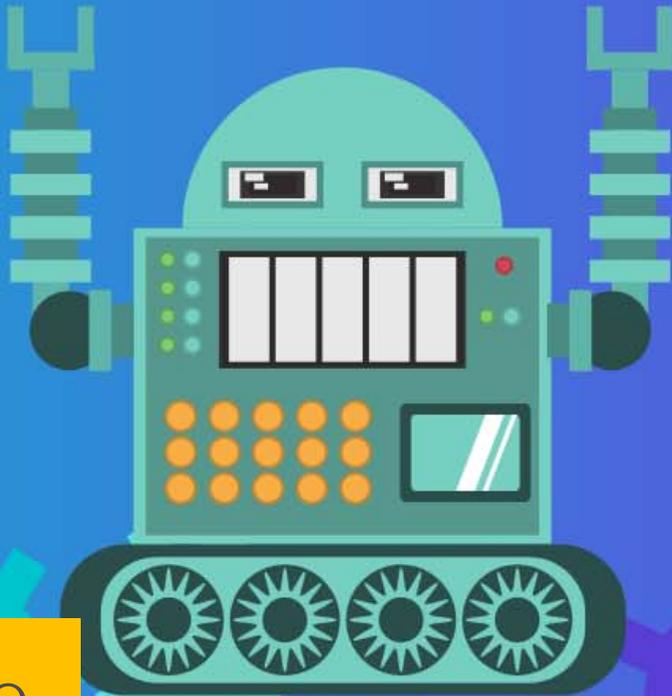
LAPBOT



HELLO

안녕하세요

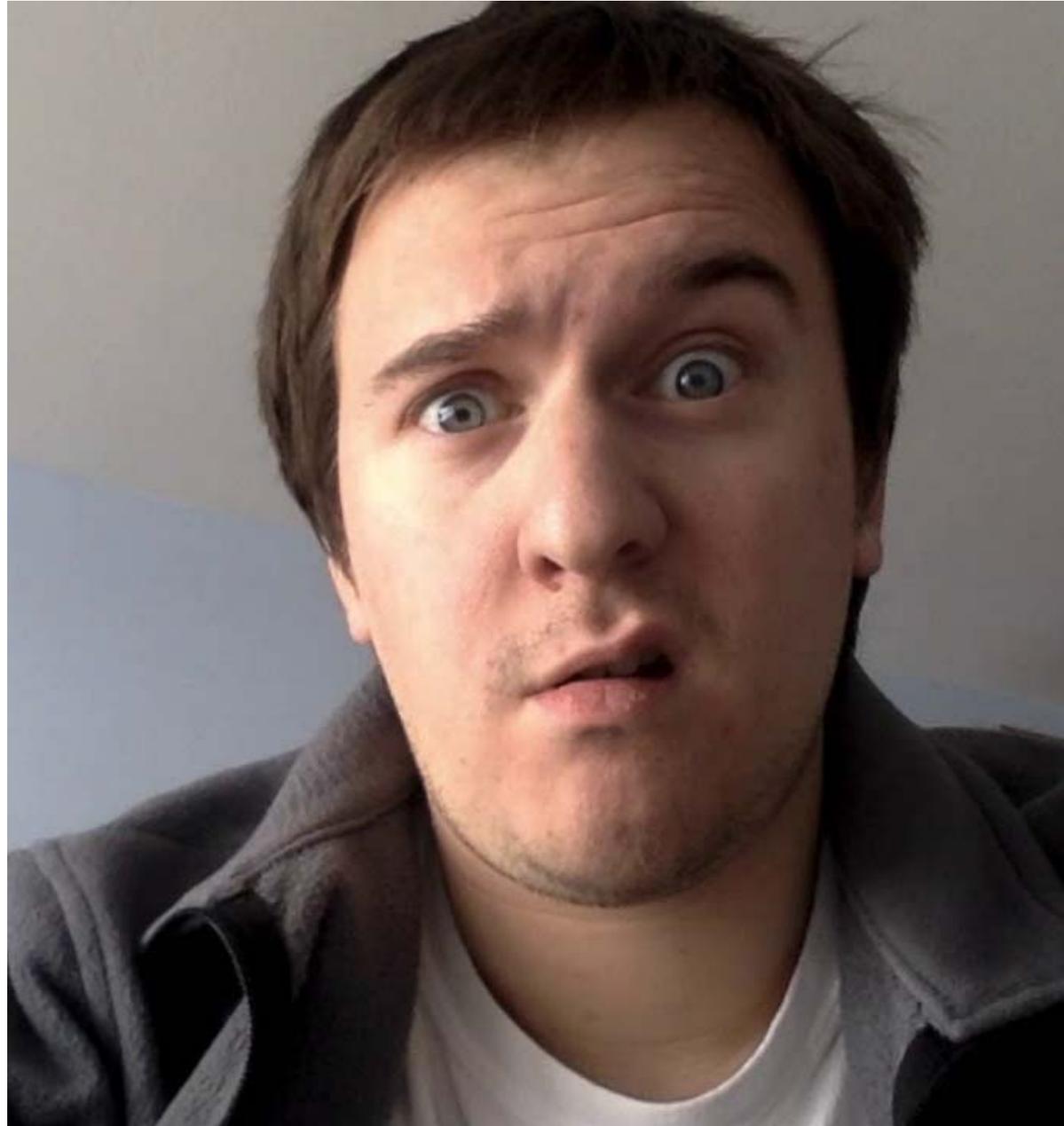
MT: user perspective

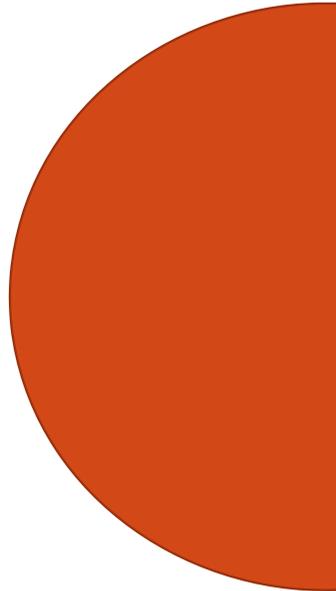


- **Influence of training corpora in output quality of neural machine translation**



- Influence of machine translation in the development of a language





**How can we  
help users  
edit MT texts  
better?**

**How much do  
users  
actually  
understand  
MT texts?**



**NORA.ARANBERRI @ EHU.EUS**  
**ITZIAR.ALDABE @ EHU.EUS**  
**ARANTZA.OTEGI @ EHU.EUS**



**BEGOÑA ALTUNA**



# Analysis and Generation of natural language timelines

Begoña Altuna, Maxux Aranzabe, German Rigau

# What's a timeline?

1990 [\[ edit \]](#)

