

Maria NAVAS-LORO

NLP Postdoc Researcher

 Madrid, Spain
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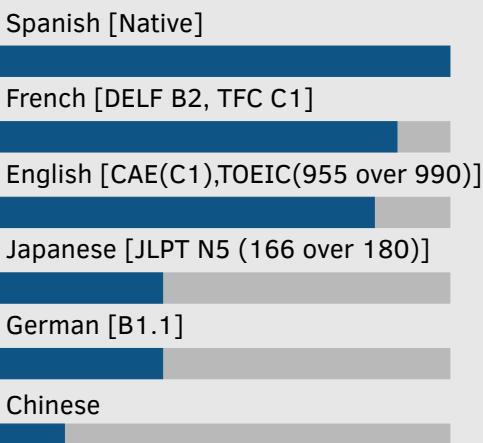
My PhD Research —



Other Interests —

LLMs Cognitive Sciences Ethics
Paraphrasing Language Learning
Sentiment Analysis Commonsense
Generative AI Machine Learning

Languages —



Summary

I have worked in several NLP projects at Universidad Politécnica de Madrid as pre and postdoctoral researcher. Prior to my PhD, I have obtained at the same University a MSc in Artificial Intelligence, Bachelor Degrees in Mathematics and Computer Science (at the Autonomous University of Madrid), and an Engineering Master Degree in Scientific Computing Methods and Applied Mathematics at the Institute Sup Galilée from the University Paris XIII (part of the Cité Sorbonne), in France.

Regarding international experience, I have completed research stays and academic exchanges at the Institut Sup Galilée at Paris XIII, the IRIT (Informatics Research Institute of Toulouse), the WU Wien (Vienna University of Economics and Business), the NII (National Institute of Informatics in Japan), the Semantic Technology Lab (Italy) and Kadir Has/Arçelik (Istanbul, Turkey). I have also completed an internship at the multinational company Safran, namely at the Snecma Villaroche division (France), and volunteered as informatics teacher in the region of Jujuy, Argentina. My language capabilities have been officially certified for English, French and Japanese, and I also have basic knowledge of German and Chinese.

I have been awarded, among others, with the José Cuena Award of the Artificial Intelligence Department of the Universidad Politécnica de Madrid and the Excellence Grant of the Region of Madrid. I have also been reviewer and Programme Committee of different events, and I have teaching experience in subjects such as Machine Learning, Python and Ethics.

Description of my Research

My research topic aims to apply information about language psychology and neuroscience to large language models in order to improve their performance, as well as studying how they can be used from the educational and the ethical point of view.

My PhD thesis targeted the identification of Temporal Expressions (such as dates) and their normalization to a standard representation via the current standard TimeML, as well as detecting relevant events in legal decisions and representing them in a semantic way that can be latter exploited by different applications.

Education

2016 - 2022 **PhD in Artificial Intelligence** [Grade: Sobresaliente]
Universidad Politécnica de Madrid, Spain
Temporal Processing, Identification and Representation of Temporal Expressions and Events in Legal Documents
Advisors: Víctor Rodríguez-Doncel | Asunción Gómez-Pérez

2015 - 2016 **MSc., Artificial Intelligence** [Grade: 9,37/10]
Universidad Politécnica de Madrid, Spain
José Cuena Award

2013 - 2014 **Engineering Master Degree, Scientific Computing Methods & Applied Mathematics** [Grade: 9,02/10]
Institut Sup Galilée - Université Paris 13, France

2009 - 2015 **Double Bachelor Degree, Mathematics and Computer Science** [Grade: 7,84/10]
Universidad Autónoma de Madrid, Spain
Academic Excellence Grant from the Region of Madrid

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María Navas-Loro



maría-navas-loro-45809890



E-9297-2017



0000-0003-1011-5023



MaraNavasLoro



mnavasloro

Skills

General:

Pack office, TeX, Windows, Linux.

NLP expertise:

LLAMA2, LangChain, GATE, OpenNLP, Stanford CoreNLP, Freeling, IxaPipes...

Coding Languages:

Python, Java, C, Prolog, C++, Matlab, R, R-Studio, NASM, LISP, Flex, Bison

Deep Learning:

Pytorch, Tensorflow

Data Management:

PostgreSQL, SQL, RDF, SPARQL

Web skills:

CSS, PHP, html, xhtml, xml, jpa, jsp, javascript, Ajax, JQuery.

Others:

Eclipse and NetBeans, Studio 12, Photoshop, GIMP, MovieMaker, AfterEffects.

PC & Reviewer

PC of COLIEE2020, 2021, 2022.

Local organiser of JURIX2019.

PC of the 6th Linked Data in Architecture and Construction Workshop (LDAC2018)

PC of the 1st Workshop on Language Resources and Technologies for the Legal Knowledge Graph at LREC 2018 (LKG2018).

Reviewer of the 1st Workshop on Technologies for Regulatory Compliance at JURIX 2017 (Terecom2017).

Subreviewer at the Resources Track of the International Semantic Web Conference 2017 (ISWC2017) - Awarded as Best reviewer of the Resources Track

Subreviewer at ACL2017

Professional Experience

Jan 2022 -
Dec 2023

Postdoctoral Researcher

Universidad Politécnica de Madrid

NLP Researcher at Ontology Engineering Group

Sep 2016 -
Jan 2022

Predoctoral Researcher

Universidad Politécnica de Madrid

NLP Researcher at Ontology Engineering Group

Feb 2021 -
Dec 2023

Professor

EAE Business School

Master in Big Data & Analytics and Master in Management

- Data Science & Advanced Analytics
- Data Science Programming: R y Python
- Machine Learning in Finance

May 2014 -
Nov 2014

Master Intern (with Jérôme Lacaille)

Sneecma (Safran Group)

“Modelling of the impact of engine dispersion in their performance”

Data Mining · Data Management · Aeronautics

- Database design and result interpretation.

- Application of Machine Learning and Mathematical Models for the analysis and prediction of Engine Health Monitoring.

July 2013 -
Aug 2013

Educational Volunteer

SubiendoAlSur

Teacher of Computer Science at Jujuy, Argentina

Jan 2008 -
Jun 2008

Administrative Worker

Gestecauto

Data processing and storage, finding of irregularities

2006 -
2009

Private Tutor

Teaching Language, Literature, English, Mathematics and History.

Research

Jan 2022 -
Dec 2023

EU CEF project NextProcurement

Treatment, enrichment and processing of Public Procurement Data
Legal NLP · Public Procurement · Data Management

- Treatment of data processing pipelines and ingestion in public sector data lakes.
- Data enrichment in public sector data lake.
- Natural language processing associated with documents from public sector data lakes.

Aug 2022 -
Dec 2023

MSCA-RISE-2020 Action AI4LABOUR

Reshaping labour force participation with Artificial Intelligence.
Knowledge Graph · NLP · Data Crawling

- Educational Data Scrapping and Harmonization for Knowledge Graph building.
- NLP for Semantic Similarity and Skill Extraction.
- Skill Automation prediction algorithm development.

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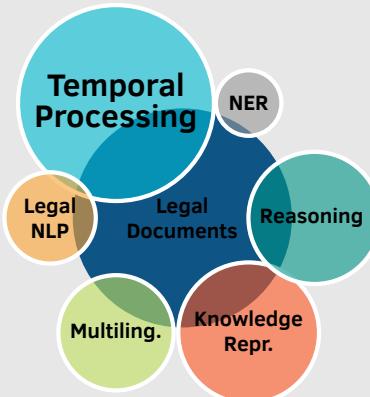


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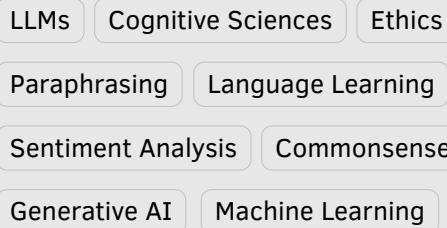