---

- 28–30 May: Iraqi president [Saddam Hussein](#) says that oil overproduction by Kuwait and United Arab Emirates was an "economic warfare" against Iraq.
- 28 May: President of Iraq [Saddam Hussein](#) and Emir of Kuwait [Jaber Al-Ahmad Al-Sabah](#) meet at the [Arab League Summit](#) in [Baghdad](#).
- 15 July: Iraq accuses Kuwait of stealing oil from the [Rumaila oil field](#), an Iraqi oil field near the [Iraqi-Kuwaiti border](#), and threatens military action in response.
- 22 July: Iraq begins deploying troops to the Iraqi-Kuwaiti border, creating a massive military buildup.
- 24 July: President of Egypt [Hosni Mubarak](#) travels to Baghdad to meet with Saddam Hussein and discuss the dispute between Kuwait and Iraq.
- 2 August: About 100,000 Iraqi troops [invade Kuwait](#).
- 2 August: [Battle of Dasman Palace](#). Emir [Jaber Al-Ahmad Al-Sabah](#) flees to [Saudi Arabia](#) with his family and ministers.
- 2 August: [United Nations Security Council \(UNSC\) Resolution 660](#) condemns the Iraqi invasion of Kuwait. [Yemen](#) is the only Arab country that does not take part in the vote in the UNSC.
- 3 August: President of the United States [George H.W. Bush](#) announces that U.S. Navy ships have been deployed to the [Persian Gulf](#).
- 4 August: [Alaa Hussein Ali](#) is appointed Prime Minister of the [Provisional Government of Free Kuwait](#) and [Ali Hassan al-Majid](#) is appointed Governor of the [Kuwait Governorate](#), which is declared the 19th Governorate of Iraq.
- 5 August: Emir [Jaber Al-Ahmad Al-Sabah](#) forms a government in exile in [Ta'if, Saudi Arabia](#).
- 6 August: [United Nations Security Council Resolution 661](#) implements international sanctions on Iraq. Yemen abstains from the vote in the UNSC.
- 6 August: United States Secretary of Defense [Dick Cheney](#) meets King of Saudi Arabia [Fahd](#) in [Riyadh](#) to discuss sending U.S. Armed Forces troops to defend Saudi Arabia in case of an Iraqi invasion.
- 7 August: 15,000 U.S. troops, 32 [destroyers](#) and 100 [helicopters](#) and [fighter planes](#) arrive in Saudi Arabia.
- 8 August: [Operation Desert Shield](#) is launched by the United States.

# Where do they come from?

## Gulf War

From Wikipedia, the free encyclopedia

*This article is about the war in 1990–1991. For other wars of that name, see [Gulf War \(disambiguation\)](#).*

*"Desert Storm" and "Operation Desert Storm" redirect here. For other uses, see [Desert Storm \(disambiguation\)](#).*

The **Gulf War**<sup>[b]</sup> (2 August 1990 – 28 February 1991) was a war waged by coalition forces from 35 nations led by the United States against Iraq in response to Iraq's invasion and annexation of Kuwait arising from oil pricing and production disputes. It was codenamed **Operation Desert Shield** (2 August 1990 – 17 January 1991) for operations leading to the buildup of troops and defense of Saudi Arabia and **Operation Desert Storm** (17 January 1991 – 28 February 1991) in its combat phase.

On 2 August 1990, the Iraqi Army invaded and occupied Kuwait, which was met with international condemnation and brought immediate economic sanctions against Iraq by members of the UN Security Council. UK prime minister Margaret Thatcher<sup>[29]</sup> and US president George H. W. Bush deployed forces into Saudi Arabia, and urged other countries to send their own forces to the scene. An array of nations joined the coalition, forming the largest military alliance since World War II. Most of the coalition's military forces were from the US, with Saudi Arabia, the United Kingdom and Egypt as leading contributors, in that order. Kuwait and Saudi Arabia paid around US\$32 billion of the US\$60 billion cost.<sup>[30]</sup>

The war marked the introduction of live news broadcasts from the front lines of the battle, principally by the US network CNN.<sup>[31][32][33]</sup> The war has also earned the nickname *Video Game War* after the daily broadcast of images from cameras on board U.S. bombers during Operation Desert Storm.<sup>[27][34]</sup>

The initial conflict to expel Iraqi troops from Kuwait began with an aerial and naval bombardment on 17 January 1991, continuing for five weeks. This was followed by a ground assault on 24 February. This was a decisive victory for the coalition forces, who liberated Kuwait and advanced into Iraqi territory. The coalition ceased its advance and declared a ceasefire 100 hours after the ground



Clockwise from top: F-15C flying over Kuwait; AC-130 gunship; and Operation Desert Storm.

**Date**

**Location**

# What information can be extracted from those texts?

- Temporal information
- Semantic roles
- Morphosyntactic information

# Project outline

## GOALS

- Development of a **system** that will **analyse texts and/or generate natural language sentences** from argument structures, paying special attention to **temporal information**.