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My PhD Research —



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Languages —

Spanish [Native]

French [DELF B2, TFC C1]

English [CAE(C1), TOEIC(955 over 990)]

Japanese [JLPT N5 (166 over 180)]

German [B1.1]

Chinese

Feb 2023 - Dec 2023 **Red.es project SmartBiC (Smart Bilingual Corpora)**
Generation of high-performance parallel corpora for neural machine translation (NMT).
Corpora Building · Multilingualism · Data Crawling

- Improvement of existing corpora crawlers for parallel corpora building.
- Creation of multilingual multiclass domain classification models.
- Collaboration with industrial partners Prompsit and Linguaserve.

Sep 2022 - Sep 2023 **European Public Procurement Data Space**
Building the European Public Procurement Knowledge Graph
Public Procurement · ePO Ontology · Data Processing

- Mapping and Publication of Spanish Public Procurement Data into European Procurement Ontology.
- Calculation of European Indicators of Public Procurement.

Dec 2017 - Mar 2021 **Lynx EU H2020 Project**
Building the Legal Knowledge Graph for Smart Compliance Services in Multilingual Europe
Legal NLP · Compliance · Temporal Expressions

- Creation of a Temporal Annotation Service for the legal domain.
- Representation of legal relevant temporal information.

Sep 2016 - Nov 2017 **LPS BIGGER CIEN Project**
Design of a semiautomatic tool for creating Big Data solutions.
NLP · Sentiment Analysis · Twitter

- Development of a Sentiment Analysis service dealing with emotions and Marketing Mix categories for tweet classification.
- Several approaches used: rule-based, lexicon-based, Machine Learning (Bayesian Methods, SVM, Trees, Metaclassifiers...), resource generation (lexicon, corpora...) and related publications.

Feb 2016 - Mar 2016 **Formation and Transference of Technology in Linguistics Engineering**
VAI Group
MSc. Thesis: "Semantic Paraphrasing Model of Document Similarity"
NLP · Similarity · Paraphrasing

- Development of a system able to detect Paraphrasing using a brand new similarity metric for the UNL interlingua.

2014 **Final Project with Ahmed Kebaier (LAGA Laboratories, France)**
Institut Sup Galilée
"Approximation Formulas for Option Pricing in Stochastic Volatility Models"
Stochastic Volatility Models · Finance

2010 **Collaboration Project with José Ramón Dorronsoro (IIC)**
Universidad Autónoma de Madrid
"Cryptography, an introduction"
Cryptography · Mathematics · Computer Science

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Subreviewer at ACL2017

Online Courses

Nov 2023	Synapses, Neurons and Brains Course Hebrew University of Jerusalem [19 hours]	Certificate Link
Nov 2023	Computational Neuroscience Course University of Washington [26 hours]	Certificate Link
Jun 2023	Mathematics for Machine Learning and Data Science Specialization DeepLearning.AI [3 Months 5h/week]	Certificate Link
	<ul style="list-style-type: none">• Linear Algebra for Machine Learning and Data Science• Calculus for Machine Learning and Data Science• Probability & Statistics for Machine Learning & Data Science	
Jun 2023	Psychology Specialization University of Palermo [2 Months 10h/week]	Certificate Link
	<ul style="list-style-type: none">• Psychology of Perception• Cognition, Thought and Language• Psychology of Learning• Psychology• Introduction to Neuroscience	
Jan 2023	Deep Learning Specialization DeepLearning.AI [3 Months 10h/week]	Certificate Link
	<ul style="list-style-type: none">• Convolutional Neural Networks• Sequence Models• Neural Networks and Deep Learning• Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization• Structuring Machine Learning Projects	
Dec 2022	Natural Language Processing Specialization DeepLearning.AI [3 Months 10h/week]	Certificate Link
	<ul style="list-style-type: none">• Natural Language Processing with Classification and Vector Spaces• Natural Language Processing with Probabilistic Models• Natural Language Processing with Sequence Models• Natural Language Processing with Attention Models	
Oct 2022	Machine Learning Specialization DeepLearning.AI & Stanford University [2 Months 10h/week]	Certificate Link
	<ul style="list-style-type: none">• Supervised Machine Learning: Regression and Classification• Advanced Learning Algorithms• Unsupervised Learning, Recommenders, Reinforcement Learning	