## TASKS AND PLAN

- Analysing the available datasets (e.g. [https://en.wikipedia.org/wiki/List\\_of\\_timelines](https://en.wikipedia.org/wiki/List_of_timelines))
- Analysing the linguistic features of the input information and the output sentences
- Choosing the best systems (rule-based, machine learning, deep learning, ...)
- Developing and evaluating a system

# **ON LINE**

- 1. Vicomtech: Aitor García Pablos**
- 2. Alicia Pérez**



**OLATZ Pz. de VIÑASPARE**



# LANGUAGES AND GENDER BIAS

## **Correlation between natural languages and gender bias**

Olatz Arbelaitz  
Xabier Arregi  
Olatz Arregi  
Olatz Perez de Viñaspre

# LANGUAGES AND GENDER BIAS

- Analyze gender bias in different languages:
  - Compare Gender bias among languages:
    - ✓ Monolingual Contextual embeddings of different languages (BERT, BERTeUs, BETO (es))
    - ✓ Multilingual ones (mBERT, IXAmBERT)
  - Compare the effect of multilinguality in the models:
    - ✓ Monolingual vs Multilingual gender bias
  - Depending on the student interests and skills, the work can focus on:
    - ✓ A deep analysis (more linguistics)
    - ✓ Identification and elimination of the bias (more development)
    - ✓ One student for each approach would be perfect!



**RODRIGO AGERRI**

**(video)**



Rodrigo Agerri

HiTZ Centre - Ixa

University of the Basque Country UPV/EHU

<https://ragerri.github.io/>

# Multilingual Emotion Detection

"Stop it! It's disgusting!"



- Detecting and classifying emotions (anger, fear, anticipation, trust, surprise, sadness, joy, and disgust)
- Large number of applications in computational social science and social media (opinion mining, gender bias detection, fake news, etc.).
- Most previous work for English

# Fake News and Fact-checking

- The list of 21 false claims doesn't include some misleading, dubious or questionable claims Trump made about NATO and US foreign relations.
- Rumourology
- Multilingualism
- Cross-lingual (zero-shot) approaches
- Verifiability (inference)

[rodrigo.agerri@ehu.eus](mailto:rodrigo.agerri@ehu.eus)

You Retweeted



**Daniel Dale** @ddale8 · Dec 4

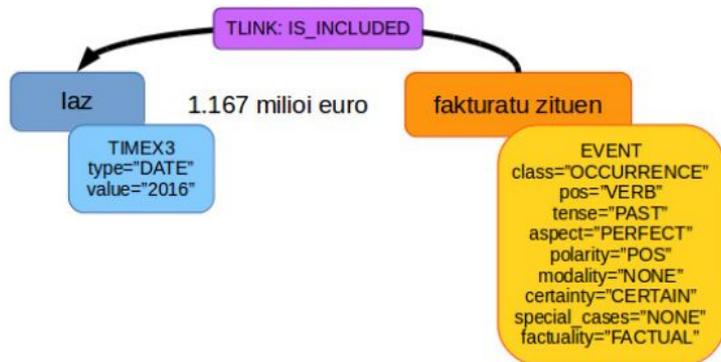
No, the Dow wasn't at 15,000 or 16,000 when Trump was elected or took office. No, South Korea didn't increase its troop payments to the US by \$500 million. No, Trump doesn't have a 95% Republican approval rating. No, the record isn't Ronald Reagan at "87."



Fact check: Trump makes at least 21 false claims at NATO meetings  
President Donald Trump held official meetings with two foreign leaders and the head of NATO at the alliance summit in London on Tuesday -- ...