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Subreviewer at ACL2017

Publications

 Journal |  Conference |  Workshop/Poster/Other

2023  Arenas-Guerrero, J., Alabaid, A., Navas-Loro, M., Pérez, M.S., Corcho, O. (2023). Boosting Knowledge Graph Generation from Tabular Data with RML Views. In: Pesquita, C., et al. The Semantic Web. ESWC 2023. Lecture Notes in Computer Science, vol 13870. Springer, Cham. https://doi.org/10.1007/978-3-031-33455-9_29

 Navas-Loro, M., Arenas-Guerrero, J., Montiel-Ponsoda, E. *AI4Labour: Reshaping Labour Force Participation with Artificial Intelligence*. Proceedings of the Annual Conference of the Spanish Association for Natural Language Processing 2023: Projects and System Demonstrations (SEPLN-PD 2023) co-located with the International Conference of the Spanish Society for Natural Language Processing (SEPLN 2023), p. 5–10 (2023). <https://ceur-ws.org/Vol-3516/>

2022  Navas-Loro, M., Rodríguez-Doncel, V. *WhenTheFact: Extracting Events from European Legal Decisions*. Frontiers in Artificial Intelligence and Applications (362): Legal Knowledge and Information Systems (2022), p. 219–224, IOS Press. <https://doi.org/10.3233/FAIA220470>

 Navas-Loro, M., Garijo, D., Corcho, O. *Multi-label Text Classification for Public Procurement in Spanish*. Procesamiento del Lenguaje Natural, vol. 69, p. 73–82 (2022). <http://journal.sep- In.org/sepln/ojs/ojs/index.php/pln/article/view/6429>

2021  Schneider, J. M., Rehm, G., Montiel-Ponsoda, E., Rodríguez-Doncel, V., Martín-Chozas, P., Navas-Loro, M., et al. *Lynx: A knowledge-based AI service platform for content processing, enrichment and analysis for the legal domain*. Information Systems (2021), p. 101966, Elsevier. <https://doi.org/10.1016/j.is.2021.101966>

2020  Navas-Loro, M., Rodríguez-Doncel, V. *TimeLex: A Suite of Tools for Processing Temporal Information in Legal Texts*. AI Approaches to the Complexity of Legal Systems XI-XII (2020), 260–266. Springer, Cham. https://link.springer.com/chapter/10.1007/978-3-030-89811-3_18

 Filtz, E., Navas-Loro, M., Santos, C., Polleres, A., Kirrane, E. *Events Matter: Extraction of Events from Court Decisions* (JURIX2020) In Legal Knowledge and Information Systems (pp. 33–42). IOS Press. <https://doi.org/10.3233/FAIA200847>

 Navas-Loro, M., Rodríguez-Doncel, V. *Annotador: a Temporal Tagger for Spanish*. Journal of Intelligent & Fuzzy Systems 39 (2020) 1979–1991, (2). <https://doi.org/10.3233/JIFS-179865>

2019  Navas-Loro, M., Filtz, E., Rodríguez-Doncel, V., Polleres, A., Kirrane, S. (2019). *TempCourt: Evaluation of Temporal Taggers on a new Corpus of Court Decisions*. The Knowledge Engineering Review 34 (2019) e24. <https://doi.org/10.1017/S0269888919000195>.