[cnn.com](https://www.cnn.com)

# Multilingual Temporal Processing



Altuna et al (2017). In Proc. of SEPLN

Contact: {rodrigo.agerri, olatz.arregi}@ehu.eus

- Add TimeML schemes for languages which do not treat temporal processing
- Semi-automatic methods for the creation of a corpus annotated with the newly created TimeML scheme
- Statistical and deep learning approaches for modeling multilingual temporal expressions
- Coreferent event and nominal expressions for temporal processing

# Lemmatize without morphology

Lemma Rule	Casing Script	Edit Script	Most Frequent Examples
$\downarrow 0; d \downarrow$	all lowercase	do nothing	the→the to→to and→and
$\uparrow 0 \downarrow \downarrow 1; d \downarrow$	first upper, then lower	do nothing	Bush→Bush Iraq→Iraq Enron→Enron
$\downarrow 0; d \downarrow -$	all lowercase	remove last character	your→you an→a years→year
$\downarrow 0; abe$	all lowercase	ignore form, use be	is→be was→be 's→be
$\uparrow 0; d \downarrow$	all uppercase	do nothing	I→I US→US NASA→NASA
$\downarrow 0; d \downarrow --$	all lowercase	remove last 2 chars	been→be does→do called→call
$\downarrow 0; d \downarrow ---$	all lowercase	remove last 3 chars	going→go being→be looking→look
$\downarrow 0; d --+b \downarrow$	all lowercase	change first 2 chars to b	are→be 're→be Are→be
$\downarrow 0; d \downarrow --+v+e$	all lowercase	change last char to ve	has→have had→have Has→have
$\downarrow 0; d \downarrow ---+e$	all lowercase	change last 3 chars to e	having→have using→use making→make
$\downarrow 0; d \downarrow --+o \rightarrow$	all lowercase	change last but 1 char to o	n't→not knew→know grew→grow

Table 1: Eleven most frequent lemma rules in English EWT corpus, ordered from the most frequent one.

- Edit distance for lemmatization: how to go from “has” -> “have”
- Compare various techniques to compute edit distance (or propose new ones)
- Deep Learning for contextual edit-distance based lemmatization
- Hypothesis: not using morphology should improve the use of lemmatizers in the wild

# Cross-lingual approaches to Sequence Tagging as Question Answering

The **attack** **put** a huge **strain** on **relations** between India and Pakistan.

## put

What does something put? 3/3 a huge strain on relations between India and Pakistan

What puts something? 3/3 The attack

What did something put something on? 2/3 The attack / relations

What did something put? 2/3 a huge strain on relations between India and Pakistan

Where did something put something? 1/3 on relations

Redefined Sequence Tagging tasks (Named Entity Recognition, Semantic Role Labelling, Opinion Mining) as Question Answering to facilitate cross-lingual research on those tasks

# Metaphor Detection

---

The experts started **examining** the Soviet Union with a microscope to study perceived changes.

---

Rockford teachers are honored for saving a *drowning* student.

---

You're **drowning** in student loan debt.

---

- Characterize metaphor detection for other languages.
- Deep learning approaches (contextual word embeddings and language models)

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**ITZIAR GONZÁLEZ**

**(Video)**



# NLP applications

- **Automatic Text Simplification**
- **Linguistic Profiling and Readability Assessment**

# Evaluating NLG: Automatic Text Simplification

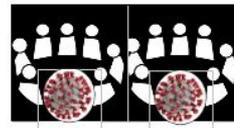
- Proposer(s): Itziar Gonzalez-Dios and Aitor Soroa
- Main topic: Automatic Text Simplification -> make a text simpler for a certain audience
- Subjective task -> difficult to evaluate! Explain the meaning of the automatic metrics and study the viability of new metrics (e.g. BertScore, iSTS...)

L'objectif du couvre-feu est de limiter les rassemblements durant lesquels les mesures barrières sont moins bien appliquées et où le virus circule rapidement tout en limitant l'impact sur l'économie déjà mise à rude épreuve par l'épidémie.

Avec le couvre-feu,  
il y aura moins de contacts entre les personnes.



Quand il y a trop de monde,  
les personnes pensent moins aux gestes barrières  
et le virus circule plus vite.