 Navas-Loro, M., Rodríguez-Doncel, V. *Spanish corpora for sentiment analysis: a survey*. Language Resources and Evaluation, pp. 1–38. <https://doi.org/10.1007/s10579-019-09470-8>

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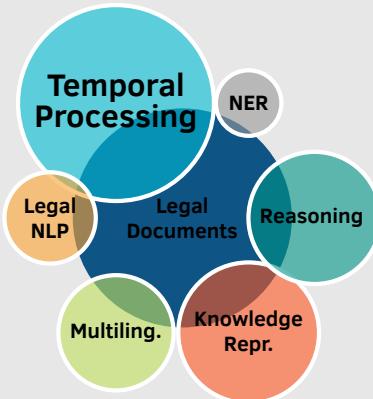


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My PhD Research —



Other Interests —

- LLMs
- Cognitive Sciences
- Ethics
- Paraphrasing
- Language Learning
- Sentiment Analysis
- Commonsense
- Generative AI
- Machine Learning

Languages —

Spanish [Native]



French [DELF B2, TFC C1]



English [CAE(C1),TOEIC(955 over 990)]



Japanese [JLPT N5 (166 over 180)]



German [B1.1]



Chinese



Publications

2018

- W Navas-Loro, M., Santos, C. *Events in the legal domain: first impressions*. In: Proceedings of the 2nd Workshop TeReCom co-located with JURIX 2018, Groningen, December 12, 2018. <http://ceur-ws.org/Vol-2309/05.pdf>
- W Rodríguez-Doncel, V., Navas-Loro, M., Montiel-Ponsoda, E., Casanovas, P. *Spanish Legislation as Linked Data*. In: Proceedings of the 2nd Workshop TeReCom co-located with JURIX 2018, Groningen, December 12, 2018. <http://ceur-ws.org/Vol-2309/12.pdf>
- C Navas-Loro, M., Rodríguez-Doncel, V., Satoh, K. *ContractFrames: Bridging the gap between Natural Language and Logics in Contract Law*. In: New Frontiers in Artificial Intelligence, Revised Selected Papers, 2018. https://doi.org/10.1007/978-3-030-31605-1_9
- C Navas-Loro, M., Rodríguez-Doncel, V. et al. *MAS: A Corpus of Tweets for Marketing in Spanish*. In: Gangemi A. et al. (eds) The Semantic Web: ESWC 2018 Satellite Events. ESWC 2018. Lecture Notes in Computer Science, vol 11155. Springer, Cham. https://link.springer.com/chapter/10.1007/978-3-319-98192-5_53

2017

- W Navas-Loro, M. *LawORDate: a Service for Distinguishing Legal References from Temporal Expressions*. In: Proceedings of the 1st Workshop on Technologies for Regulatory Compliance co-located with the 30th International Conference on Legal Knowledge and Information Systems (JURIX 2017), Luxembourg, December 13, 2017. pp. 25–31. <http://ceur-ws.org/Vol-2049/04paper.pdf>
- C Navas-Loro, M., Rodríguez-Doncel, V., et al. *Spanish Corpus for Sentiment Analysis Towards Brands*. In: Speech and Computer: 19th International Conference, SPECOM 2017, Hatfield, UK, September 12–16, 2017, Proceedings. Ed. By Alexey Karpove. Cham: Springer International Publishing, pp. 680–689. https://doi.org/10.1007/978-3-319-66429-3_68
- W Navas-Loro, M. *Mining, Representation and Reasoning with Temporal Expressions in the Legal Domain*. In: Proceedings of the Doctoral Consortium, Challenge, Industry Track, Tutorials and Posters @ RuleML+RR 2017 hosted by International Joint Conference on Rules and Reasoning 2017 (RuleML+RR 2017). <http://ceur-ws.org/Vol-1875/paper2.pdf>
- W Navas-Loro, M., Rodríguez-Doncel, V. *OEG at TASS 2017: Spanish Sentiment Analysis of tweets at document level*. In: Proceedings of TASS 2017: Workshop on Semantic Analysis at SEPLN (TASS 2017). Ed. by Julio Villena Román et al. Vol. 1896. CEUR Workshop Proceedings. Murcia, Spain: CEUR-WS, pp. 43–49. http://ceur-ws.org/Vol-1896/p4_oeg_tass2017.pdf
- C Loro, M.N., Lacaille, J. *Datamining turbofan engine performance to improve fuel efficiency*. In: 2017 IEEE Aerospace Conference, pp. 1–8. <http://ieeexplore.ieee.org/document/7943699/>