# Deep understanding of CEFR guidelines for multilingual readability assessment

- Proposer(s): Itziar Gonzalez-Dios and Kepa Bengoetxea
- Main topic: text complexity analysis, text stylometrics and readability assessment
- Understand the linguistic complexity required for each CERF level in a multilingual environment and propose linguistic measures for certain levels to be included in the readability assessment systems ErreXail, AzterTest and MultiAzterTest

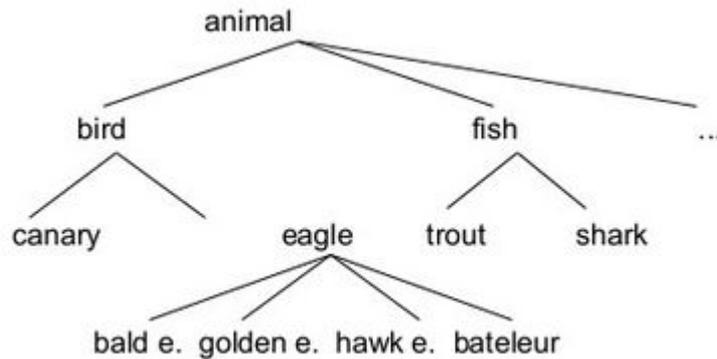


# Related to Languages Resources



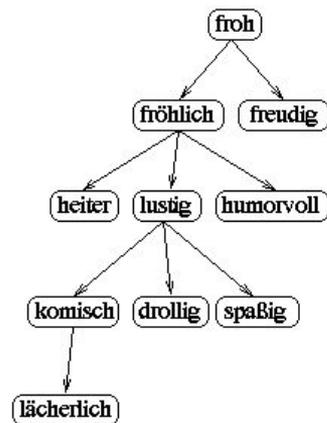
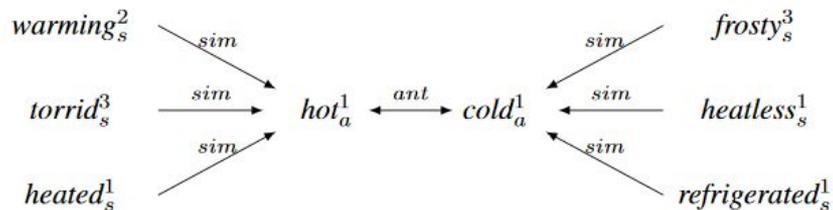
# Towards the Enrichment of Basque WordNet with a Sentiment Lexicon

- Proposer(s): Itziar Gonzalez-Dios and Jon Alkorta
- Main topic: wordnets and sentiment lexicons
- Propose a methodology to enrich the Basque WordNet using the sentiment lexicon SentiTegi
- **Basque speaker needed!**



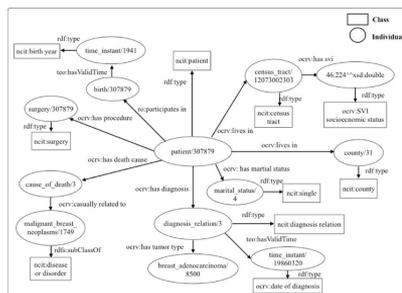
# Adjective modelling in WordNet with latest innovations

- Proposer(s): Itziar Gonzalez-Dios and Jon Alkorta
- Main topic: Adjective modelling in wordnets
- Propose a model to unify cluster-based organisation (WordNet) and hierarchical organisation (GermaNet)



# Multilingual modeling of a linguistic or multimodal phenomenon in LRs

- Proposer(s): Izaskun Aldezabal, Itziar Gonzalez-Dios and German Rigau
- Topics: Emotions, Registers, Dialects, Multimodal information, , Humor, Hate speech, (dis)agreement of different resources
- Propose an unified model or a framework to analyse and characterise the phenomenon in different languages, and, in the case of the multi-resourced proposals, propose a mapping if possible or not



## OBTENCIÓN DE EJEMPLOS

Recuperar:	Concordancias: <input type="text"/>	Normal: <input type="text"/>	Clasificación: <input type="text"/>
Agrupación:	<input type="text"/>	Merzas:	<input type="text"/>