2016

- C Lacaille, J., Loro, M.N. *Data mining turbofan engine performance to improve fuel efficiency*. In: 2016 Future Technologies Conference (FTC), pp. 318–322. <http://ieeexplore.ieee.org/document/7821629/>

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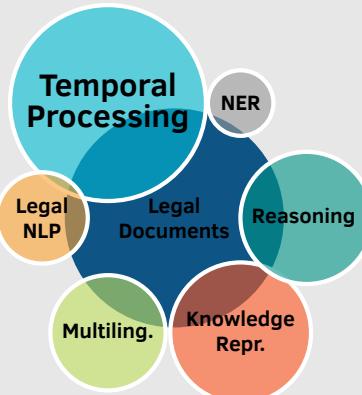


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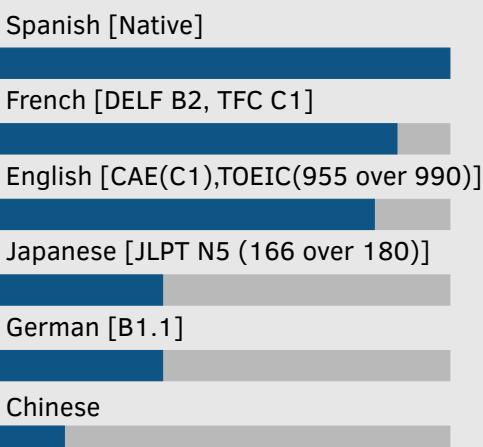
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- Ethics
- Paraphrasing
- Language Learning
- Sentiment Analysis
- Commonsense
- Generative AI
- Machine Learning

Languages —



Talks and events

- 16/10/2023 "Introducción a la Inteligencia Artificial", talk for the Criminologist Association of Madrid
- 19/05/2023 "A Beginner's guide to Machine Learning and Deep Learning", part of the seminar "Machine/Deep Learning Applications in Industry"
- 06/10/2022 "Challenges and Opportunities of Knowledge Graphs for Representing Legal Data", with Erwin Filtz, as Invited Speaker of Thomson Reuters
- 05/10/2023 Co-organizer of Session "AI in the University: challenges, opportunities and proposals - Ethos+Tehne school: a new generation of AI researchers" at the I EELISA conference, held in Bucharest, Romania
- 23/10/2022 Co-organizer of International Workshop on Artificial Intelligence Technologies for Legal Documents. Co-located with ISWC 2022.
- 12/2019 Co-organizer of the conference JURIX 2019, held in Madrid, Spain

Research Visits

- Aug 2023 - Sep 2023 **Secondment at Arçelik/Kadir Has University**
Istanbul, Turkey [2 Months, in 2022 and 2023] AI4LABOUR
- Sep 2019 - Dec 2019 **Internship at the Semantic Technology Laboratory**
Bologna/Rome, Italy [3 Months]
With Aldo Gangemi STLab
- Aug 2018 - Oct 2018 **Internship at the National Institute of Informatics**
Tokyo, Japan [2,5 Months]
With Ken Satoh NII
- Aug 2017 - Oct 2017 **Visitor at the Institute for Information Business**
Vienna, Austria [3 Months]
With Axel Polleres and Sabrina Kirrane WU Wien
- Mar 2016 - May 2016 **Visitor Student at the IRIT**
Toulouse, France [2 Months]
With Jérôme Mengin Univ. Paul Sabatier

Grants & Awards

- 2018 Predoctoral Grant from the Universidad Politécnica de Madrid: "Processing Temporal Expressions in Legal Texts".
- 2017 Best Reviewer Award of the Resources Track of ISWC 2017.
- 2016 Mentee in the International Mentor Program USA-Europe Engineering from the IMFAHE (International Mentoring Foundation for the Advancement of Higher Education) from Massachusetts, USA.
- 2016 José Cuena Award from the Artificial Intelligence Department of the Universidad Politécnica de Madrid.
- 2010 Excellence Grant of the Region of Madrid.