Cómo citar el CORPUS

Pantalla: 2 de 6. Siguiendo 1 2 3 4 5 6 Ver párrafos

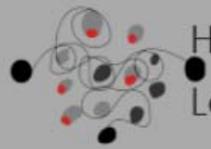
#P	CONCORDANCIA	AÑO
26	amena que alguien pueda considerar inadecuada, es una opinión. Vays, a mí hablar de disparate, no me pa	2004
27	que la burbuja estalle". Hernández Perri mantiene una opinión muy distinta a la del gobernador del Banc	2003
28	Y esa debe articularse en la cotización salvaje de una opinión pública política. Si hasta ahora este t	2003
29	icas para navegar entre varias aguas: su partido, una opinión antiliberalista, y las imposiciones de la r	2002
30	o, sino para facilitar la tarea de desintoxicar a una opinión pública bombardeada durante 18 años por m	1998
31	o, por Hiarra de Yago y de meca indios. Existe una opinión algo extendida, y que no comparto, según	1996
32	interlocutor social -el empresario- manifiesta una opinión unitaria, aunque expresada con cautela po	1996
33	está constitucionalmente capacitado para expresar una opinión aunque le avale el ministro de Justicia.	1996
34	rematitir en este viaje una imagen seductora ante una opinión pública que en un 60% cree que China es u	1997
35	o, los intentos de este periódico de obtener ayer una opinión de Economía sobre esa moneda a la ley d	1997
36	congreso, Joaquín Molina, advirtió que no emitiría una opinión colectiva hasta analizar con detenimiento	1997
37	e asesor directo de Anar: lo rectificó incluyendo una opinión favorable al texto que fue definitivamente	1997
38	ar la investidura. Bondevik cuenta a su favor con una opinión favorable: se le reconoce gran capacidad	1997
39	aparato de imagen de Fraga, matizó que expresaba una opinión personal, sus apreciaciones coinciden en	1997
40	lmas reales y, por último, pautas que configuran una opinión pública activa y, a la vez, receptiva, gr	1997
41	didid hasta finales de octubre. Se trata de extraer una opinión objetiva sobre la capacidad de estos país	1997
42	isálico Tony Blair, pero todavía no han expresado una opinión formal. Hay, dentro de la CIO, un potenc	1997
43	os del grupo vasco (PSE) Iñaki Anasagasti ofreció una opinión muy diferente. A su juicio, la Audiencia	1997
44	ilista en una visión comunitaria ha ilusionado a una opinión cansada de individualismo. La economía he	1997
45	a lo que significan unas elecciones, a manifestar una opinión. Lógico después de una tan larga dictadur	1977
46	nos también que los obispos españoles no lograron una opinión unánime y decidieron enviar a Roma las su	1988
47	bre la CROM, la proporción de españoles que emite una opinión es claramente superior a la de quienes di	1988
48	isico para Gorbachov desde hace 20 años, y según una opinión generalizada, nunca habían sido tan malis	1988
49	ismo basado en la fidelidad del cargo. También se una opinión generalizada que esta cadena de poder est	1987
50	nes en que se ha desarrollado el juicio, formular una opinión sobre la relación entre culpa y castigo.	1987

# Contact

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## Master's Thesis

- Master's Thesis guidelines
- Master's Thesis regulations
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Title	Tutor	File	Assigned
[eu en] Multilingual modeling of a linguistic/multimodal phenomenon in wordnets.	ltziar@gonzalezd@ehu.eus		
[en] Embeddings for Word Sense Disambiguation	german.rigau@ehu.eus		
[en, eu] Discourse Based Automatic Summarization -- Diskurtso-egituran oinarrituriko laburpen automatikoa	mikel.iruskiet@ehu.eus		
[en] Multilingual and Multi-Domain Opinion Mining and Sentiment Analysis	rodrigo.agerri@ehu.eus		
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